

UNIVERSITY OF BAHRAIN
College of Arts
Department of English Language and Literature



A Comparative Analysis of Cognitive Rhetoric in Arab and Western Media Coverage of Artificial Intelligence

A Thesis Submitted in Partial Fulfillment of the Requirements for the M.A.

Degree in Applied English Language Studies

Submitted by

Fatima Mohammed Abdulwahab

Academic Number: 20146500

Supervised by

Dr. Madani Othman

Associate Professor of Linguistics

University of Bahrain

May 2025

Defense Committee's Approval

University of Bahrain

College of Arts

Department of English Language and Literature

M.A. Degree in Applied English Language Studies

Student Fatima Mohammed Abdulwahab, Academic Number: 20146500,
defended her thesis, by which she fulfilled the requirements for the degree of
M.A. in Applied English Language Studies, entitled '**A Comparative
Analysis of Cognitive Rhetoric in Arab and Western Media Coverage of
Artificial Intelligence**'

on this day of

The committee recommends

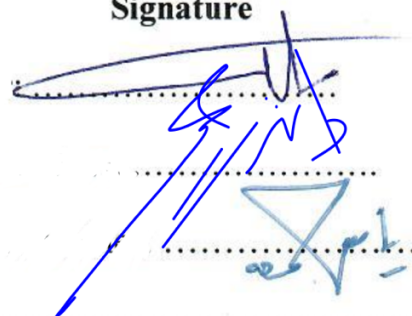
.....

.....

Thesis Defense Committee:

Name	Role
Dr. Madani Othman	Supervisor
Dr. Dana Abdulrahim	Internal Examiner
Prof. Yasser Gomaa	External Examiner

Signature

The image shows three handwritten signatures in blue ink, each written over a horizontal dotted line. The signatures are stylized and appear to be of the three committee members listed in the table: Dr. Madani Othman, Dr. Dana Abdulrahim, and Prof. Yasser Gomaa.

Abstract

This thesis explores the cognitive and rhetorical functions of metaphor and metonymy in Arab and Western media discourse on Artificial Intelligence, using two corpora of over 100,000 words per language. It adopts a mixed-methods design grounded in Conceptual Metaphor Theory, Extended Conceptual Metaphor Theory, and Critical Metaphor and Metonymy Analysis. The study systematically identifies and interprets figurative expressions to delineate the conceptual keys, frame structures, and ideological undercurrents shaping media representations of Artificial Intelligence. The findings reveal that while both corpora share common metaphorical patterns and overarching conceptual keys, they diverge in frequency, frame-level mappings, rhetorical interactions, and cultural underpinnings. Notably, English media tends to anthropomorphise Artificial Intelligence through the prevalent use of human metaphors and frequently frames it through polarised lenses, ranging from technophilia to technophobia. In contrast, Arabic media tends to comparatively reify Artificial Intelligence more through the predominant use of economic and object metaphors and constructs it via discourses of utility and national progression. This thesis also addresses key methodological challenges in cross-cultural and cross-linguistic metaphor research, including limited Arabic natural language processing tools and the absence of a dedicated Arabic FrameNet. Future research is encouraged to incorporate diachronic analyses of metaphor and other methodologies to better trace figurative language circulation in global Artificial Intelligence discourse.

Keywords: AI, media discourse, metaphor, metonymy, frames

Declaration

I declare that this thesis, submitted to the University of Bahrain, was conducted by me through the collection of authentic data. This research has not been previously accepted and is not currently being considered for any other degree at any other university.

Name: Fatima Mohammed Abdulwahab

Academic Number: 20146500

Signature: 

Date: 2/11/2025

The thesis defense committee considered the thesis title:

A Comparative Analysis of Cognitive Rhetoric in Arab and Western Media Coverage of Artificial Intelligence'

Submitted to the Department of English Language and Literature for the M.A. Degree in Applied English Language Studies.

Thesis Defense Committee:

Name	Role
Dr. Madani Othman	Supervisor
Dr. Dana Abdulrahim	Internal Examiner
Prof. Yasser Gomaa	External Examiner

Signature



Dedication

To my Mother

To my daughter

To both my past and my future

Acknowledgements

I begin by expressing my deepest gratitude to Allah for granting me the strength and clarity of mind to complete this long-overdue research journey.

I would like to extend my sincere thanks to Dr. Dana Abdulrahim and Dr. Haleema Al-Aali, whose unwavering support and solid belief always rekindled my spirit, and to Dr. Madani Othman for helping me complete this work.

To my daughter, Malak, whose presence in my life has redefined my sense of purpose and resilience: this thesis was written with you in mind, often while you slept or played nearby, and sneakily added your personal touches and deleted entire sections, forcing me to rewrite them once again. You have been both my biggest challenge and my greatest joy.

Table of Contents

No.	Topic	Page No.
	Defense Committee's Approval	A
	Abstract	B
	Declaration	C
	Dedication	D
	Acknowledgements	E
	Table of Contents	F
	Table of Tables	G
	Table of Figures	H
	List of Abbreviations	I
Chapter One		
Introduction		
1.1	Background of the Study	2
1.2	Problem Statement	6
1.3	Objectives of the Study	7
1.4	Research Questions	8
1.5	Methodology	9
1.5.1	Methods of Data Collection	9
1.5.2	Methods of Data Analysis	9
1.6	Significance of the Study	9
1.7	Structure of the Thesis	10
1.8	Definition of Key Terms	11
1.9	Summary of the Introduction	12

Chapter Two Theoretical Framework and Literature Review		
2.1	Theoretical Framework	14
2.1.1	The Cognitive Rhetoric Approach	14
2.1.2	Conceptual Metaphor Theory (CMT)	16
2.1.2.1	Development and Critique of CMT	17
2.1.3	Complementary Role of Extended CMT (ECMT)	19
2.1.3.1	Deliberate or Conscious Metaphors	19
2.1.3.2	Conceptual Structure in ECMT	20
2.1.3.3	Conceptual Metaphors and Context	23
2.1.3.4	The Interplay Between Schematic Hierarchy and Context	24
2.1.3.5	Conceptual Metaphors, Discourse, and Culture	26
2.1.3.6	More on Frames	27
2.1.4	Complementary Role of CMA	29
2.1.4.1	Analytical Stages in CMA	30
2.1.5	Evolution and Application of Critical Metonymy Analysis	33
2.1.6	Summary and Justification of the Theoretical Framework	37
2.2	Literature Review	39
2.2.1	Conceptual Metaphors and Technology	39
2.2.2	Framing and Representation of AI in Media Discourse	42
2.2.3	Critical Metaphor Analysis and AI Media Discourse	44
2.2.4	Critical Deployment of Metaphors	50
2.2.5	Metonymy and Critical Metonymy Analysis	53

2.2.6	Cross-Cultural Studies on Metaphors and Metonymies in Media	55
2.2.7	Summary	57
Chapter Three Methodology		
3.1	Research Design	59
3.2	Methods of Data Collection	59
3.2.1	Corpus Composition	60
3.2.1.1	Inclusion and Exclusion Criteria	60
3.3	Methods of Data Analysis	61
3.4	Rationale for Methodological Choices	66
3.5	Ethical Considerations	67
3.6	Summary	67
Chapter Four Findings and Discussion		
4.1	Metaphors and Metonymies in Arab and Western Media	69
4.1.1	English Media: Dominant Metaphors and Metonymies	70
4.1.2	Arabic Media: Dominant Metaphors and Metonymies	75
4.1.3	Comparative Observations	82
4.2	Frame-Level Conceptual Structures	86
4.2.1	English Media Frames	87
4.2.2	Arabic Media Frames	95
4.2.3	Comparative Observations	105
4.3	Ideological and Socio-Cultural Insights	109

4.3.1	Agency and Audience Positioning	109
4.3.2	Power Relations	113
4.3.3	Sociocultural Functions	118
4.4	Rhetorical Interaction	121
4.4.1	English Media: Rhetorical Interaction	122
4.4.2	Arabic Media: Rhetorical Interaction	124
4.4.3	Comparative Observations	126
4.4.4	A Note on Rhetorical Interaction and Reflexivity	127
4.5	Comparison of the Present Study's Results to Previous Research	128
Chapter Five		
Conclusion		
5.1	Theoretical and Practical Contributions	137
5.2	Limitations of the Study	138
5.3	Directions for Future Research	140
6.	References	142
Appendix A: English Corpus Text Collection		157
Appendix B: Arabic Corpus Text Collection		159
Appendix C: All English Metaphors in Resonance Order		163
Appendix D: All English Metaphors in Resonance Order		164
Appendix E: Statistical Significance (Log-Likelihood and Chi-square)		165
Appendix F: Elaboration on frames and frame elements		171

Table of Tables

No.	Title	Page
Table 1	Schematic Hierarchy of the “Life is a Journey” Metaphor in ECMT	22
Table 2	Corpus Composition: Languages, Word Count, Outlets, and Timeframe	60
Table 3	English Corpus: Conceptual Key Categories of AI Metaphors by Resonance	70
Table 4	English Corpus: Human Metaphors by Resonance	71
Table 5	English Corpus: Organic and Environmental Metaphors by Resonance	72
Table 6	English Corpus: Economic and Object Metaphors by Resonance	73
Table 7	English Corpus: Social and Event Metaphors by Resonance	74
Table 8	English Corpus: Distribution of Metonymic Expressions by Percentage	75
Table 9	Arabic Corpus: Conceptual Keys of AI Metaphors by Resonance	76
Table 10	Arabic Corpus: Economic and Object Metaphors by Resonance	77
Table 11	Arabic Corpus: Human Metaphors by Resonance	78
Table 12	Arabic Corpus: Social and Event Metaphors by Resonance	79
Table 13	Arabic Corpus: Organic and Environmental Metaphors by Resonance	80
Table 14	Arabic Corpus: Spatial and Temporal Metaphors by Resonance	81
Table 15	Arabic Corpus: Metonymic Expressions by Percentage	82

Table 16	Statistical Significance of Conceptual key differences by token count and MR	83
Table 17	Cross-Linguistic Comparison of Conceptual Metaphor Keys	84
Table 18	Cross-Linguistic Comparison of Metonyms	85
Table 19	English Frame-Level Mapping of the Human Metaphor	88-89
Table 20	English Frame-Level Mapping of Organic and Environmental Metaphors	90
Table 21	English Frame-Level Mapping of Economic and Object Metaphors	91-92
Table 22	English Frame-Level Mapping of Social and Event Metaphors	93
Table 23	Metonymic Types in the English Corpus	94
Table 24	Arabic Frame-Level Mapping of Economic and Object Metaphors	96
Table 25	Arabic Frame-Level Mapping of the Human Metaphors	97-98
Table 26	Arabic Frame-Level Mapping of Social and Event Metaphors	100
Table 27	Arabic Frame-Level Mapping of Organic and Environmental Metaphors	101
Table 28	Arabic Frame-Level Mapping of Spatial and Temporal Metaphors	102
Table 29	Metonymic Frames in the Arabic Corpus	103-104
Table 30	A Comparison of the Black Box Metaphor FEs	107
Table 31	Conceptual Key Percentages in both Corpora	110
Table 32	A Comparison of the Student/Trainee Metaphor FEs	112
Table 33	English Corpus: Rhetorical Interactions with Metaphors and Metonymies	122
Table 34	Arabic Corpus: Rhetorical Interactions with Metaphors and Metonymies	124

Table of Figures

No.	Title	Page
Figure 1	Schematic hierarchy for four conceptual structures (from Kövecses 2020, P.52)	21
Figure 2	Four types of context (from Kövecses 2015a, p. 10)	23
Figure 3	Integrated ECMT and CMA Model for the Present Study	62
Figure 4	A Visual Representation of AI AS A CLONE/HYBRID Metaphor	117

Table of Abbreviations

AI	Artificial Intelligence
CAIL	Critical Artificial Intelligence Literacy
CDA	Critical Discourse Analysis
CMA	Critical Metaphor Analysis
CMeA	Critical Metonymy Analysis
CMT	Conceptual Metaphor Theory
ECMT	Extended Conceptual Metaphor Theory
FE	Frame Elements
LL	Log-likelihood
MeIP	Metonymy Identification Procedure
MIP	Metaphor Identification Procedure
MR	Metaphor Resonance
NLP	Natural Language Processing

Chapter One

Introduction

Chapter One

Introduction

This chapter establishes the context and outlines the background of the study. It also includes the statement of the research problem, objectives, research questions, methodology, and significance of the study. It lastly presents its overall structure and defines key terms.

1.1 Background of the Study

Artificial intelligence (AI), an umbrella term for automated digital systems that classify, recommend, and make decisions through data-trained algorithms (Nguyen & Hekman, 2024), has rapidly permeated all aspects of contemporary society and revolutionised various fields, from education and industry to healthcare, communication, and even daily routines (Alshater, 2022; Bucher, 2017, 2018; Kyeremeh et al., 2023; Nguyen, 2024; Terwiesch, 2023), which has garnered interest in its prevalent, yet abstract and intricate nature. This nature renders it challenging for individuals lacking technical expertise to fully comprehend (Nguyen, 2024); a challenge that is further exacerbated by technical experts' reliance on specialised terminology. As such, the layperson's understanding of AI mainly depends on how it is mediated and represented to them, a goal largely achieved through media discourse (Nguyen & Hekman, 2024).

The academic literature provides a plethora of definitions of media, discourse, and media discourse. However, these terms continue to be subject to diverse interpretations. Mass communication theorist McQuail defines

media as the publicly available means used to disseminate information to the public, supplementing with print, film, television, and radio as media examples (2010). These communication channels serve many functions. One of these functions, relevant to this study, is bridging between the authorities and experts as producers of information and the general public as receivers. In linguistics, discourse is a broad term that can refer to “narratives in a restricted or broad sense of the term, text, talk, a speech, topic-related conversations, to language *per se*.” (Wodak, 2008, p. 3). Discourse has also been linguistically defined as the ways in which language is used in communication, in that it shapes and reflects broader social, cultural, and ideological patterns (Fairclough, 1995a). When applied to media, media discourse refers to the structures and functions of texts produced for public consumption in mass communication contexts, focusing on how they influence knowledge, attitudes, and societal ideologies (Fairclough, 1995b; van Dijk, 1988). Most specifically, the present study employs the term “AI media discourse” in reference to “the discursive conventions of conceptualising and framing the nature and use of AI technologies” (Kajava & Sawhney, 2023, p. 4).

Evident in its increasing popularity in news media headlines (Nguyen, 2024) and in recognition of the importance of linguistic strategies in facilitating public comprehension, the media assumes a critical role in shaping the AI discourse by translating its technical aspects into accessible and culturally resonant narratives. This task is often achieved through rhetorical devices, with conceptual metaphors and metonymies being notable ones (Anderson, 2023; Kajava & Sawhney, 2023). Lakoff and Johnson, pioneering theorists recognised for the Conceptual Metaphor Theory

(henceforth CMT), postulate that abstraction and complexity are often understood through metaphors (Lakoff & Johnson, 1980). Their theory repositions metaphors from mere rhetorical and literary flourishes to conceptual tools that facilitate the comprehension of abstract concepts (target domains) by contextualising them within more concrete, familiar experiences (source domains). Addressing AI discourse, it is essential to first acknowledge how the term 'Artificial Intelligence' is inherently metaphorical as it draws upon human intelligence (source domain) to depict the technical processes of AI (target domain).

Similarly, metonymy, first introduced as a conceptual tool by Kövecses and Radden (1998; 1999) and Panther and Radden (1999), also partakes in AI discourse by using a familiar representative element (the vehicle) to stand in for a broader concept (the target). In metonymy, the vehicle represents the target through a direct association or contiguity, provided both are “linked by a pragmatic function, so that the target is mentally activated” (Barcelona, 2011, p. 52). In AI discourse, a metonym like "the algorithm" serves as a vehicle for the target concept of interwoven, data-driven operations and encapsulates intricate processes into a single recognisable term (Furze, 2024).

Culture plays a pivotal role in the construction and deconstruction of metaphors and metonymies. Kövecses (2009b) conceives of culture as a set of shared understandings of the world necessary for the production and comprehension of discourse and, by extension, conceptual metaphors and metonymies. His expansion of CMT (2020) emphasises that, while metaphors operate on universal cognitive mechanisms, their application and resonance

are deeply influenced by culture. Such cultural underpinnings not only determine the choice of metaphors but also reflect societal attitudes embedded in discourse (Charteris-Black, 2004, 2011; Kövecses, 2020), which are in turn reflected in the cross-cultural variations in metaphoric and metonymic expressions (Kövecses, 2017b).

Based on the fundamental communicative role of media, the utility of metaphors and metonymies in crafting culturally resonant imagery, and the few publications on how AI and other emerging technologies are given meaning through media discourse (Nguyen & Hekman, 2024), especially from a cross-cultural perspective, the present study employs cognitive rhetoric. This approach combines elements of cognitive linguistics with rhetorical theory and analysis (Potapenko, 2016) to investigate the interplay between media discourse, rhetorical devices, conceptual structure, and culture. More specifically, it attempts to explore how a sample of Arab and Western media use metaphors and metonymies, being both rhetorical strategies and cognitive phenomena, to frame AI within their respective cultures.

To pursue this investigation, the present study grounds its analysis in CMT and two complementary frameworks. On the cognitive or conceptual level, Kövecses' Extended Conceptual Metaphor Theory (therefore ECMT) (2020) addresses different critiques and expands on CMT in various aspects. One of these aspects is the elaborate conceptual structure analysis that introduces four key levels of schematicity: image schemas, domains, frames, and mental spaces. Specific to the present study is the adopted frame level as outlined in the Theoretical Framework section. On the rhetorical level, this

study utilises Charteris-Black's (2004, 2005) Critical Metaphor Analysis (henceforth referred to as CMA). CMA integrates CMT with Critical Discourse Analysis (CDA) and brings into the discussion the ideological weight of metaphor. Through synergising ECMT and CMA, and subsequently blending the cognitive dimensions with rhetorical analysis, this study aims to address both the rhetorical (i.e., influencing and engaging the public) and conceptual effects (i.e., shaping understanding and structuring knowledge) of metaphors and metonymies in AI discourse.

1.2 Problem Statement

Due to its entanglement in both professional fields and aspects of daily life alike, AI has garnered public interest in its prevalent yet abstract and intricate nature. This opacity is compounded by the use of technical jargon within AI discourse, which alienates the lay public and restricts their capacity to engage meaningfully with its implications. As this technology continues to advance, the public understanding of its implications is significantly influenced by media narratives (Nguyen, 2024) that mediate between the experts of technology and laypeople (Kajava & Sawhney, 2023). Within this mediated space, the media's use of linguistic strategies, materialised in specialised technical terminology and rhetorical devices, shapes the cultural discourse and conceptualisation of modern-day AI. While some media channels adopt specialised terminology that creates barriers and hinders mediation to the layperson, the utility of metaphors and metonyms, as Wyatt (2021) asserts, renders them more comprehensible to the general public as they resonate more emotionally and function more dynamically

than technical jargon. This necessitates a specific exploration of how different cultures utilise metaphors and metonymies in their AI discourse.

Acknowledging the exhaustive body of literature documenting the application of CMT and subsequent frameworks to examine media discourse in fields like politics, healthcare, environmental issues, and even technology (Chown & Nascimento, 2023; Eadon & Wood, 2024; Hellsten, 2002; Landau et al., 2018; Luokkanen & Huttunen, 2014; Musolff, 2016, 2023), the systematic academic application of these frameworks to current AI discourse remains underdeveloped, especially from a cross-cultural perspective. Addressing this gap, the present study addresses Arab and Western media representations of AI with a focus on how metaphors and metonymies vary across cultural contexts. This study therefore attempts to address two queries: how these technical notions are made more accessible to the public through the conceptual aspects of metaphors and metonymies, and what embedded cultural values and attitudes surrounding the discourse on AI in each respective culture can be unearthed from the critical analysis of said metaphors and metonymies.

1.3 Objectives of the Study

The primary aim of this study is to conduct a comparative analysis of how cognitive rhetoric is employed by Arab and Western media in their coverage of AI. To that end, the study pursues the following specific objectives:

1. To identify and classify the metaphors and metonymies used by Arab and Western media to conceptualise and frame AI.

2. To analyse the frame-level conceptual structures that underlie the identified metaphors and metonymies in each cultural context.
3. To apply critical metaphor and metonymy analysis in order to evaluate the ideological and socio-cultural implications of these conceptualisations.
4. To investigate how metaphorical and metonymic expressions interact with other rhetorical devices, specifically contrast, repetition, and rhetorical questions, in shaping the AI discourse in each respective culture.

1.4 Research Questions

Aligned with its specific objectives, this study is guided by the following research questions:

1. What are the conceptual metaphors and metonymies employed in the selected corpora of Arab and Western media to frame AI?
2. What frame-level conceptual structures underlie the metaphorical and metonymic representations of AI in each cultural context?
3. What ideological and socio-cultural insights can be derived through a critical metaphor and metonymy analysis of the identified expressions?
4. How do metaphorical and metonymic expressions interact with other rhetorical devices in shaping the AI discourse in each respective culture?

1.5 Methodology

This study implements a mixed-methods research design and incorporates both qualitative and quantitative corpus-assisted analyses.

1.5.1 Methods of Data Collection

The data for this study consist of two purposefully sampled corpora drawn from English-language Western media and Arabic-language Arab media. These collections include news articles published between 2021 and 2025 that align with recent AI discourse.

1.5.2 Methods of Data Analysis

The analytical framework is primarily adopted from ECMT and Charteris-Black's three levels of CMA (namely identification, interpretation, and explanation), with a preceding pre-metaphoric stage and one succeeding stage, all of which are part of the scholarly practices of Charteris-Black and other linguists (Charteris-Black, 2005; Hamilton, 2012; Imani, 2022).

1.6 Significance of the Study

Situated at the intersection of cognitive linguistics, rhetorical analysis, and media discourse studies, this study is significant in exploring how culturally resonant rhetorical devices mediate public understanding of abstract technologies. In doing so, it fosters interdisciplinary dialogues concerning language, cognition, and culture, and simultaneously offers novel insights into how cross-cultural meaning-making unfolds within mediated technological discourse.

On an academic level, the present study's scholarly contributions are fourfold. First, it addresses a significant gap in linguistic research by offering a cross-cultural comparative analysis of metaphor and metonymy in AI media discourse, an area that remains largely under-theorised, especially from an ECMT-informed perspective. Second, it responds to the marginalisation of metonymy in much of the existing scholarship by reinstating it as a component of figurative framing in technological contexts. Third, the study moves beyond the traditional metaphor identification paradigm by investigating how metaphors and metonymies interact with other rhetorical devices, such as contrast and rhetorical questions. Finally, by integrating frame-level conceptual structures into CMA, a novel addition, to the best of the author's knowledge, it attempts to contribute to the scholarly practice and understanding of how frames inform metaphorical variation.

1.7 Structure of the Thesis

This thesis is organised into five chapters: Chapter One, the Introduction, outlines the context and motivation of the study and presents the problem statement, objectives, research questions, and methodology. It also discusses the study's significance and structure. Chapter Two states and elaborates on the theoretical foundations informing the study. It starts with cognitive rhetoric as the overarching approach and progresses through the core theories, CMT, ECMT, and CMA. It also synthesises prior scholarship on metaphor and metonymy in media, especially AI and technology media discourse. Chapter Three provides a detailed account of the methodology, including the research design, corpus selection, data collection, and the analytical procedure. It introduces a multi-stage framework that culminates

in a cross-linguistic and cross-cultural comparative analysis. Chapter Four presents the results of the analysis, identifies key metaphorical and metonymic expressions, examines their frame-level conceptual structures, their underlying ideologies and rhetorical interactions, and draws comparisons between Arab and Western contexts. Finally, the concluding chapter summarises the main findings, reflects on their theoretical and practical implications, and proposes recommendations for future research.

1.8 Definition of Key Terms

To ensure conceptual clarity and consistency throughout the thesis, this section outlines the key terms central to the study. As the focus of the present thesis, **AI** refers to digital systems that classify, predict, and make decisions through data-trained algorithms (Nguyen, 2024). Governing the framework of this study, **cognitive rhetoric** is an interdisciplinary approach that integrates cognitive linguistics with rhetorical analysis to explore how language both reflects and influences conceptualisation, persuasion, and meaning-making in discourse (Potapenko, 2016). In turn, **discourse** is understood in the critical linguistic sense as language-in-use that constructs and reflects social reality and often serves ideological functions within specific communicative and cultural contexts (Fairclough, 1995b; van Dijk, 1988). In this study, **AI media discourse** refers specifically to journalistic texts that frame AI for public audiences and act as intermediaries between technical experts and lay readers.

Theory-wise, a **conceptual metaphor** is defined as a cognitive mapping between two domains, wherein a target domain is understood through a source domain as expressed in the structure TARGET IS

SOURCE (Lakoff & Johnson, 1980). A **metonym**, in contrast, operates through conceptual contiguity or associative links within the same domain, wherein a salient vehicle element stands in for a more complex or broader target concept (Panther & Radden, 1999; Barcelona, 2011). This study also employs the concept of **frames**, particularly as developed in ECMT, to refer to culturally embedded, schematic knowledge structures that organise experience, guide metaphorical interpretation, and play a crucial role in cross-cultural metaphoric variation (Kövecses, 2020).

1.9 Summary of the Introduction

This chapter introduces the study's focus, outlines the research problem, aims, and questions, and presents the cognitive rhetoric approach, which combines CMT, ECMT, and CMA. It also describes the methodological design, addresses the study's significance, and explains its structure. By introducing metaphors and metonymies as both cognitive and rhetorical tools shaped by culture, the Introduction sets the stage for the theoretical exploration that follows in Chapter Two.

Chapter Two

Theoretical Framework and Literature Review

Chapter Two

Theoretical Framework and Literature Review

The purpose of this chapter is twofold: the Theoretical Framework section outlines the theoretical foundations underpinning the present study with a focus on several notions pertinent to its scope. The second section summarises prior research on how these theoretical frameworks have been empirically applied in media discourse, particularly in framing AI and other technologies.

2.1 Theoretical Framework

Under the umbrella approach of cognitive rhetoric, the adopted theoretical framework integrates rhetorical and cognitive dimensions and establishes the basis for examining how metaphors, metonymies, and underlying frame-level conceptual structures. In doing so, it particularly employs two expansions on CMT, namely ECMT and CMA.

2.1.1 The Cognitive Rhetoric Approach

Cognitive rhetoric integrates cognitive linguistics and rhetorical analysis, which provides a comprehensive lens to examine the interplay of the rhetorical and conceptual aspects of metaphors and metonymies. Potapenko (2016) proposes two key perspectives on cognitive rhetoric: the ontological perspective, which considers the roles of communication participants, and the epistemological perspective, pertinent to research methodologies. According to Kwiatkowska (2012), the ontological perspective entails examining the

sender's use of language to influence the receiver's cognitive processes. Epistemologically, it entails applying cognitive principles to rhetorical analysis. According to Oakley (2005), epistemological cognitive rhetoric is the "study of correspondence between cognitive semantics, which seeks to understand how we generally conceptualise, imagine, and reason, and rhetorical theory, which seeks to understand how we conceptualise, imagine, and reason in particular situations" (p. 455). At the intersection of the ontological and epistemological perspectives, Potapenko treats cognitive rhetoric as "the theory and practice of persuading explained with the application of cognitive linguistic methodology" (2016, p. 13). He also lists several complementary theories under this umbrella approach, including, but not limited to: CMT (Lakoff & Johnson, 1980), force dynamics (Talmy, 1988), image schemas (Johnson, 1987), conceptual integration (Fauconnier & Turner, 2002), and cognitive grammar (Langacker, 1987). There is yet to be a scholarly consensus on the roots of cognitive rhetoric as an academic approach. However, Potapenko traces it back to Sperber (1975) and Turner (1991).

Within the scope of the present research, cognitive rhetoric investigates how metaphors and metonymies, anchored in frame-level conceptual structures, are used in shaping AI media discourse. Considering their dual function as both cognitive phenomena and rhetorical devices, metaphors and metonymies prove central to cognitive rhetoric; their bridging between cognitive linguistics and rhetorical theory highlights the intersection of the human conceptualisation of abstract ideas and the rhetorical use of language. These metaphors and metonymies double as constructs that influence thought processes (Saban, 2006), facilitate understanding (Lakoff, 1991)

and are strategically employed to engage and influence audiences, evoke particular responses, and frame arguments persuasively (Ferreira et al., 2023; Kövecses, 2009a). To address their multifaceted use in discourse, the present study synergises two expansions on CMT: Kövecses' ECMT and Charteris-Black's CMA.

2.1.2 Conceptual Metaphor Theory (CMT)

Metaphor is a figure of speech that has historically been regarded solely for its poetic and rhetorical effects. Only after the publication of *Metaphors We Live By* (Lakoff & Johnson, 1980) has metaphor emerged as a significant scholarly phenomenon in cognitive linguistics, repositioning from simple literary flourishes to a fundamental aspect of everyday language. It henceforth gained recognition as a pervasive conceptual tool that structures, restructures, and even creates reality (Turner, 1987), and more significantly, a representative of reasoning and thinking (de Guerrero & Villamil, 2002). The inception of CMT in 1980 has therefore brought to the forefront of linguistic analyses the role of metaphors in human cognition.

In their seminal work, Lakoff and Johnson propound that metaphors facilitate understanding of abstract concepts (target domains) by likening them to more tangible, familiar experiences (source domains). They based this function of conceptual metaphors on their proposition that both people's conceptual system and language are metaphorically built, which suggests that individuals often perceive worldly experiences, emotions, and objects in terms of other concepts (Imani, 2022). Lakoff and Turner (1989) build on this proposition and emphasise that metaphorical reasoning permeates "all kinds of thought: thought about emotion, about society, about human character,

about language, and about the nature of life and death” (p. xi). They further emphasise that metaphors form cognitive frameworks that construct knowledge, shape worldviews, and guide subconscious thought processes. As a result, the concept of metaphorical thinking surfaced as a fundamental and inescapable aspect of human mental processing (Lakoff, 1991; Gibbs, 1994; Schmitt, 2005). Relevant to metaphorical thinking, the concept of metaphorical meaning-making refers to the process by which individuals understand the world, create, and derive meaning from experiences, concepts, or situations through the often-unconscious deployment of metaphors (Lakoff & Johnson, 1980). Pertinent to the present study, traditional CMT reveals how media discourse simplifies the abstract concept of AI for public use by linking it to familiar things, such as people, objects, or events.

2.1.2.1 Development and Critique of CMT

Researchers postulate that CMT occupies a somewhat paradoxical position within academia (Kövecses 2020). Despite its widespread recognition, significant contributions, and cross-disciplinary popularity, nearly all aspects of the theory have faced extensive critique over the past four decades (Geeraerts, 2010; Gibbs, 2006; Steen, 2007). These critiques have spurred theoretical refinements that led to more nuanced models, which in turn directed CMT to develop further and stand the test of time (Kövecses, 2015a).

While many scholars have significantly contributed to its development, Zoltán Kövecses, a prominent scholar in metaphor studies, has offered both critical perspectives and remedial expansions of CMT in several of his

scholarly publications (2002, 2005, 2009a, 2009b, 2015a, 2015b, 2017a, 2017b, 2020). Two of his notable critiques pertain to the limited attention to social factors and the universality of metaphors.

Kövecses' (2020) first critique addresses CMT's limited focus on the social-pragmatic functions of metaphors within real-life discourse. This critique emphasises that CMT, in its traditional form, has primarily focused on cognitive mechanisms without fully examining how metaphors operate in social interactions. He remedied this oversight with a call to consider both the cognitive and social dimensions of metaphor, as real-world discourse shapes and is shaped by social contexts.

The second critique, relevant to the present study, pertains to CMT's emphasis on universal conceptual metaphors. Kövecses (2020) points out that while some metaphors, such as KNOWING IS SEEING, are widely applicable across diverse languages due to universal cognitive and biological experiences, this universality does not extend to all metaphors. As many conceptual metaphors are indeed cross-culturally prevalent, culturally specific and context-induced metaphors are a part of the conceptual system and shape how specific cultures view the world. This critique of traditional CMT's heavy reliance on universal bodily metaphors acknowledges a degree of universality while simultaneously leaving room for culturally contingent metaphors.

To address the aforementioned critiques and others, Kövecses has made significant advancements in CMT that culminated in his *Extended Conceptual Metaphor Theory* (2020), which attempts to remedy several long-standing

debates and challenges in metaphor as discussed in the following section.

2.1.3 Complementary Role of Extended CMT (ECMT)

Whereas CMT provides the foundational insight into how metaphors structure human thought through domain mappings, ECMT responds to the necessity for a more sophisticated model that captures the dynamicity and variability of metaphor in actual discourse. Kövecses' elaboration on deliberate or conscious metaphors, conceptual hierarchy, and contextual variation serves as a primary theoretical foundation for this thesis and makes essential contributions to both the theoretical and empirical refinement of metaphor research.

2.1.3.1 Deliberate or Conscious Metaphors

A remarkable advancement within ECMT is its integration of deliberate metaphor theory (Steen, 2008, 2011, 2013), which distinguishes between metaphors that are processed automatically and those intentionally designed to guide the audience's perspective.

Defined by Steen (2008) as metaphors specifically designed to encourage conscious metaphorical thinking, deliberate metaphors, or conscious metaphors, were not a central focus of Lakoff and Johnson's foundational CMT. In emphasising how metaphors operate unconsciously, they largely bypassed the equally important explicit and intentional use of some metaphors. Building on deliberate metaphor as developed by Gerard Steen (2008, 2011, 2013) and others (Kövecses, 2020), ECMT acknowledges that not all metaphors operate below consciousness. There are also some

conscious, deliberate metaphors which are distinct from traditional CMT's metaphorical thinking, as they intentionally guide the audience to adopt an unfamiliar, or 'alien', perspective on a target concept. This perspective subsequently enables individuals to conceptualise the target in a way that aligns with the metaphor's intended framing. Deliberate metaphors sometimes appear in overt, linguistically marked forms, such as similes, analogies, or quotation marks, that signal that a metaphor is being used, which invites reflection on the metaphorical mapping and its implications, rather than allowing them to blend seamlessly into thought. This makes deliberate metaphors particularly relevant in persuasive discourse, such as that found in media texts, where authors may consciously employ them to steer public opinion or frame an emerging phenomenon in an intended way (Steen, 2011; Kövecses, 2020).

2.1.3.2 Conceptual Structure in ECMT

Another central innovation in ECMT is its emphasis on the hierarchical organisation of metaphorical structure, which moves beyond the classical CMT source–target domain mapping.

Kövecses (2017c) identifies the hierarchy problem of metaphors. This problem arises because, on the one hand, traditional CMT treats metaphors as static mappings between a source and a target domain, while, on the other hand, many other linguists have adopted various perspectives and used different terms to refer to the structures constituting conceptual metaphor. This resulted in a plethora of theorisation on the source-target mapping, including, but not limited to, image schemas (Johnson, 1987), frames (Kövecses, 2006; Lakoff, 1996), domains (Lakoff & Johnson, 1980;

Langacker, 1987), and mental spaces (Fauconnier, 1994), with other terms in circulation. In attempts to harmonise these various perspectives on source-target domain mapping, Kövecses introduces a four-level model of hierarchical schematicity, as presented in Figure 1 and explained below:

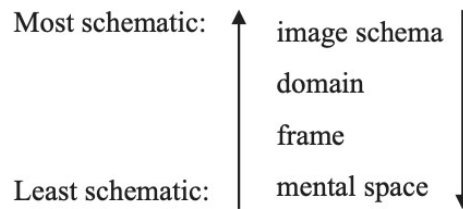


Figure 1.

Schematic Hierarchy of Conceptual Structures (from Kövecses, 2020, p. 52)

1. **Image Schemas:** Foundational, pre-linguistic patterns derived from sensory-motor experiences (e.g., CONTAINMENT, BALANCE).
2. **Domains:** Broader conceptual areas organising knowledge, shaped by experiential factors, especially bodily context.
3. **Frames:** Culturally and socially constructed structures that organise knowledge and beliefs (and contain frame elements), also shaped by experience.
4. **Mental Spaces:** Dynamic, context-sensitive constructs used for often real-time metaphorical reasoning.

Furthermore, Kövecses (2020) argues that metaphors often function concurrently across these levels, which creates both general patterns, as in domains and image schemas, and specific instantiations, as in mental spaces.

He illustrated the hierarchical structure using the famous LIFE IS A JOURNEY metaphor as detailed in Table 1 below.

Table 1.

Schematic Hierarchy of the “Life is a Journey” Metaphor in ECMT

Level	Example from the "Life is a Journey" Metaphor
Image Schema	ACTION IS MOTION: Life involves movement and progress CONTROL IS PHYSICAL BALANCE: Staying stable in life means maintaining balance
Domain Level	LIFE IS TRAVEL: Life is understood as a form of movement across time and space.
Frame Level	LEADING A LIFE IS JOURNEYING: A person moves along a life path with goals, obstacles, and direction.
Mental Space Level	KEEPING ONE'S JOB IS KEEPING ONE'S BALANCE WHILE WALKING ALONG A TIGHTROPE: A specific scenario where employment stability is linked to physical balance. LOSING ONE'S JOB IS LOSING ONE'S BALANCE WHILE WALKING ALONG A TIGHTROPE: Losing a job is metaphorically falling off the tightrope.

At the most schematic level, image schemas provide fundamental embodied experiences that structure thought. The ACTION IS MOTION schema maps movement onto abstract concepts such as progress in life, while the CONTROL IS PHYSICAL BALANCE schema conceptualises stability in life as maintaining equilibrium. At the second level, domains serve as broad conceptual categories that structure abstract concepts. As a domain-level metaphor, LIFE IS TRAVEL organises different ways of thinking about progress, time, and purpose. Within this domain, frames provide more specific structures, as seen in the Journey frame, where life is conceptualised as a goal-oriented movement that involves several frame elements (henceforth FEs, singular FE), such as travellers, paths, obstacles, and destinations. At the last and most specific level, mental spaces instantiate metaphors in context-

dependent ways. For example, Kövecses presents a scenario where employment stability is understood through the metaphor of walking on a tightrope: keeping one's job is maintaining balance on a tightrope, while losing one's job is falling off. The mental space represents a particular instance of this metaphor in discourse, but it activates the entire hierarchy of conceptual structures associated with it. This proposition about hierarchy addresses how conceptual structures become increasingly specialised as they move from broad schemas to specific ones.

2.1.3.3 Conceptual Metaphors and Context

In addition to schematic hierarchy, Kövecses (2015a, 2020) emphasises the importance of context in both the production and interpretation of metaphors. In contrast to traditional CMT that focuses on universal metaphors derived from bodily experiences (bodily context), he highlights the contextual variability of metaphorical meaning. In doing so, he identifies four types of context that influence metaphor use as illustrated in Figure 2.

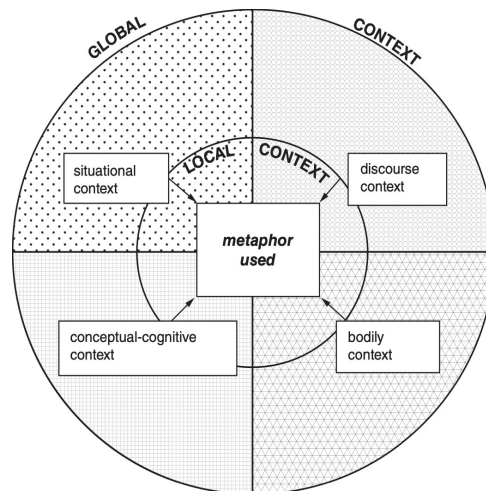


Figure 2.

Four Types of Context (from Kövecses, 2015b, p. 12)

1. **Situational Context:** Immediate physical or social circumstances surrounding communication.
2. **Discourse Context:** The broader linguistic environment, including prior and concurrent utterances.
3. **Conceptual-cognitive Context:** Individual cognitive states, such as goals, emotions, and knowledge structures.
4. **Bodily Context:** Embodied experiences that influence metaphor comprehension.

Through the integration of these four types of context into CMT, ECMT extends it to account for how metaphors adapt to specific communicative and cultural circumstances and aligns it with discourse analysis, which renders it a suitable theoretical lens for the present thesis.

2.1.3.4 The Interplay Between Schematic Hierarchy and Context

Another defining strength of ECMT lies in its capacity to integrate schematic hierarchy and contextual variation into a unified framework. Rather than treating metaphors as fixed mappings, ECMT views them as dynamically constructed, influenced by both hierarchical schematic structures (Figure 1) and multiple types of context (Figure 2).

Kövecses (2020) highlights that the levels of schematicity interact dynamically with context in metaphorical meaning-making and cross-cultural variation. He notes that, in traditional CMT, the body of a human being and its experiences (bodily context) are significantly involved in the process of metaphorical meaning-making, making the most schematic level of image schemas significant in this regard. This is because the image

schemas are predicated on our most fundamental interactions with the physical world and are indispensable to human understanding. However, in critiquing traditional CMT, Rakova (2002) points out that a theory based on image schemas, and in particular, on essential physical experiences that are shared across cultures, cannot simultaneously be a theory of cultural variation. ECMT therefore addresses the question of how and to what extent metaphorical conceptualisation is universal and can vary across cultures, which leads the discussion to the less schematic levels and the other types of context.

The addition of different types of context remedies this shortcoming of standard CMT, as each level of schematicity interacts with specific contextual influences. For example, mental spaces are particularly sensitive to situational and discourse contexts, including the immediate physical environment, the social situation, and the discourse history. This allows speakers to adapt metaphorical expressions to immediate communicative aims. In turn, these mental spaces activate broader frames, which are shaped by cultural models, shared ideologies, and conceptual histories. These frames operate within broader domains and ultimately rest on deep image schemas rooted in embodied experience (bodily context). Thus, while the structure of metaphor follows a hierarchy, the actual metaphor selected and how it is understood is always contextually modulated (Kövecses, 2015b).

This layered interaction also allows for feedback loops between levels. For instance, repeated metaphor use in specific contexts, such as framing AI in war-like terms, such as AI BATTLEFIELD, can gradually entrench certain frames within the public consciousness. At the same time, broader cultural

values can predispose particular metaphorical framings as detailed in the following subsection.

2.1.3.5 Conceptual Metaphors, Discourse, and Culture

Within ECMT, metaphor is both a cognitive mechanism and a discursive and cultural practice. Kövecses (2020) argues that variation in metaphorical conceptualisation is not random but emerges from the culturally specific contexts in which communication occurs. In his pursuit of metaphorical variation in relation to culture, he situated culture within two of the four types of context: culture as a situational context and culture as a conceptual context.

In addressing culture as situational context, defined by Kövecses (2017a) as the specific ideas, values, practices, and artefacts unique to a linguistic community, these cultural factors, ranging from dominant values and artistic works to media products and physical objects, supply metaphorical source domains that are salient and active in specific communicative instances.

In addressing culture as a conceptual context, and more relevant to this study, Kövecses (2017b) proposes that culture can be understood as a conceptual system that is both a process and a product of cognitive operations. This conceptual system, central to cognitive linguistics, is dynamic and evolving. It consists of frames or cultural models that emerge from shared lived experiences within a community. Frames, as developed by Fillmore (1982), Lakoff (1987), Langacker (1987), and others, represent structured knowledge that enables meaning-making. Said frames or models are

experientially motivated structures, rooted in direct or indirect experience (Johnson, 1987; Lakoff, 1987; Gibbs, 2006, as cited in Kövecses, 2017b).

Cultural anthropology and linguistics further extend this idea by treating culture as a system of interconnected frames or cognitive models, also referred to as cultural models (Sharifian, 2015; Albufalasa & Vorobeva, 2020). This leads the discussion to frames (i.e., the third conceptual level on the schematic hierarchy) that shape our understanding of the world and influence how individuals interpret and produce metaphors in discourse (Kövecses, 2015b). In this view, culture becomes both the source and the site of metaphorical meaning-making. Via studying metaphors at the specific level of frames, one may be able to gain deeper insights into how cultural nuances and contextual factors inform metaphorical meaning-making (Kövecses, 2015b) and, subsequently, metaphorical variation in how Arab and Western media may represent AI.

2.1.3.6 More on Frames

At the heart of ECMT's cultural and contextual sensitivity in relation to schematic hierarchy is the notion of frames. Frames are central to both conceptual and situational types of context, and by extension, culture. As representational structures, frames are shaped by shared cultural experiences and background knowledge, creating the possibility that different cultures may have varying frames, or FEs, for the same concept, which leads to different interpretations and uses. This situates frames as containers of meaning and dynamic schemas that guide both metaphor understanding and production. Since frames operate between domains and mental spaces, they

offer a level of analysis that captures both cultural generality and contextual flexibility (Komatsubara, 2023; Table 1). These frames not only structure metaphor use but also determine which elements are highlighted and which are backgrounded; a process that shapes public perception, emotional response, and even policy discourse (Lakoff, 2004; Charteris-Black, 2004).

As the analysis of the present study functions on the frame-level structure, it is deemed critical to trace back this term to its roots in scholarly practices and not have it confused with the notion of “frames” as postulated by other scholars, an issue which Sullivan (2023) gives a comprehensive account of. She postulates that framing as a theoretical concept has emerged independently across multiple disciplines (Entman, 1993), resulting in diverse interpretations and applications. Frames originated once within sociology to shape perspectives in communication and media studies (Goffman, 1974) and once within cognitive psychology to evolve into the frames used in linguistics (Fillmore, 1968). However, over time, subsequent research in both traditions has brought these perspectives closer together to the point that their distinct origins are frequently forgotten (Andor, 2010; Fillmore, 2008; Fillmore & Baker, 2009, as cited in Sullivan, 2023).

A key factor in bridging these traditions has been the study of metaphorical frames, particularly in the influential work of Lakoff (1996). 2004). His research has influenced both traditions, blurring the boundary between them; a theme further developed and explored by Kövecses (2020). In light of the plethora of scholarly definitions and applications, and to ensure theoretical and methodological accuracy, the present study exclusively

adopts Kövecses' definition of frames, and his prescribed methodology is used to identify metaphors' frame levels and related FEs.

Notwithstanding ECMT's significant advancements in metaphor analysis, it still faces certain methodological limitations. The theory's complex interaction between various types of contexts and levels of schematicity leaves gaps in systematically delineating how specific variables influence metaphorical production and understanding. Operationalising and distinguishing all these variables in metaphor often poses practical difficulties in empirical research. To address these methodological constraints, this study will selectively employ specific notions of ECMT, focusing on the frame level of schematic hierarchy, related FEs, their role in structuring culturally variable conceptual metaphors, and the significance of deliberate metaphors and human agency.

2.1.4 Complementary Role of CMA

Building on CMT's positioning of metaphors as representatives of reasoning and thinking, language of a metaphoric nature has been recognised as a powerful tool for uncovering subconscious beliefs, implicit assumptions, and underlying attitudes that shape conscious opinions on various subjects (McGrath, 2006). Pertinent to the present study is the exploration of metaphorical language surrounding AI and its potential to reveal orientations, which necessitates the adoption of a specific theoretical and methodological framework that closely examines how metaphors interact with ideology.

Despite its utility, traditional CMT is rooted in cognitive semantics, which attributes the motivation for particular metaphorical mappings to experiential connections between domains, thereby overlooking the speaker's intentional use of metaphor. This limitation has led scholars to incorporate perspectives from CDA, which emphasises that “metaphors are chosen by speakers to achieve particular communication goals within particular contexts rather than being predetermined by bodily experience” (Charteris-Black, 2004, p. 247). Thus, CDA treats metaphors as products of both individual resources and broader social ones (Imperiale and Phipps, 2022). These individual resources consist of cognition, emotion, and linguistic knowledge, while the social ones encapsulate ideological, historical, social, and cultural knowledge (van Dijk, 2009; Charteris-Black, 2004).

One influential framework for examining metaphors within CDA is Charteris-Black's CMA (2004), in which he sought to refine CMT by highlighting the pragmatic aspects of metaphor in communication. In implementing his approach, the present thesis combines the cognitive focus of CMT and the cultural variation of ECMT with the ideological insights of CDA.

2.1.4.1 Analytical Stages in CMA

Drawing on Fairclough's (1995a) three-dimensional model of discourse analysis, CMA involves three stages: Metaphor Identification, Metaphor Interpretation, and Metaphor Explanation (Charteris-Black, 2004; Sudajit-apa, 2017). For the present study, it serves as both a theoretical framework and a practical methodology with defined stages and procedures.

While the methodology is discussed in detail in Chapter Three, this section provides a comprehensive account of the notions informing the present study's steps of data collection and analysis.

The first stage, metaphor identification, involves detecting metaphorical expressions and organising them into higher-order conceptual structures. Drawing on CMT, metaphors are treated as target-source mappings. Once metaphorical expressions are identified, they are grouped into conceptual metaphors based on shared semantic mappings, which are in turn abstracted into broader *conceptual keys* in reference to unifying categories that thematically structure how a phenomenon is understood (e.g., the AI IS A HUMAN conceptual key includes STUDENT, TRAINEE, ASSISTANT, and other metaphors). Metaphorical expressions are also quantified as types (i.e., the distinct lexical realisations of a metaphor) and tokens (i.e., the total number of instances in which those realisations occur). Importantly, Charteris-Black introduces the concept of metaphor resonance (henceforth MR) as a diagnostic indicator of a metaphor's productivity in discourse based on the metaphor's lexical variety (types) and frequency (tokens).

The second stage, being metaphor interpretation, examines how metaphors function within a specific discursive and rhetorical context. It focuses on understanding the rhetorical and cognitive impacts of metaphor by analysing four key aspects: tone, purpose, mapping, and topic framing. Tone refers to the evaluative colouring of a metaphor, such as optimistic, ambivalent, or cautionary. Purpose refers to the communicative or rhetorical aim of the metaphor, such as whether it functions to normalise technological adoption, provoke concern, or establish authority. Mapping, a core analytic

focus in Charteris-Black's model involves identifying which salient *elements* of the source domain are mapped onto the target domain. Charteris-Black (2004) emphasises that metaphorical power lies not merely in the mapping itself, but in the selection of specific elements that are foregrounded; an insight that has informed this study's integration of ECMT's (2020) frames into the interpretive process. This therefore refines the mapping procedure by treating metaphors as embedded within culturally rich frames in which FEs structure the metaphor's internal logic and attest to what aspects of the metaphor are foregrounded. Finally, topic framing involves examining how metaphorical choices shape the public understanding of particular issues, in this case, AI in relation to the public.

The third stage, explanation, marks the explicitly critical phase of CMA, wherein metaphors are explained as ideologically motivated rhetorical tools. Three core elements are examined in this stage, namely sociocultural functions, power relations, and audience positioning. The sociocultural function is assessed through examining the metaphor's role in naturalising policies, promoting certain beliefs and attitudes, or supporting particular technological imaginaries. Power relations are interrogated to reveal which actors or institutions gain epistemic authority or political legitimacy through metaphorical framing. Audience positioning is examined through the roles the metaphor ascribes to public participants, whether as empowered users, passive observers, or ethically responsible agents. Finally, the explanation step requires a degree of reflexivity: the analyst must recognise their own positionality and the interpretive frameworks they bring to the analysis (Charteris-Black, 2004).

Finally, expanding on Charteris-Black's insights (2005), the added stage of metaphorical interaction examines how metaphors interact with other rhetorical elements, such as contrast, rhetorical questions, and repetition. The purpose of this stage is to evaluate whether such rhetorical strategies serve to reinforce and legitimise dominant metaphors or, conversely, to destabilise and challenge them. In doing so, it also sheds light on the extent to which the media demonstrates reflexive awareness of the metaphors it circulates. As Charteris-Black (2005) emphasises, "metaphors... provide the frame of the argument, the persuasive effect ... is produced by their interaction with contrast, rhetorical questions, and patterns of repetition and reiteration" (p. 167). This stage evaluates how metaphorical language combines with other rhetorical strategies in reinforcing or challenging specific interpretations.

2.1.5 Evolution and Application of Critical Metonymy Analysis

Pioneering researchers like van Dijk (2009) and Panther and Radden (1999) argue that, much like metaphors, metonymies carry cognitive weight through encapsulating social, political, or cultural connotations within brief yet impactful expressions. While metaphors have long been central to discourse studies, recent developments in metaphorical research have sparked more interest in metonymy (Zhang, 2014), with scholars increasingly acknowledging its distinct role in shaping discourse. Subsequently, a number of these scholars have emphasised the importance of integrating metonymy analysis within CDA frameworks (Barcelona, 2003; Zhang, 2014; Si, 2018), noting that it often works alongside metaphor to structure public understanding.

In their primary works on metonymy, Radden and Kövecses defined it as “a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same idealised cognitive model” (Radden & Kövecses, 1999, p. 3). Initially featuring idealised cognitive models as the conceptual architecture underpinning metonymic expressions (Kövecses & Radden, 1998; Radden & Kövecses, 1999; Kövecses, 2002; Li & Fang, 2003), Kövecses later substituted the term with “frame” in his works to align it more closely with ECMT. He states that “in metonymy, an element in a [...] frame provides mental access to another element within the same [...] frame” (Kövecses 2020, p. 36), and while metaphors operate between two different source and target frames, in metonymy, “there is a correlation between two events or states within the same frame” (Kövecses, 2020, p. 40). This placement of metonyms as FEs within frames helps explain why metonymy tends to be culturally variable; it builds on shared socio-cognitive models (i.e., frames) that differ across languages and cultures. It also accounts for why metonyms are efficient and pervasive; they leverage these frames as pre-existing and culturally embedded knowledge structures to achieve conceptual compression and rhetorical economy. This makes the critical analysis of metonymy a useful addition to cross-cultural discourse analysis, as it can reveal culturally specific associations that differ across languages and contexts (Liu et al., 2024).

Many CDA scholars argue that ideology can obscure or distort the objective world and therefore advocate for CDA to “remove the veil” of ideology to unearth underlying assumptions embedded in language (Fairclough, 1995a; Van Dijk, 2009). This is where the analysis of

metonymy proves important in CDA. The critical analysis of metonymy seeks to uncover how metonymic choices reflect and reinforce ideological positions. The use of metonymy, according to Zhang (2014), functions beyond simple word substitution to subtly guide readers toward interpreting events from a particular ideological viewpoint. This is done through foregrounding certain aspects (FEs) of an Idealised Cognitive Model (or a frame) and backgrounding others. In that sense, metonymy does not only reflect experiential and cultural knowledge but, much like metaphors, also participates in constructing social reality.

This notion of selective FEs parallels Burke's (1966) concept of the *terministic screen* in reference to how symbolic systems, including language, metaphors and metonymy, direct attention to certain aspects of reality while deflecting attention from others. Like a camera filter that highlights specific colours and suppresses others, linguistic signs create a selective lens through which individuals perceive and interpret the world (Liu, 2008). Terministic screens operate by foregrounding concepts that discourse producers deem salient, thereby shaping patterns of thought, feeling, and behaviour. As Ju (2010) notes, different linguistic choices produce different terministic screens, each of which reflects the ideological orientations of the writer (Zhang, 2014).

Metonymy participates directly in this process. When discourse producers choose a metonymic expression, such as selecting Beijing to represent the Chinese government, they highlight one FEs of a bigger frame while downplaying or erasing other aspects (FEs). This selective emphasis constitutes a terministic screen because it directs the audience's attention

toward one dimension (FE) of reality while concealing others (FEs). Metonymy therefore structures social perception by constructing a particular version of events that aligns with the discourse producer's values.

To encompass various types of metonymy, Kövecses and Radden have developed a comprehensive typology that classifies them into 46 distinct patterns, including part-whole, producer-product, object-user, cause-effect, and place-event relations, among others. These metonymic patterns are governed by the principle of frame-internal contiguity, where one FE activates the whole frame, or another FE that is functionally or experientially related (Kövecses & Radden, 1998; Radden & Kövecses, 1999).

Recognising the conceptual and ideological aspects of metonymy, CMeA extends the insights of CMA by focusing on how metonymies, like metaphors, can reinforce or challenge ideological stances within discourse. While pioneering scholars like Lakoff (1991) have long addressed metonyms in discourse, the origins of a more theoretically and methodologically grounded CMeA lie within the foundational work of Charteris-Black (2004, 2005). While Critical Metonymy Analysis (CMeA) is not a well-circulated and acknowledged methodology, the present thesis applies it as informed by both Charteris-Black's CMA and Kövecses' (Kövecses & Radden 1998; Radden & Kövecses 1999; Kövecses 2020) notions of metonymy and frames. Initially developed to analyse metaphors, CMA's principles can be equally applicable to metonymy (Zhang, 2014). Building on this, CMeA applies the analytical stages of CMA to metonymic expressions and integrates Kövecses' notions in exploring how metonymy employs certain FEs and foregrounds others within the same frame.

2.1.6 Summary and Justification of the Theoretical Framework

Under the umbrella approach of cognitive rhetoric, the adopted theoretical framework synthesises CMT, ECMT, and CMA. The combination of these theories offers a multidimensional lens through which to analyse metaphors and metonymies as both cognitive phenomena and rhetorical devices and explore their conceptual, cultural, and ideological dimensions.

Traditional CMT provides the foundational insight that metaphor allows individuals to understand abstract phenomena through more familiar experiential ones (Lakoff & Johnson, 1980). However, the theory's original emphasis on universality, its minimal attention to discursive context, and its static model of domain mapping render it insufficient for analysing the dynamic, culturally embedded, and ideologically charged nature of media discourse. ECMT addresses these limitations by introducing a hierarchical model of schematicity and foregrounding the role of context in metaphor production and interpretation (Kövecses, 2020). Of particular relevance to this study is its focus on frame-level conceptual structures, which is where conceptual metaphors become culturally situated and variable.

However, while ECMT explains how metaphors are contextually shaped and culturally variable, it does not fully explain why they are selected and to what ideological ends. For this, the study turns to CMA to investigate the ideological and persuasive power of metaphor in discourse. Crucially, CMA overcomes several limitations: (1) while it integrates qualitative analyses, it also relies on corpus-based data rather than subjective intuition or introspection; (2) it integrates cognitive approaches to metaphor while still

acknowledging its rhetorical impact; and (3) it serves as a valuable extension of CDA as it offers a more robust and interdisciplinary platform for analysing how metaphors function across both mental and social domains (Hu & Xu, 2017). Therefore, CMA provides the critical dimension necessary to investigate not just how metaphors are structured and understood (as in CMT) and vary across cultures (as in ECMT), but why they are strategically employed in particular media contexts.

Broader theoretical concerns further justify this triadic integration. As Chilton (2005) critiques, many CDA models have under-theorised the cognitive dimensions of discourse, which in turn limited their applicability to important linguistic phenomena such as metaphors in discourse. Through integrating cognitive linguistics, particularly ECMT and its attention to frame-level structure, into CDA, this study attempts to respond to that gap and to the calls for a more cognitively enriched form of CDA. Additionally, as Gibbs (2008) notes, the study of metaphor is inherently interdisciplinary; it intersects with language, cognition, and society. This intersection makes a rigid commitment to one theoretical lens insufficient for the complex, cross-cultural, and mediated phenomenon under investigation.

In summary, this study adopts a multi-theoretical framework that facilitates a layered analysis of metaphor and metonymy in AI discourse. This framework enables the present thesis to investigate how AI is conceptualised and framed across Arab and Western media discourse and compare the similarities and differences shaped by and reflected in language.

2.2 Literature Review

The Literature Review section examines prior studies that have empirically applied the theories outlined in the previous section. It documents how CMT, ECMT, and CMA have been used to explore metaphors and metonymies in media discourse and their cross-cultural variation, particularly in reference to emerging technologies like AI. It subsequently identifies key research gaps that the current study seeks to address.

2.2.1 Conceptual Metaphors and Technology

CMT has been a seminal framework for understanding how metaphors structure the way individuals conceptualise abstract or complex phenomena. Metaphors, as discussed in the Theoretical Framework section, explain topics in ways that influence public understanding. Beyond their explanatory roles, metaphors also serve constitutive ones, especially in science and technology.

The use of metaphors to explain technology has been well-recognised by Ungerer and Schmid. In their book titled *An Introduction to Cognitive Linguistics* (2006), they address how metaphors in technology, particularly in fields like computer science, play dual roles: they can be explanatory by aiding understanding or constitutive by shaping conceptual models (Ungerer & Schmid, 2006). They highlight how concepts such as COMPUTER WORK IS OFFICE WORK exemplify the explanatory function, where concepts like desktop, folders, and trash cans provide intuitive, user-friendly interfaces for lay users, which contrast with technical terminology like "CLS" or "MD".

These metaphors offer intuitive conceptual access to abstract technical operations by mapping them onto everyday experiences, which renders them as cognitive scaffolds that enable non-expert users to interact with complex systems. Similarly, computer metaphors such as BUG or VIRUS draw on biomedical schemas to make technological malfunctions more relatable by mapping familiar concepts (illness, infection) onto abstract technological issues.

However, as Kuhn (1993) posits in his analysis of scientific paradigms, metaphors also become constitutive of how entire fields conceptualise their subject matter. He supplements with NUCLEUS AND ELECTRONS ARE PING-PONG BALLS as an example, asserting that it not only explains atomic structure, but also frames the ontology of matter in ways that guide scientific inquiry. This example demonstrates how, in technological contexts, metaphors are not just tools for accessibility but also integral to shaping both user understanding and professional conceptualisation. In metaphorical words, metaphors do not merely describe reality; they help construct it.

In the broad context of technology and its advancements and the specific context of AI, an initially explanatory metaphor known as the computational metaphor emerges as a significant example; technological innovations and complexities have long been understood in metaphorical comparison to the human body and its functions. The mass media theorist Marshall McLuhan, as early as 1964, explored the impact of technological innovation on humanity and conceptualised said innovation in biomedical terms, postulating that “The new media and technologies by which we

amplify and extend ourselves constitute huge collective surgery carried out on the social body with complete disregard for antiseptics” (McLuhan, 1964, p. 64). For decades, metaphors have likened minds and machines. Technological discourses have conceptualised the human brain in relation to the pivotal technologies of their eras, ranging from hydraulics to telegraphs and computers (European Parliamentary Research Service [EPRS], 2021). Carbonell et al. (2016) describe the connections between computational metaphors for the brain and vice versa and state that, while the human brain has long been understood in comparison to machines, these metaphors are also reversed to conceptualise technologies via the lens of human cognition and functions. This makes The Computational Metaphor, THE BRAIN IS A COMPUTER IS A BRAIN, the most significant metaphor in neuroscience and AI (Baria & Cross, 2021).

Contrary to popular belief and in spite of recent rapid growth and recognition, AI technology is not a recent discovery but rather dates back to the 1950s (McCarthy et al., 1955) and has been a part of media discourse for decades. Discussions regarding AI frequently employ metaphors, and the term 'AI' in itself is based on a metaphor for human intelligence (EPRS, 2021). The exploration of metaphors and AI has therefore been taking place for a significant period of time and is nearing its centennial. In an early work of Gozzi (1994), for example, he used a dataset of articles in the press at the earliest stages of development in the field of AI, from 1966 to 1970, and found that common AI metaphors, falling in the same canon of all revolutionary technologies, were ‘brains’ with subsequent metaphorical extensions to the description of thought as a computational process. The employment of this computational metaphor has persisted into modern day and has been used,

documented, and criticised by scholars, educators, and legislators of AI.

2.2.2 Framing and Representation of AI in Media Discourse

Although the present study focuses on metaphor and metonymy, it is situated within a broader body of scholarship on how AI is represented and communicated through media discourse. As emerging technologies continue to change public life, the media functions as both a translator of expert knowledge and a constructor of meaning. This is particularly salient for AI, whose opacity and abstraction require discursive framing that renders it intelligible and relatable. These framing choices, whether metaphorical or not, have a recognisable impact on public sentiment and ethical debates (Nguyen & Hekman, 2024).

In one of the recent investigations of modern-day AI discourse, the research of Bones et al. (2021) examines how historical context, gender, and, most critically, language influence said AI discourse. The authors employ a feminist epistemological approach, which recognises the impact of social and cultural factors on knowledge production, to analyse how AI terminology and its evolution over time can either inform or misinform public understanding. Methodologically, they implement a triangulation of historical analysis, corpus linguistics, and textual exegesis to analyse a sample of texts sourced from the British National Corpus and the *TIME* Magazine Corpus. Of particular relevance to the present study, their findings reveal that the language used to describe AI often perpetuates misleading perceptions of omnipotence and transparency, attributable to the various common metaphors and terminology that anthropomorphise machines, such as “brain”, “memory”,

and “learning”. The authors argue that such use of these metaphors and terms imbues machines with human-like qualities and contend that this anthropomorphic framing tends to obscure the actual limitations and intricacies of AI systems. Finally, they suggest reframing key concepts, and supplement with the example of replacing the term “data” with “capta”, which may help highlight data’s interpretive and human-dependent nature and subsequently promote a more accurate AI depiction.

Following suit, Nguyen and Hekman (2024) examined how media discourses shape public understanding of AI with the specific objective of identifying dominant news frames and their association with specific data risks. They deployed a corpus-based dataset of 3,098 articles from four newspapers: *The New York Times*, *The Guardian*, *Wired*, and *Gizmodo*, and grounded their research in media framing and agenda-setting theories. Temporally, the findings indicate that AI coverage shifted from niche to mainstream, with an increasing critical perspective over time. Their exploration reveals 14 dominant frames subcategorised into four overarching meta-frames. Governing these four meta-frames, they further identify two overarching framing patterns: an optimistic progress framing pattern that emphasises AI’s benefits and potential for innovation and societal advancement, and a cautious risk one that evokes concerns about job displacement, privacy, and ethical implications. The study concludes that these two polarised framing patterns create a dichotomous narrative around AI, where media representations oscillate between AI as a transformative force and AI as a significant source of societal risk, which influences how audiences perceive AI’s broader implications. Along with calls for reframing

efforts, the authors finally advocate for further qualitative research to deepen the understanding of AI discourse across different cultural contexts.

2.2.3 Critical Metaphor Analysis and AI Media Discourse

In recognition of both the conceptual and rhetorical effects of metaphors and metonymies and the crucial role of media in shaping and guiding public perception as a mediator, it has been argued that understanding the metaphors and metonymies media outlets deploy in a certain subject can suffice for understanding the entirety of said discourse (Komatsubara, 2023). Komatsubara asserts that metaphors and metonymies allow access to the conceptual frameworks and rhetorical strategies that govern media representations and encapsulate the whole discourse without needing to examine every individual element. After having separately addressed technological metaphors and AI media discourse, the following empirical studies highlight the intersection of AI, CMT, and media discourse.

In a recent scholarly effort addressing popular media discourse, and in light of the rapid growth and introduction of various AI tools, Nguyen (2024) explores how AI and its recent developments are framed through conceptual metaphors in *The Guardian* newspaper. His study's corpus comprises 33 articles published between 2022 and 2024, which were purposively sampled through targeted AI-related keyword searches, such as "Artificial Intelligence", "ChatGPT", and "machine learning". Similar to the present study, his analysis was theoretically informed by both CMT and some concepts from ECMT. In the findings, he identifies three primary AI metaphors, namely AI IS A HUMAN BEING, AI IS AN ANIMAL, and AI IS A

NATURAL FORCE, with the most prevalent one being the HUMAN metaphor (88%, approximately). Additional metaphors for AI development, as per Nguyen's analysis, include AI DEVELOPMENT IS WAR, AI DEVELOPMENT IS A RACE, AI DEVELOPMENT IS A CONVERSATION, AI DEVELOPMENT IS A DANCE, and AI DEVELOPMENT IS A GAME. Collectively, these metaphors are realised through an approximation of 150 linguistic expressions that function to simplify AI's intricacies and portray its development as both dynamic and relatable. Nguyen discusses how these metaphors influence the ways in which AI's potential, risks, and applications are conceptualised and mediated to the public, while also revealing broader critical and ideological attitudes embedded in media narratives. He finally recommends that media professionals and educators intentionally utilise certain metaphors to improve public comprehension of AI and its ramifications, and he suggests further research into how they influence AI perceptions and policymaking.

In addition to these studies addressing popular media, other scholars have addressed AI discourse produced by governments and AI legislators. For example, the research of Ye and Li explores the European Union AI Act (EU AIA). Their theoretical framework is grounded in both CMA and CMT and informed by some concepts from Kövecses' ECMT. Implementing corpus linguistics as their methodology, the sampled corpus comprises 89,787 tokens from the EU AIA documents analysed through Wmatrix software for semantic domain identification and Metaphor Identification Procedures (MIP). The key findings highlight the prominence of metaphors like AI IS A JOURNEY, which connotes purposive progression, and AI IS WAR, which emphasises risks and challenges. The authors argue that these metaphors highlight societal aspirations and fears while simultaneously reflecting the policy's framing

of AI as requiring careful regulation and governance. The study finally emphasises the critical role of metaphor in shaping public and legal discourses surrounding AI development and regulation (Ye & Li, 2024).

In a similar vein, Kajava and Sawhney (2023) also explore how legal AI discourses impact societal perceptions, particularly within the European Union. They draw from the theories of CMT and CMA and deploy Natural Language Processing (NLP) tools, namely spaCy, for dependency parsing and manual annotation methods like MIP, to examine how metaphors and personification-with-metonymy instances shape narratives about AI's autonomy and agency. They sampled a corpus of 20 reports (1300 pages, approximately) published between 2020 and 2021 and prepared by AI Watch, the European Commission's knowledge service on AI. They identify active verbs that attribute agency to AI and several metaphors, such as AI IS A FORCE and AI UPTAKE IS A RACE. Their findings about how these metaphors are realised reveal that terms like "trustworthy", "biased", or "transforming society" attribute human-like qualities to AI, which often obscures human decision-making and agency in directing these systems. The authors assert that their study highlights the socio-technical implications of such discourses and reveals their influence on public perception, policy framing, and future visions of AI development. They finally call for more critical and accurate discourses to focus on AI's tangible effects on society.

Also addressing legal AI discourse, but from the legislators' perspective, the European Parliamentary Research Service issued an official document that critiques the current use of AI-related metaphors, such as

“AI” and AI IS A GLOBAL RACE for their potential to mislead public understanding and policy development. It argues that metaphors like AI IS A GLOBAL RACE frame development as a zero-sum game with a singular "finish line," which portrays nations as competitors vying for dominance. This framing implicitly prioritises speed and competition over collaboration, which subsequently discourages global cooperation and shared benefits. The document further critiques militarised metaphors like AI ARMS RACE, which shift the focus toward the inevitability of weaponised AI and encourage militarised investments, often at the expense of broader societal priorities. In addition, sensationalised depictions like the humanoid "terminator" metaphor persist in media and policy discourse, which often minimise valid concerns by framing them as irrational fears of dystopian science fiction. These dominant metaphors, the document argues, not only misrepresent AI's current capabilities but also shape policy and public opinion in ways that may limit innovative and inclusive approaches to AI governance. To address the limitations posited by the use of such problematic metaphors, the document advocates reconsidering and adopting alternative ones that emphasise cooperation, shared progress, and ethical responsibility. By moving beyond competitive and militarised framings, it suggests that policymakers and media can encourage a more balanced discourse that reflects the diverse applications and implications of AI. This approach could enable a more thorough understanding of it, foster global cooperation, and ensure that its development serves collective societal interests rather than narrow geopolitical agendas (2021).

Similarly, Matteo Stocchetti (2023) adopts a political-scientific perspective to analyse the implications of AI metaphors and their role in

shaping societal understanding. In doing so, he critiques the prevalent metaphorical association of "Artificial Intelligence" with human cognition, and argues that it distorts fundamental distinctions between human writing and production and AI textual functions. These metaphors prioritise instrumental rationality, and therefore they risk obliterating subjectivity and suppressing human concerns, Stocchetti argues. He further warns that this narrative leads to the downplaying of human competencies essential for adapting to existential challenges. He finally proposes new metaphors that avoid both oversimplifying and commodifying the concept of intelligence. He also emphasises the need to preserve the transformative and intersubjective dimensions of human textual practices through avoiding certain AI-related metaphors. This critique of Stocchetti aligns with concerns about the ideological impact of AI narratives and urges educators and policymakers to foster AI awareness in a rapidly digitalised world.

Further to the legislative and political-scientific critiques of AI metaphors, Baria and Cross (2021) add a neuroscientific dimension that critically explores the Computational Metaphor in neuroscience and AI, and focuses on the bidirectional use of THE BRAIN IS A COMPUTER IS A BRAIN to simplify complex ideas. Using CMT, the authors contend that, while this metaphor serves as a valuable heuristic for elucidating intricate cognitive processes and advancing scientific inquiry, its uncritical proliferation within technological discourse may engender misguided trajectories in development and perpetuate harmful societal norms. They warn about the metaphor's potential to reinforce existing social hierarchies and biases, particularly in relation to issues of race, gender, and ability. Furthermore, Baria and Cross call for introspection among neuroscientists and technologists and urge them

to critically assess the ramifications of the Computational Metaphor. While aiding comprehension, this metaphor also fosters undue trust in AI technologies and leads to ethical concerns such as the overestimation of AI's capabilities and the exacerbation of systemic biases in areas like predictive policing. Finally, the authors emphasise the need to revise these metaphors and propose alternatives, such as AI IS A TOOL, to realign public understanding with AI's functional realities and mitigate its societal risks.

As extensions of the THE COMPUTER IS A BRAIN part of The Computational Metaphor, the various nouns and verbs surrounding the processes of AI are also commonly anthropomorphised. Rehak (2021) compares the anthropomorphic AI-related terms, such as ‘recognition’, ‘learning’, ‘deciding’, ‘remembering’, and ‘understanding’, among others, to the more abstract language typically used in mathematics. He further draws parallels between Artificial Neural Networks (ANNs) and human cognitive processes to explain how these analogies depict AI as agentic and autonomous. In doing so, he posits that the use of these anthropomorphisms by journalists and experts alike often perpetuates misconceptions about AI's nature and capabilities. This is especially prominent with the prevalence of magic-related AI metaphors, in circulation for decades, which portray AI as a force not accessible or comprehensible to people but rather superior to them and border on posthumanist narratives. To counter this, Rehak advocates for a paradigm shift in the language employed in journalism and policymaking and emphasises the necessity for precision in their terminology. He finally proposes criteria for terminology selection that align closely with technical realities and avoid misleading connotations, such as paraphrasing “remembering” into “implicitly stored in configuration”.

2.2.4 Critical Deployment of Metaphors

Much like scholars and AI policymakers, AI educators have long recognised the impact of metaphor choice in framing AI and shaping perception. Such awareness has moved the study of AI metaphors from mere documentation of how it is made more accessible, to the critical analysis of how metaphors shape and reflect attitudes towards AI, and to the legal and scholarly efforts of deploying and prescribing certain metaphors to help foster informed citizenry aligned with specific AI-relevant goals and aspirations.

Liu et al. (2024) assert that CMA enables individuals and institutions to challenge existing metaphors and propose an alternative way of conceptualising the target domain in question. This is manifested in the numerous times scholars, AI experts, authorities, and educators have challenged the term “Artificial Intelligence” as problematic, reasoning that much of the technology is neither artificial nor intelligent (Crawford, 2021) and that it is implemented in ways that complicate ethical debates (Campolo & Crawford, 2020). Whereas other examples are present in the recommendations of Rehak (2021), Stocchetti (2023), and Baria and Cross (2021), some scholars dedicated entire publications to prescribing new AI metaphors and subsequent terms.

Extending the study and debate on AI metaphors into pedagogy, Roe et al. (2024) explore the role of metaphors in developing critical AI literacy (CAIL). With a specific focus on how metaphors shape public understanding and attitudes, their paper examines metaphors' dual role: as heuristic devices that aid comprehension and as ideological instruments that reinforce specific

AI narratives or power dynamics, particularly in contexts where understanding AI's ethical and societal implications is vital. They propose a methodological approach for integrating metaphor analysis into AI literacy curricula and emphasise the importance of equipping learners with tools to critically engage with dominant AI metaphors. The authors employ CMT to prescribe and evaluate four key metaphors, namely AI AS A FUNHOUSE MIRROR, AI AS AN ECHO CHAMBER, AI AS A BLACK BOX, and AI AS A MAP. Each of these metaphors is selected for its pedagogical potential and alignment with UNESCO's AI competency framework (UNESCO, n.d.). For instance, the authors believe that utilising the FUNHOUSE MIRROR metaphor can illustrate how AI systems distort reality, which in turn encourages learners to explore biases in algorithmic outputs. They similarly promote the AI IS A BLACK BOX metaphor to address the opacity of AI processes and potentially foster discussions on transparency and explainability. The four metaphors prescribed by the authors are accompanied by tailored learning activities to promote critical thinking and link technical concepts to societal implications. The study of Roe et al. demonstrates the explanatory power of metaphors and their ability to engage learners and, most importantly, provides an innovative framework for teaching CAIL through the strategic deployment of prescribed metaphors, which renders the study a valuable contribution to both AI literacy and critical discourse studies.

Also addressing the pedagogical implications of AI metaphors from a CAIL perspective, Anderson (2023) employs CMT to examine current discussions on ChatGPT. By analysing a corpus of various sources ranging from recent scholarly and news discourse, prompts and outputs from

ChatGPT, and the author's own writing process, her research specifically explores how the use of particular metaphors, such as TOOL, COLLABORATOR, and various medical analogies, contributes to the collective framing of ChatGPT and other AI models. To highlight the limitations of these metaphors, she critiques the oversimplification inherent in the TOOL metaphor, arguing that it overlooks the complexities of ChatGPT's interaction with human-generated content. She equally raises ethical concerns surrounding the COLLABORATOR metaphor, arguing that it minimises the issues of authorship and accountability. To counter this, her study prescribes alternative metaphors that can potentially highlight the dependence of AI systems on human data and the ethical considerations involved in their use. Anderson finally advocates for the integration of CAIL in educational settings and encourages students to be critical in their engagement with AI outputs in order to understand biases, limitations, and ethical concerns. Overall, Anderson's study highlights how the metaphors associated with AI systems influence educational practices in particular and public perception and policymaking in general.

Similar research by Gupta et al. (2024) explores how metaphors used to describe AI in general and Large Language Models (LLMs) in particular influence public discourse and educational practices of CAIL. Employing CMT and a collaborative autoethnographic methodology, the authors analyse various AI metaphors compiled from peer-reviewed scholarship, social media, workshops, and popular discourse. These metaphors were situated along two dimensions: an anthropomorphic continuum (human–animal/plant–nonhuman) and Selber's multiliteracies framework (functional, critical, rhetorical). Their findings show that human metaphors (e.g., ASSISTANT,

STUDENT, LIFE-SAVER) often frame AI as advantageous and familiar, and animal/plant metaphors (e.g., STOCHASTIC PARROT, OCTOPUS, VENUS FLYTRAP) highlight mimicry, deception, or entrapment. In contrast, nonhuman/inanimate metaphors (e.g., CALCULATOR FOR WORDS, BLURRY JPEG, COLONISING LOUDSPEAKER) emphasise technical qualities and AI flaws and limitations. In addition, and through seven guided questions, the study identifies and reflects on three overarching themes: first, anthropomorphic metaphors raise ontological debates about whether LLMs are sentient or merely mimic intelligence; second, metaphors carry moral and ethical weight and can henceforth either obscure harms through functional framings or surface dangers such as bias, exploitation, and colonial reproduction of knowledge; and third, metaphor reflection can itself be a pedagogical tool that enables playful yet critical classroom engagement with AI and fosters blends of functional, critical, and rhetorical literacies. These reflections are discussed collectively to argue that metaphors influence beliefs about AI's sentience and agency and that awareness of and reflection on these metaphors enhances CAIL by fostering skepticism of simplistic narratives about AI's capabilities. This study's contributions are particularly relevant for educators aiming to incorporate CAIL into their curricula, but it also illustrates how metaphors impact both cognition and behaviour.

2.2.5 Metonymy and Critical Metonymy Analysis (CMeA)

Metonymy's meaning economy renders it an effective tool in discourse to help the public grasp large-scale issues. While the literature cited in this subsection does not officially address CMeA as its methodology, it still applies

CDA in investigating metonyms employed by media outlets. Due to a perceived gap in the exploration of metonyms surrounding AI discourse, the following studies address various other discourses and issues.

The interdisciplinary study of Catalano and Waugh (2013) delves into a critical analysis of the US crime reporting. More specifically, they attempt to explore how metonymy functions within media discourse to shape societal perceptions of two juxtaposing groups: Latino migrants and Wall Street CEOs. To that end, the authors employ a multimodal framework that integrates CDA, cognitive linguistics, and visual analysis to examine over 25 online newspaper articles published between 2004 and 2011. Their findings demonstrate that the metonymic strategies in their sampled texts are systematically used to construct positive representations of CEOs and negative portrayals of Latinos, which subsequently reinforce hegemonic ideologies. They illustrate with the example of media's use of some metonymic representations such as "profession for person" (e.g., referring to CEOs by their job titles), "institution for person", or "simplified event for complex sub-events". These metonymies, they argue, tend to downplay individual culpability and, in turn, portray CEOs as representatives of respectable institutions, thereby casting them in a positive light and diffusing blame. Conversely, the media employ negative metonymies such as "defining property for category/person", "non-human for human", and "part for whole" to depict Latinos in crime reports. These include dehumanising references and broad generalisations that reinforce stereotypes, create a "they versus us" dichotomy, and foster negative perceptions. This research critically underscores the ideological potency of metonymy as a subtle discursive device that may embed social inequalities.

In a similar vein, McLachlan's research (2021) examines how metonymy is employed on Australian high school webpages to promote certain educational discourses. His research offers a synthesis of CDA and cognitive linguistics as he applies a multimodal CDA framework to show how both visual and textual signs, such as school crests, smiling students, and references to excellence, function metonymically to index broader constructs (i.e., frames), such as discipline, marketability, and performativity. He posits that these metonymic signs operate as rhetorical shortcuts that frame schools as competitive and self-branding entities. Importantly, McLachlan's research situates metonymy as an ideologically loaded tool and emphasises the need to integrate it into CDA. Both his and Catalano and Waugh's (2013) integration of metonymy within CDA foregrounds how it, similar to metaphor, can reveal and reinforce certain ideologies or attitudes through mediation and communication.

2.2.6 Cross-Cultural Studies on Metaphors and Metonymies in Media

Many scholars have documented cross-cultural variation in conceptual metaphors. However, cross-cultural and cross-linguistic studies on how metaphors and metonymies are realised in the context of AI remain scarce. In light of this gap, the research cited in this subsection also focuses on media discourses unrelated to AI and technology.

In their comparative study of metaphor in Spanish and English financial reporting, Charteris-Black and Ennis (2001) examined how metaphors shape public perception in economic discourse across cultural contexts. Their study investigates metaphors that convey financial stability, risk, and performance, highlighting how language choices reflect underlying cultural attitudes toward

finance in each language. Through a corpus-based analysis, they revealed that English financial reporting frequently uses metaphors of health and warfare, such as "recovery" or "battling inflation", to evoke a sense of resilience and conflict. In contrast, Spanish reporting often employs journey-based metaphors, which emphasise progress and continuity. Their findings underscore the role of metaphor in framing economic events within culturally specific cognitive frameworks, which influences readers' interpretations of financial realities. Relevant to the present study, this cross-linguistic comparison demonstrates that metaphor not only aids comprehension but also subtly conveys cultural ideologies.

Following suit, Liu et al. (2024) extend Charteris-Black's (2004, 2018) CMA framework by proposing a more specialised method suited for comparing different corpora and diachronic discourse contexts. They argue that while existing CMA approaches have successfully illuminated metaphorical ideology in political and media discourse, they often neglect the temporal and cross-linguistic variability of metaphor usage. To address this gap, the authors offer a step-by-step analytical model that integrates both *metaphor correspondence types* and *attitudinal intensity tracking* over time. This novel model is empirically illustrated through two case studies of *Global Times*' Chinese-English COVID-19 news coverage in 2020. The first investigates metaphor circulation across languages, while the second applies time-stamped analysis to track patterns of intensified or weakened metaphorical stance over 30 "COVID-19 weeks". Their work significantly advances CMA by operationalising its application in multilingual and longitudinal contexts. This provides a replicable methodological blueprint for analysing cross-cultural media discourse, which is particularly valuable for

researchers working at the intersection of corpus linguistics, metaphor theory, and critical discourse studies.

2.2.7 Summary

Notwithstanding the considerable scholarship on metaphors and the growing one on metonymies in media discourse, particularly within Western contexts, several gaps, to the best of the author's knowledge, persist in the academic inquiry and literature. First, while CMT and CMA have been instrumental in dissecting Western media narratives, their application to non-Western contexts remains limited; in particular, the Arabic media context, and the application of CMA to Arabic *AI media discourse* specifically is even more scarce. Second, although cross-cultural studies on metaphor have expanded, research examining Arabic–Western variation from an ECMT- and CMA-informed perspective is rare. Third, the integration of frame-level conceptual structures into metaphor analysis, as advocated by Kövecses (2017, 2020), continues to be limited, especially in empirical cross-cultural analyses. Fourth, while metonymy plays a crucial role in media discourse, there remains a notable lack of studies applying CMeA to AI discourse in both Western and Arabic contexts, despite its importance in shaping how technology and agency are conceptualised. Accordingly, the present study's focus on dissecting metaphors and metonymies in Arab and Western AI media discourses through the integration of frame-level structures and an ECMT-, CMA-, and CMeA-informed approach aims to address these gaps and contribute to a more comprehensive understanding of how cultural models shape public perceptions of AI.

Chapter Three

Methodology

Chapter Three

Methodology

This study utilises a mixed-methods research design; the qualitative being a manual lexical approach and the quantitative being a corpus-based one, both of which are informed by CMT, ECMT, and CMA.

3.1 Research Design

The research design follows a structured multi-stage approach to systematically examine AI-related metaphors and metonymies. The methodology is divided into five stages, adapted to integrate Charteris-Black's (2004) CMA framework with Kövecses' ECMT. Each methodological stage is tailored to capture cultural and linguistic differences in AI representation that culminate in a comparative analysis of Arab and Western media use of cognitive rhetoric.

3.2 Methods of Data Collection

The data for this study comprise two purposefully constructed comparative corpora of media articles. To compile approximately 100,000 words in each language, a total of 140 articles were collected: 90 from Arabic language sources and 50 from English language sources. This distribution is justified by differences in article length, as English articles were often nearly twice as long as their Arabic counterparts.

3.2.1 Corpus Composition

As illustrated in Table 2, the English corpus includes 50 articles sourced from three prominent Western media outlets, and published between 2021 and 2025. These articles address a range of topics on AI. The Arabic corpus comprises 90 articles, similarly drawn from widely circulated Arabic outlets and also published between 2021 and 2025. Each article was recorded with accompanying metadata, including its headline, publication date, and media outlet (Appendix A, Appendix B).

Table 2.
Corpus Composition: Languages, Word Count, Outlets, and Timeframe

Language	Size	Media Outlets	Publication Year
English	103,653 words (50 articles)	<i>The Guardian, The New York Times, and The Washington Post</i>	2021-2025
Arabic	103,217 words (90 articles)	<i>Al Jazeera, Al Arabiya, and Al-Hurra</i>	2021-2025

3.2.1.1 Inclusion and Exclusion Criteria

The purposive text selection followed carefully defined inclusion and exclusion criteria. To ensure linguistic authenticity and rhetorical integrity, all articles had to be originally written and published in either Arabic or English and not translated. In terms of geographic representativeness, the sampled articles are from newspapers based in and widely circulated within both Arab and Western regions, respectively. Thematically, articles were required to engage directly with the topic of AI and its implications, rather than merely mentioning it in passing. Only content intended for a general readership was included. Academic and specialist publications were

henceforth excluded. In line with the study's objectives, these criteria ensured both discursively rich and culturally grounded corpora.

3.3 Methods of Data Analysis

The analysis followed a structured, multi-stage process adapted from Charteris-Black's CMA, supplemented with insights from Kövecses' ECMT, particularly his emphasis on the frame level of conceptual hierarchy, context, and culture (Figure 3). Charteris-Black identifies three core stages in metaphor analysis: identification, interpretation, and explanation (2004). These stages were here expanded to accommodate both metaphor and metonymy and integrate frame-level analysis. The practical application of CMA in the present study was informed by Imani's (2022) comprehensive step-by-step guide and summary of Charteris-Black's methodology. As illustrated in Figure 3, the first stage of analysis addressed both the first question and objective of the study. The second, third, and fourth stages addressed the second, third, and fourth questions and objectives, respectively.

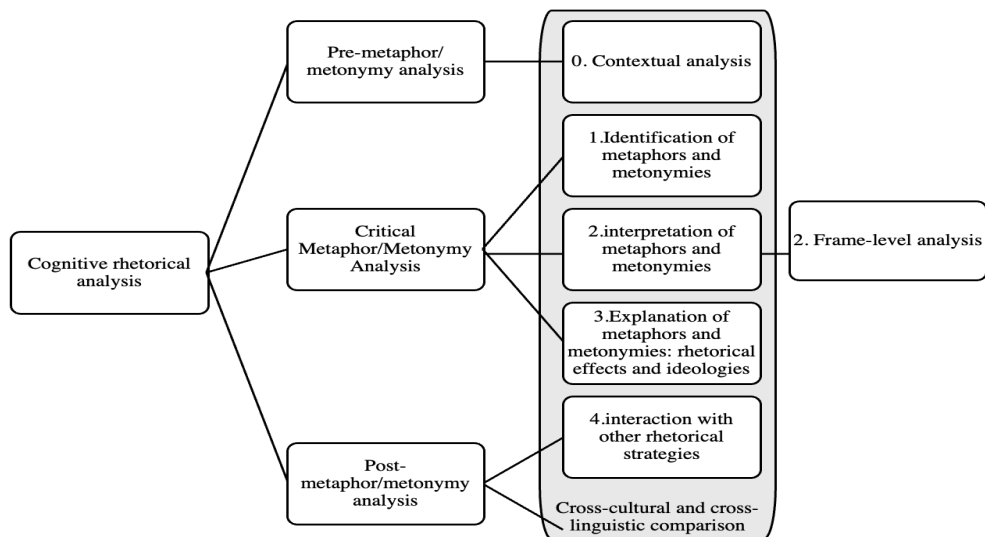


Figure 3.

Integrated ECMT and CMA Model for the Present Study

Stage 0: Contextual Analysis

This pre-analytical stage establishes the context in which AI metaphors are used. Drawing on recent cross-cultural adaptations of CMA (Imani, 2022; Liu et al., 2024), this stage aims to address important points that would guide the following steps, such as who produced the text and when.

Stage 1: Identification of Metaphors and Metonymies

According to Charterise-Black (2004), metaphor identification undergoes two main phases: the first requires a close reading of a sample of texts to identify candidate metaphors. Words commonly used with a metaphorical sense are then classified and quantitatively measured in the corpus in the second phase (Hu & Xu, 2017). In line with this prescribed approach, this study broke down the identification stage into two phases. The first phase is a qualitative bottom-up one in extracting and categorising

metaphors. The second phase is a quantitative top-down one to validate findings, quantify patterns, and detect broader trends as follows:

Stage 1.1: Bottom-Up Identification of Metaphors and Metonymies

This stage employed an inductive, manual, and qualitative bottom-up approach to extract metaphorical and metonymic expressions without imposing pre-existing categories. The expressions were collected directly from the corpus through close reading. MIP, as developed by the Pragglejaz Group (2007), instructs the researcher to (1) read the text carefully to gain a general understanding of the discourse, (2) identify lexical units within the text, (3) determine the contextual meaning of each lexical unit based on its use in the text, (4) check for a more basic meaning that is concrete or historically primary, (5) compare the contextual and basic meanings to assess whether they contrast but are related, and (6) mark as metaphorical if the meanings contrast but maintain a connection. Similarly, the applied Metonymy Identification Procedure (MeIP), is put forth to (1) understand the context, (2) identify lexical units that may function metonymically, (3) determine literal and contextual meanings of each unit, (4) check for contiguity (e.g., part-whole, cause-effect, etc.) as per Kövecses' typology), and (5) mark as metonymic if the relationship involves contiguity rather than similarity.

Stage 1.2: Top-Down Identification of Metaphors and Metonymies

Contrary to the inductive one, the deductive approach involves starting with candidate conceptual metaphors to quantify and locate instances of these specific metaphors. This stage validates and extends the findings of the manual extraction through deploying several online resources that address semantic relations and FEs (e.g., collocates, synonyms, etc.), especially *FrameNet* (n.d.), *WordNet* (Princeton University, 2010), *Oxford English Dictionary* (Oxford University Press, n.d.), and *Almaany* (n.d.) in both metaphor identification and the following stage of interpretation. For example, it used Excel Sheets word searches to find all instances of education-related words and FEs as found in the online resources to attempt to capture all AI IS A STUDENT instances. The instances were then manually reviewed to confirm the metaphorical use. All identified metaphorical expressions were then grouped into conceptual metaphors and conceptual keys. Conceptual metaphors were quantified into types and tokens. Using Microsoft Excel, Charteris-Black's (2004) formula for calculating Metaphor Resonance (MR) as a diagnostic indicator of a metaphor's productivity in discourse ($\text{Resonance} = \sum(\text{Types}) \times \sum(\text{Tokens})$), was lastly employed. MR scores were converted into percentages for a clear indication of the productivity of the metaphors in question in the AI discourse. Log-likelihood (LL) tests are used to measure whether differences in conceptual-key frequency between both corpora are statistically significant. Two LL analyses are conducted: one using raw token frequencies for each conceptual-key category and another using MR to capture deeper conceptual prominence. Both are run as one-tailed tests to determine which corpus showed higher proportional use.

Full results are presented in the Findings and Discussion and Appendix E.

Stage 2: Interpretation

In answering the second question, metaphor interpretation involves establishing the relation between metaphors and the cognitive and pragmatic factors that determine their use. Focusing on the cognitive factors, this further step incorporates Kövecses' (2020) elaboration of frames as the third level in the schematic hierarchy. Kövecses proposes the lexical approach for investigating the frame-level structure. In essence, the lexical approach takes advantage of various lexical resources (idioms, collocations, synonyms, etc.), which are available in dictionaries and online databases. The metaphorical expressions in this study were analysed using the manual lexical approach and the online resources used to identify metaphors. Context played a crucial role in identifying and interpreting metaphors and metonyms (Appendix F).

Stage 3: Explanation

In answering the third question, the third stage was built on the findings from the previous stages and utilised Imani's (2022) guide to answer the following questions: How is the audience positioned in relation to the metaphor? What socio-cultural function does the metaphor perform? And how does the analyst's own position affect interpretation? It also addresses the level of agency the metaphors attribute to AI. In addressing agency, the metaphors' conceptual keys are placed on a subject-object continuum, with the human conceptual key being the most agentic. In addition to the difference in

conceptual-key distribution, this step of analysis critically examines the metaphors exclusive to one of the sampled corpora.

Stage 4: Rhetorical Interaction

In answering the last question, this stage examined how metaphors interact with other rhetorical devices, such as contrast and rhetorical questions, in a way that either enhances their interpretive and persuasive impact or attempts to destabilise them. It randomly samples 10 articles from each corpus and presents examples of this rhetorical interplay.

3.4 Rationale for Methodological Choices

The present study adopts a mixed-methods design, which aligns with the research objectives and the multifaceted nature of the linguistic phenomena under investigation. Opting for a purely qualitative approach might capture the contextual subtleties of metaphors and metonymies but risk anecdotalism, whereas a solely quantitative method might document broader patterns but fail to address these contextual subtleties.

In more detail, the study's inductive, bottom-up analysis ensures sensitivity to the culturally specific nature of metaphorical language, consequently allowing figurative expressions to surface organically from the data. Supplementing with the top-down analysis complements this by validating findings across the corpus. Additionally, the frame-level analysis provides grounds for a better understanding of how metaphor and metonymy are structured within culturally embedded knowledge systems (i.e., frames). Overall, this layered approach enables a cross-cultural analysis of AI

discourse that is empirically grounded, theoretically informed, methodologically transparent, and most importantly, replicable.

3.5 Ethical Considerations

The present study draws exclusively on publicly available media texts, which minimises ethical risk. Ethical integrity is maintained by ensuring that all sources are properly cited. Reflexivity is also acknowledged, with attention to how factors such as the researcher's mother tongue, culture, and interpretive stance may inevitably affect observations.

3.6 Summary

This chapter outlines the mixed-methods research design. Grounded in CMT, CMA, and ECMT, the methodology unfolds across sequential stages: contextual analysis, identification, interpretation, explanation, and rhetorical interaction. The data corpus comprises 140 purposefully selected articles (90 Arabic and 50 English), amounting to more than 100,000 words in each language. Rigorous inclusion criteria ensure linguistic authenticity, cultural representativeness, and thematic relevance.

Chapter Four

Findings and Discussion

Chapter Four

Findings and Discussion

Organised around the four guiding research questions, this chapter presents a comprehensive analysis of the metaphorical and metonymic representations of AI in the sampled corpora. It begins by identifying and categorising the dominant conceptual metaphors and metonymies used to frame AI, followed by an examination of the frame-level conceptual structures that underlie these mappings. It subsequently explores the ideological and socio-cultural assumptions ingrained in these figurative representations and finally investigates the interaction between metaphorical/metonymic expressions and other rhetorical devices. This chapter is deliberately cumulative in structure, as each section builds upon the previous one, moving from lexical and conceptual analysis toward discursive, ideological, and rhetorical interpretation.

4.1 Metaphors and Metonymies in Arab and Western Media

This section answers the first research question: *What conceptual metaphors and metonymies are employed in the selected corpora of Arab and Western media to frame AI?* In doing so, it provides a quantitative overview of the metaphors identified across both corpora. The results are presented in rank order based on the calculated MR (types $\times$ tokens) of both overarching conceptual keys and subsequent conceptual metaphors, which reflects the relative salience and conceptual productivity of each metaphor within media discourse. The metonymic expressions are similarly tabulated, with frequency

counts for each metonym. The categorisation in this section remains at the descriptive and lexical level, focusing on metaphor and metonymy *types* and *tokens* rather than frame-level or ideological interpretations, which are addressed in subsequent sections.

4.1.1 English Media: Dominant Metaphors and Metonymies

The analysis of the English media corpus yielded a total of 29 metaphors realised in 3251 metaphorical tokens across 177 types, and grouped into four major conceptual key categories in resonance rank order: Human Metaphors, Organic and Environmental Metaphors, Economic/Object Metaphors, and Social/Event Metaphors (Table 3).

Table 3.

English Corpus: Conceptual Key Categories of AI Metaphors by Resonance

No.	conceptual key	Metaphors	Types	Tokens	MR	%
1	The Human Metaphor	AI is a student/trainee, AI is a traveller, AI is a creator, AI is an assistant, AI is a friend/ therapist, AI is an oracle, AI is a mimic/ impersonator, AI is a witch, AI is a competitor/replacement, AI is a dreamer/ hallucinator, AI is a thief	68	1324	9687	45.60 %
2	Organic and Environmental Metaphors	AI is a natural evolution/ superbeing, AI is a virus/disease, AI is a mind, AI is a living organism, AI is a natural force, AI is an animal/beast	36	835	4655	21.90 %
4	Economic and Object Metaphors	AI is a building, AI is a tool, AI is a weapon/ double-edged sword, AI is a vehicle, AI is a resource, AI is a black box, AI is a product, AI is a toy, AI is a mirror	45	834	4460	20.98 %
3	Social / Event Metaphors	AI is a competitive game/war, AI is an apocalypse, AI is a race/ arms race	28	258	2448	11.52 %
Cumulative total			177	3251	21250	100%

Illustrated in Table 4, the most dominant conceptual key category was Human Metaphors, with the highest cumulative resonance (9,687), comprising 68 metaphor types and 1,324 tokens, and accounting for 45.60% of the total.

Table 4.

English Corpus: Human Metaphors by Resonance

No.	Metaphor	Main Lexical Expressions	Types	Tokens	MR	%
1	The Human Metaphor		68	1324	9687	45.60 %
1a	AI is a student/trainee	train (147), answer (99), learn (91), test (72), pass (26), success (22), fail (13), score (13), evaluate (2)	9	485	4365	20.54 %
1b	AI is a traveller	come (80), go (77), path (27), step (18), direction (6), cross (4), moving (4), stride (2), threshold (1), slow and steady (1),	10	220	2200	10.35 %
1c	AI is a creator	Create (98), generate (76), write (33), compose (13), come up with (6)	5	226	1130	5.32%
1d	AI is an assistant	Help (123), assist (30),[virtual/ digital] assistant (25), serve (9), aid (2)	5	189	945	4.44%
1e	AI is a friend/ therapist	therapist (20), consult (12), friend (8), heal (7), companion (5), sympathise (5), empathy (2), warm (2), like (2), shrink (2), confide (1)	11	66	726	3.42%
1f	AI is an oracle	Predict (12), public [belief/ faith] (7), oracle (6), evangelist (4), all-knowing (2), holy grail (2), miracle (2), [sum/ all human knowledge] (2)	8	37	296	1.39%
1g	AI is a mimic/ impersonator	Mimic (14), imitate (5), [act] humanlike (4), impersonate (4), echo (3), ape (1),	6	31	186	0.87%
1h	AI is a witch	Magic (7), witch (6), conjure (4), summon (1), from thin air (1), Séance (1), incarnation (1)	7	21	147	0.69%
1i	AI as a competitor/ replacement	Replace (16) surpass (1), take over (1)	3	18	54	0.25%
1j	AI is a dreamer/ hallucinator	dream (15), Hallucinate(ion) (12)	2	27	54	0.25%
1k	AI is a thief	Theft (2), steal (2)	2	4	8	0.04%

This conceptual key includes personifications of AI as students, creators, assistants, oracles, therapists, and other human roles. Within this category, the AI IS A STUDENT/TRAINEE was the most resonant metaphor, with 485 tokens (20.54% of the total corpus), followed by AI IS A TRAVELLER (220 tokens, 10.35%) and AI IS A CREATOR (226 tokens, 5.32%).

Table 5 demonstrates the second most prominent conceptual key category (Organic and Environmental Metaphors), with 730 tokens across 33 types, accounting for 21.90% of all expressions.

Table 5.

English Corpus: Organic and Environmental Metaphors by Resonance

No.	Metaphor	Main Lexical Expressions	Types	Tokens	MR	%
2	Organic and Environmental Metaphors		36	835	4655	21.90%
2a	AI is a natural evolution/ superbeing	Develop (126), evolve (7), evolution (7), species (6), Superintelligence (16), superhuman (4), artificial general intelligence (19)	7	185	1295	6.09%
2b	AI is a mind	Neural network (22), understand (88) think (359), remember (13), recognise (8),	5	490	2450	11.53%
2c	AI is a virus/disease	Immune (1), proliferate (4), spread (13), inoculate (1), prevent (3), infect (2)	6	24	144	0.68%
2d	AI is a living organism	Grow (43), feed (24), ingest (9), diet (5), spit out (1)	5	82	410	1.93%
2e	AI is a natural force	wave (13), storm (6), flood (4), tsunami (3), erupt (2), tide (3), gush (1)	7	32	224	1.05%
2f	AI is an animal/beast	victim (6), harness (5), killing (4), unleash (3), saddle (2), runaway (2)	6	22	132	0.62%

This conceptual key included metaphors such as AI IS A MIND (490 tokens, 11.53%), AI IS A NATURAL EVOLUTION (185 tokens, 6.09%), and AI IS A LIVING ORGANISM (82 tokens, 1.93%), among others. These metaphors often render AI in biological or ecological terms whose interpretation is addressed in subsequent sections.

Table 6.

English Corpus: Economic and Object Metaphors by Resonance

No.	Metaphor	Main Lexical Expressions	Types	Tokens	MR	%
4	Economic and Object Metaphors		45	834	4460	20.98%
4a	AI is a building	build (101), base (54), support (20), structure (20), construct (10), foundation (10), teeter (1)	7	216	1512	7.11%
4b	AI is a tool	use (207), tool (54), in the hands (5)	3	266	798	3.75%
4c	AI is a weapon/ double-edged sword	[good/ bad] (33), harmful (31), useful (21), edge (3), benefit/drawback (1), “Bringing wonder and danger” (1), hone (1), handy in a battle (1)	8	92	736	3.46%
4d	AI is a vehicle	fuel (23), Drive (16), accelerate (11), guardrail (7), steer (6), turbocharge (4), navigate (4), crash (3)	8	74	592	2.79%
4e	AI is a resource	Access (38), resource (14), trove (10), dissipate (1), waste (1)	5	64	320	1.51%
4f	AI is a black box	[unknown ways of data processing] (18), inside (15), outside (13), transparency (7), [peer-through] (2)	5	55	275	1.29%
4g	AI is a product	Product (10), maker (10), sell (9), consumer (5)	4	34	136	0.64%
4h	AI is a toy	play (12), Toy (9), entertain (4)	3	25	75	0.35%
4i	AI is a mirror	Mirror (3), reflect (5)	2	8	16	0.08%

Economic and Object Metaphors, as seen in Table 6, constituted the third major category, with 834 tokens across 45 metaphor types, accounting for 20.98% of the total. Notable mappings within this conceptual key include AI IS A BUILDING (216 tokens, 7.11%), AI IS A TOOL (266 tokens, 3.75%), and AI IS A WEAPON/DOUBLE-EDGED SWORD (92 tokens, 3.46%).

Table 7.

English Corpus: Social and Event Metaphor by Resonance

No.	Metaphor	Main Lexical Expressions	Types	Tokens	MR	%
3	Social / Event Metaphors		28	258	2448	11.52%
3a	AI is a competitive game/war	Win (32), game (31), lose (20), rival (15), player (13), deploy (11), champion (5), battleground (1), playground (1), battle (1)	10	130	1300	6.12%
3b	AI is an apocalypse	sci-fi-like (13), [end/destroy/etc.] humanity (11), “luddite” resistance (11), dystopia (7), apocalypse (4), doom (4), catastrophe (4), killer robots (4), murder (2), terminator-like (2), vampirical (1)	11	63	693	3.26%
3c	AI is a race/arms race	race (29), speed (15), pace (11), Arms race (4), catch up (2), halt (2), fall behind (2)	7	65	455	2.14%

Table 7 highlights the least frequent conceptual key: Social and Event Metaphors, comprising 258 tokens over 28 types (11.52%). This included metaphors of AI IS A COMPETITIVE GAME OR WAR (130 tokens, 6.12%), AI IS AN APOCALYPSE (63 tokens, 3.26%), and AI IS A RACE /ARMS RACE (65 tokens, 2.14%).

Table 8.*English Corpus: Distribution of Metonymic Expressions by Percentage*

Metonym	Pattern	Total Count	Percentage (%)
The Systems	Whole-for-part Instrument-for-agent	283	37.24%
The Technology	Category- for- member	235	30.92%
The Robots	Prototype- for- category	92	12.11%
The machine	Instrument- for-agent Part-for-whole Concrete-for-abstract	61	8.03%
The Model	product-for-process Product-for-producer	41	5.39%
The Algorithms	part-for-whole	39	5.13%
The Automation	process-for-agent	9	1.18%
Cumulative total		760	100%

In addition to metaphorical mappings, several metonymic patterns were also observed across the English corpus (Table 8). The total metonymy count in the corpus was 760, dominated by a narrow band of highly recurrent terms. The most frequent was “the system(s)”, which accounted for 283 instances (37.24%), followed by “the technology” (235 instances, 30.92%). Other metonyms included “the robots” (12.11%) and “the machine” (8.03%). The least frequent metonym, “the automation”, comprised under 2% of the total.

4.1.2 Arabic Media: Dominant Metaphors and Metonymies

As summarised in Table 9, the Arabic media corpus yielded a total of 26 metaphors, realised in 3,151 metaphorical tokens across 136 metaphor types. These were categorised into five overarching conceptual keys: Economic and Object Metaphors, Human Metaphors, Social and Event

Metaphors, Organic and Environmental Metaphors, and, unique to the Arabic corpus, Spatial and Temporal Metaphors.

Table 9.

Arabic Corpus: Conceptual Keys of AI Metaphors by Resonance

N o.	conceptual key	Metaphors	Types	Tokens	MR	(%)
5	Economic and Object Metaphors	AI is a Tool (أداة), AI [data] is a Precious Resource/ asset (مورد ثمين), AI is a Product (منتج), AI is a Building (أساس/مبنى), AI is a Weapon/ double-edged sword (سلاح ذو حدين), AI is a black box (صندوق أسود)	30	1201	6240	33.83%
1	The Human Metaphors	AI is a Student/ trainee (الطالب / المتدرب), AI is a Child/offspring (الابن), AI is an Employee/ assistant (الموظف), AI is a Competitor/ replacement (المنافس), AI is a Clone/ hybrid (المستنسخ والهجين), AI is a Superhero/ superbeing (بطل خارق), AI is a Driver/ traveller (السائق), AI is a Hallucinator (المهلوس)	47	928	5829	31.60%
3	Social and Event Metaphors	AI is a [general] Threat (تهديد), AI is a military invasion (غزو عسكري), AI is a Race/Journey/السباق والرحلة), AI is a Competitive Game (اللعبة التنافسية), AI is a Revolution (ثورة)	27	568	3344	18.13%
2	Organic and Environmental Metaphors	AI is a Mind (عقل), AI is a living organism (كائن حي), AI is a part of the ecosystem (النظام البيئي), AI is a Natural Force (قوة من الطبيعة)	22	312	2314	12.54%
4	Spatial and Temporal Metaphors	AI is a physical space (المساحة), AI is an Era/Physical Time (عصر), AI is a World (عالم)	10	142	719	3.90%
	Cumulative Total		136	3151	18,446	100%

The data presented in Table 9 indicate that the most dominant conceptual key category was Economic and Object Metaphors, comprising 1,201 metaphorical tokens distributed across 30 distinct types, thereby accounting for 33.83% of the total metaphorical expressions identified in the corpus. A more detailed distribution of these metaphors that includes types, tokens, and glosses is provided in Tables 10–14.

Table 10.*Arabic Corpus: Economic and Object Metaphors by Resonance*

No .	Metaphor	lexical units	Gloss	types	tokens	MR	(%)
5.	Economic and Object Metaphors			30	1201	6240	33.83 %
5a	AI is a Tool	استخدام (٤٩٧)، أداة (١٨٨)، استفادة (٣٨)، استغلال (١٣)، وسيلة (١١)	use, tool, benefit, exploitation, means	5	747	3735	20.25 %
5b	AI [data] is a Precious Resource/ Asset	استثمار (٧٠)، السيطرة على (٢٦)، موارد (٢٣)، مصدر (١٢)، النفط (الجديد) (٥)، عوائد (٣)، كنز (١)	investment, control over, resources, source, new oil, returns, treasure	7	140	980	5.31 %
5c	AI is a Product	منتج (١٥) إنتاج (٢٥)، سلعة (٤)، تسويق (١٠)، صناعة (٢٢)، تصميم (٣٠))	product, production, commodity, marketing, industry, design	6	106	636	3.45 %
5d	AI is a Building	بناء (٥٠)، قائم على (١٧)، أساس (١٢)، تقويض (٢)، حجر الأساس (١)	building, based on, foundation, cornerstone	5	82	410	2.22 %
5e	AI is a Weapon/ double-edged sword	فوائد (٥٠)، أضرار (٣٨)، سلاح (٢) (ذو حدين) (١١)، سلاح (٢)	benefits, harms, double-edged weapon, weapon	4	101	404	2.19 %
5f	AI is a black box	الشفافية (١٦) [صعوبة فهم الآلية] (٧) صندوق أسود (٢)	transparency, [difficulty understanding], black box	3	25	75	0.41 %

Within the most dominant category, AI IS A TOOL emerged as the most resonant metaphor, with 747 tokens and 5 distinct lexical types, representing over a fifth (20.25%) of the entire corpus. This was followed by AI IS A RESOURCE OR ASSET (140 tokens), AI IS A PRODUCT (106 tokens), and less frequent metaphors such as AI IS A BUILDING, AI IS A WEAPON, and AI IS A BLACK BOX.

Table 11.*Arabic Corpus: Human Metaphors by resonance*

No.	Metaphor	lexical units	Gloss	types	tokens	MR	%
1.	The Human Metaphors			47	928	5829	31.6%
1a	AI is a Student/trainee	تدريب (89)، إجابة (61)، صحيحة (20)، نجاح (12)، فشل (8)، خاطئة (8)، يتعلم (7)	training, answer, correct, success, failure, wrong, learns	7	205	1435	7.78 %
1b	AI is a Child/offspring	ناتئ (40)، جيل (30)، تبني (28)، أب (11)، ابن (10)، طفل (10)، سلف (6)، نضج (2)، بر (1)، تبرؤ (1)	emerging, generation, adoption, father, son, child, predecessor, maturity, filial piety, disowning	10	139	1390	7.54 %
1c	AI is an Employee/assistant	يعمل (61)، مساعدة (56)، توظيف (33)، ساعد (11)، يخدم (11)	works, assistance, employment, helped, serves	5	172	860	4.66 %
1d	AI is a Competitor/replacement	ينافس (56)، يستبدل (37)، يحل محل (13)، يسبق (7)، يتفوق على (6)، (يجاري 2)	competes, replaces, substitutes, surpasses, outperforms, matches	6	121	726	3.94 %
1e	AI is a Clone/ hybrid	محاكاة (51)، تقليد (49)، نسخ (28)، (هجين 8)، شبيهة بالإنسان (5)	simulation, imitation, copying, hybrid, human-like	5	141	705	3.82 %
1f	AI is a Superhero/superbeing	فائق الذكاء (46)، خارق (25)، إمكانيات [مذهلة، خارقة، فائقة] (11)، (ينقذ البشرية 2)، سوبرمان (2)	superintelligent, extraordinary, [amazing, super, superior] capabilities, saves humanity, Superman	5	86	430	2.33 %
1g	AI is a Driver/traveller/	قيادة (9)، مسار (6)، طريق (4)، بعيد، وصول (4)، (3)، تسارع (3)، (تقارب 2)	driving, path, road, far, arrival, acceleration, convergence	7	31	217	1.18 %
1h	AI is a Hallucinator	(هلوس 28)، خرف (5)	hallucinates, delirium	2	33	66	0.36 %

Human Metaphors constitute the second largest category, comprising 928 tokens distributed across 47 types, thereby accounting for 31.60% of the total data. A closer examination of Table 11 reveals that AI IS A STUDENT/TRAINEE is the most salient metaphor, with 205 tokens, followed

closely by AI IS A CHILD/OFFSPRING (139 tokens) and AI IS AN EMPLOYEE/ASSISTANT (172 tokens).

Table 12.

Arabic Corpus: Social and Event Metaphors by Resonance

No.	Metaphor	lexical units	Gloss	types	tokens	MR	%
3.	Social and Event Metaphors			27	568	3344	18.13%
3a	AI is a [general] Threat	مخاوف (٨٠)، خطر (٧٣)، تهديد (٥٦)، السلامة من (١٨)، أمانة (من) (١٠)، حماية من (٨)	fears, danger, threat, safety from, secure from, protection from	6	245	1470	7.97%
3b	AI is a military invasion	سيطر على (٤٦)، دمر (١٠)، يغزو (٨)، مقاومة (٧)، معركة (٤)، معسكر (٣)، استسلام (٣)، قمع (٢) مذبح (١)، عتاد (١) هجوم (١)، قتل (١)	took control, destroyed, invades, resistance, battle, camp, surrender, suppression, massacre, equipment, attack, killing	12	87	1044	5.66%
3c	AI is a Race/Journey	طريق (٣٩)، خطوة (٢٨)، سباق (٢٥)، لحق (٥)، فوز (٥)	path, step, race, caught up, victory	5	102	510	2.77%
3d	AI is a Competitive Game	لعب (٣٨)، لاعب (٣٢)، تنافس (٢٣)	game, player, competition	3	93	279	1.51%
3e	AI is a Revolution	ثورة (٤١)	revolution	1	41	41	0.22%

The third-ranking category was Social and Event Metaphors (Table 12), with 568 tokens across 27 types, accounting for 18.13% of the total. The most prominent subtype was AI IS A THREAT, contributing 245 tokens and representing nearly 8% of the total metaphor data. Other significant subtypes included AI IS A MILITARY INVASION (87 tokens) and AI IS A RACE/JOURNEY (102 tokens).

Table 13.*Arabic Corpus: Organic and Environmental Metaphors by Resonance*

No.	Metaphor	lexical units	Glosses	types	tokens	MR	%
2.	Organic and Environmental Metaphors			22	312	2314	12.54%
2a	AI is a Mind	يتعرف على (٧٢), فهم (٥٢), دماغ (٥٢), عقل (٢٤), يفكر (١٥), شبكة عصبية (١٢), يدرك (٨), يركز (١)	recognises, understanding, brain, mind, thinks, neural network, perceives	8	236	1888	10.24%
2b	AI is a living organism	نمو (٢٥), تغذية (١٧), استهلاك (٧), تطور طبيعي (٣), شهية (٣), تربية النباتات (١))	growth, nourishment, consumption, natural evolution, appetite, cultivation of plants	6	56	336	1.82%
2c	AI is (a part of) Ecosystem	التعايش (٥), محاكاة نظام الطبيعة (٣), علاقة تكافلية (١), بيئة (١), نظام بيئي (١), سلسلة غذائية (١)	coexistence, mimicry of nature's system, symbiotic relationship, environment, ecosystem, food chain	6	12	72	0.39%
2d	AI is a Natural Force	تسونامي (٥), موجة (٤)	tsunami, wave	2	8	18	0.09%

Organic and Environmental Metaphors (Table 13) were less prominent in the Arabic corpus, with 312 tokens across 22 types, representing 12.54% of the total. The dominant expression in this group was AI IS A MIND, which accounted for 236 tokens, followed by AI IS A LIVING ORGANISM (56 tokens), and rarer constructions such as AI IS AN ECOSYSTEM and AI IS A NATURAL FORCE.

Table 14.*Arabic Corpus: Spatial and Temporal Metaphors by Resonance*

No.	Metaphor	lexical units	Glosses	types	tokens	MR	%
4.	Spatial and Temporal Metaphors			10	142	719	3.9%
4a	AI is a physical space	اندماج (٤٤)، جزء (٤٣)، حواجز (٥)، امتداد (٤)، تداخل (٤)، الحدود (٣)	integration, part, barriers, extension, overlap, boundaries	6	103	618	3.35 %
4b	AI is an Era/ Time	عصر (٢٧)، زمان (٢)، وقت (٢)	era, time, moment	3	31	93	0.50 %
4c	AI is a World	عالم الذكاء الاصطناعي (٨)	AI world	1	8	8	0.04 %

Finally, Spatial and Temporal Metaphors (Table 14) represent the least frequent category, comprising 142 tokens and 10 types (3.90%). This group includes AI IS A SPACE (103 tokens), AI IS AN ERA/TIME (31 tokens), and AI IS A WORLD (8 tokens). It is important to note that, while the sampled English corpus revealed no instances of spatial and temporal AI metaphors in English, such expressions do indeed exist outside of the sampled data, as per online Google searches (Google, n.d.). The lack of said metaphors in the sampled English corpus might be an indicative of their scarcity rather than their inexistence.

Table 15.*Arabic Corpus: Metonymic Expressions by Percentage*

Metonym	gloss	Pattern	Total Count	%
التكنولوجيا	technology	Category-for-Member	257	29.57%
الروبوت	robot	Prototype-for-Category	207	23.82%
التقنية	technique / technology	Category-for-Member	196	22.55%
الخوارزميات	algorithms	Part-for-Whole	52	5.98%
النموذج	model	Product-for-Process Product-for-Producer	49	5.64%
الآلة	machine	Instrument- for-agent Part-for-whole Concrete-for-abstract	42	4.83%
الأتمتة	automation	Process-for-Agent	28	3.22%
النظام	system	Whole-for-part	24	2.76%
البرمجيات	software	Product-for-function	14	1.61%
Cumulative Total			869	100%

In parallel with metaphor, the Arabic corpus also revealed 9 metonyms, realised in 869 instances, and dominated by a concentrated set of three metonyms. The most frequent was “التكنولوجيا” (technology) with 257 occurrences (29.57%), followed by “الروبوت” (robot) at 207 (23.82%) and “التقنية” (also technology) at 196 instances (22.55%). These three, collectively, accounted for over 75% of all metonymic expressions. Less frequent metonyms include “الخوارزميات” (algorithms), “النموذج” (model), “الآلة” (machine), and “البرمجيات” (software), each representing under 6% of the metonymic distribution (Table 15).

4.1.3 Comparative Observations

A comparison of the English and Arabic corpora reveals a combination of both shared and language-specific metaphors, as well as key differences in metaphorical distribution.

Table 16.*Statistical Significance of Conceptual key differences by token count and MR*

Conceptual Key	Tokens (Eng / Ar)	MR (Eng / Ar)	MR % (Eng / Ar)	Token-Based LL	MR-Based LL	More in
Human	1324 / 928	9687 / 5829	45.60 / 31.60	LL $\approx$ 58.17, p < 0.0001	LL $\approx$ 500.79, p < 0.0001	English
Organic & Environmental	835 / 312	4655 / 2314	21.90 / 12.54	LL $\approx$ 231.45, p < 0.0001	LL $\approx$ 506.61, p < 0.0001	English
Economic & Object	834 / 1201	4460 / 6240	20.98 / 33.83	LL $\approx$ 78.51, p < 0.0001	LL $\approx$ 603.18, p < 0.0001	Arabic
Social & Event	258 / 568	2448 / 3344	11.52 / 18.13	LL $\approx$ 129.13, p < 0.0001	LL $\approx$ 295.07, p < 0.0001	Arabic
Spatial & Temporal	0 / 142	0 / 719	0.00 / 3.90	LL $\approx$ 201.32, p < 0.0001	LL $\approx$ 1102.17, p < 0.0001	Arabic

In addressing the statistical distribution of conceptual keys and their differences, and to assess whether the distributional differences observed across the two corpora were statistically meaningful, two complementary sets of log-likelihood (LL) tests were conducted: one based on raw metaphor tokens and another based on metaphor resonance (MR). The token-based LL tests showed significant cross-corpus contrasts in all five conceptual-key categories. Human and Organic/Environmental metaphors were significantly more frequent in the English corpus (LL $\approx$ 58.17 and 231.45, respectively, p < 0.0001), whereas Economic/Object, Social/Event, and Spatial/Temporal metaphors occurred significantly more frequently in the Arabic corpus (LL $\approx$ 78.51, 129.13, and 201.32, respectively, p < 0.0001). The MR-based LL tests reinforced these findings as they yielded substantially larger LL values due to the higher conceptual weight encoded in MR (e.g., LL $\approx$ 500.79 for Human, 506.61 for Organic, 603.18 for Economic/Object, 295.07 for Social/Event

and 1102.17 for Spatial/Temporal; all $p < 0.0001$). The combined results confirm that the contrasts identified in metaphor frequency and resonance are not random but statistically robust, indicating clear preferences in how English and Arabic media conceptualise AI across these metaphorical keys (Table 16).

Table 17.

Cross-Linguistic Comparison of Conceptual Metaphor Keys

conceptual key	English Conceptual Metaphors	Arabic Conceptual Metaphors
The Human Metaphors	AI is a student/trainee, AI is a traveller, AI is a creator, AI is an assistant, AI is a friend/ therapist, AI is an oracle, AI is a mimic/ impersonator, AI is a witch, AI is a competitor/ replacement, AI is a dreamer/ hallucinator, AI is a thief	AI is a student/ trainee (الطالب / المتدرب), AI is a child/offspring (الابن), AI is an employee/ assistant (الموظف), AI is a competitor/ replacement (المنافس), AI is a clone/ hybrid (المستنسخ والهجين), AI is a superhero/ superbeing (بطل خارق), AI is a driver (السائق), AI is a hallucinator (المهلوس)
Organic and Environmental Metaphors	AI is a natural evolution/ superbeing, AI is a virus/disease, AI is a mind, AI is a living organism, AI is a natural force, AI is an animal/beast	AI is a mind (عقل), AI is a living organism (كائن حي), AI is (a part of) the ecosystem (النظام البيئي), AI is a natural force (قوة من الطبيعة)
Social and Event Metaphors	AI is a competitive game/war, AI is an apocalypse, AI is a race/ arms race	AI is a [general] threat (تهديد), AI is a military invasion (غزو عسكري), AI is a race/journey/ (السباق) والرحلة, AI is a competitive game (اللعبة التنافسية), AI is a revolution (ثورة)
Spatial and Temporal Metaphors	None	AI is a physical space (المساحة), AI is an Era/Physical Time (عصر), AI is a World (عالم)
Economic and Object Metaphors	AI is a building, AI is a tool, AI is a weapon/ double-edged sword, AI is a vehicle, AI is a resource, AI is a black box, AI is a product, AI is a toy, AI is a mirror	AI is a Tool (أداة), AI [data] is a precious resource/ asset (مورد ثمين), AI is a product (منتج), AI is a building (أساس/مبنى), AI is a weapon/ double-edged sword (سلاح ذو حدين), AI is a black box (صندوق أسود)

In addressing metaphorical expressions, several metaphors were found in both datasets, while many others were only detected in one corpus. On the one hand, the shared metaphors include AI IS A STUDENT/TRAINEE, which appeared 485 times in the English corpus and 205 times in the Arabic

corpus; AI IS A COMPETITOR/ REPLACEMENT, appearing 18 times in English and 121 times in Arabic; and AI IS A MIND, recorded in 402 English tokens and 236 Arabic tokens among several others, as highlighted in Table 17. Notwithstanding differences in resonance, these conceptual metaphors represent points of overlap in both media contexts.

On the other hand, several metaphors were exclusive to one of the two sampled corpora; in the English corpus, these include AI IS A FRIEND/THERAPIST (66 tokens), AI IS AN ORACLE (37 tokens), AI IS A WITCH (21 tokens), AI IS A THIEF (4 tokens), AI IS A MIRROR (8 tokens), AI IS A TOY (25 tokens), AI IS A CREATOR (226 tokens), AND AI IS A VIRUS among others, which were not attested in the Arabic corpus in any form. In the Arabic corpus, these unique metaphors include AI IS A CHILD/OFFSPRING (139 tokens), AI IS A REVOLUTION (41 tokens), and all Spatial and Temporal metaphors, among others; none of which had any equivalent in the English dataset.

Table 18.

Cross-Linguistic Comparison of Metonyms

Metonym	Percentage (%)	Metonym	Percentage (%)
The Systems	37.24%	التكنولوجيا	29.57%
The Technology	30.92%	الروبوت	23.82%
The Robots	12.11%	التقنية	22.55%
The machine	8.03%	الخوارزميات	5.98%
The Model	5.39%	النموذج	5.64%
The Algorithms	5.13%	الألة	4.83%
The Automation	1.18%	الأتمتة	3.22%
		النظام	2.76%
		البرمجيات	1.61%
Cumulative total	100%	Cumulative Total	100%

In terms of metonymy, Table 18 illustrates how both corpora were dominated by a small set of highly frequent metonyms. In the English texts, the most common were “the system” (37.24%), “the technology” (30.92%), and “the robots” (12.11%). In Arabic, the top metonymic terms were “الروبوت” (23.82%), “التكنولوجيا” (22.55%), and “التكنولوجيا” (29.57%), loosely translating to “robot”, “technology” and also “technology”. Combined, “technology” and “technique” amount to 52.12% of the total metonymic instances, making both “robot” and “technology” common metonyms in Arabic and English. Similarly, the top three terms in each corpus accounted for over 75% of all metonymic references. Lower-frequency metonyms in both corpora referred to algorithms, models, and machines. Having acknowledged all similarities, it is crucial to note that the most frequent English metonym ‘the system(s)’ was recorded at only 2.76% in the Arabic corpus. LL statistical significance tests were also applied to metonyms. It revealed that, except for automation and algorithm, differences in the frequency of other metonyms in both corpora are statistically significant (Appendix E).

4.2 Frame-Level Conceptual Structures

This section answers the second research question: *What frame-level conceptual structures underlie the metaphorical and metonymic representations of AI in each cultural context?* Drawing on Kövecses’ ECMT (2020), the analysis investigates how metaphorical and metonymic expressions in both corpora activate culturally grounded frames as the third level of schematicity. As discussed in Chapter Two, frames are structured mental models that involve frame elements (FEs). The analysis is organised

by conceptual key in Metaphor Resonance (MR) order and presents tables that contain source and target frames and FEs.

4.2.1 English Media Frames

Starting with the most dominant conceptual key, the Human Metaphors (Table 19), reflect a consistent tendency to map AI onto roles embedded in both interpersonal and occupational schemas. The most structurally elaborate and most dominant English metaphor is the STUDENT/TRAINEE frame, where roles such as student, teacher, test, and curriculum are aligned with machine learning functions. TRAVELLER metaphors extend this developmental mapping with goal-oriented directional structures (e.g., destination → Artificial General Intelligence “AGI”, path → progress). In this, AI is journeying on a developmental path towards achieving AGI, which, to nations competing for AI dominance, is the pinnacle of AI development. The ASSISTANT and FRIEND/THERAPIST metaphors preserve human centrality while framing AI as a subordinate executor or companion. Frames such as empathic care, interpersonal support, and human service introduce relational mappings that rely on human interaction schemas. Less frequent metaphors like WITCH, HALLUCINATOR, and THIEF introduce elements of opacity, distortion, or appropriation.

Table 19.*English Frame-Level Mapping of the Human Metaphor*

No	Metaphor	Source Frame(s)	Target Frame(s)	FES (Source to target)
1	The Human Metaphor			
1a	AI is a student/ trainee	-Human Learning, -Pass/Success	-AI learning and improvement -System evaluation	(Student → AI) (Teacher → Developer) (Lesson → Dataset/training input) (training → New input processing) (Test → developers' benchmark) (Pass/fail → meeting set criteria) (Improvement/ upping a grade → fine-tuning)
1b	AI is a traveller	Journey	AI development path	(Traveller → AI) (Destination → AGI/Superintelligence) (Path → Development stages) (Obstacle → Risks/Failures)
1c	AI is a creator	Human Creativity	AI creative outputs	(Artist → AI) (Creativity → Novel output) (Art → Music, writing, design)
1d	AI is an assistant	-Human Service -Assistance	-AI resource -AI task delegation	(Human assistant → AI system) (Task → Data processing, content creation) (Productivity → Automation of labour)
1e	AI is a friend/ therapist	Interpersonal Support / Empathic Care	AI supportive and emotional responses	(Friend → AI) (Listener → System input processor) (Comforter → Feedback generator) (Trust → User openness) (Support → AI Emotional alignment, lack of moral judgment, confidentiality)
1f	AI is an oracle	Human Omniscience	AI knowledge and predictive capabilities	(Oracle → AI) (Questioner → User) (Prediction → Data-driven output)
1g	AI is a mimic/ impersonator	Imitation and Replication	AI simulating human behaviours	(Mimic → AI system) (Human → Behavioural template) (Imitation → Output reproduction) (Authenticity → Deceptive realism)

No.	Metaphor	Source Frame(s)	Target Frame(s)	FES (Source to target)
lh	AI is a witch	Witchcraft	AI Incomprehensible Technological Force	(Witch → AI) (Conjuring spells → generating content) (Magical powers → unexplained AI capabilities) (Mystery → lack of transparency in AI processes)
li	AI is a competitor/ replacement	-Competitive interaction	-Human-AI relationship	(Competitor → AI) (Arena → Job market) (Superiority → Performance advantage) (Threat → Job loss) (performance → evaluation)
lj	AI is a dreamer/ hallucinator	-Mental Health -Human cognition -perception	-AI glitches -inaccuracies /misinformation -output	(Dreamer/ hallucinator → AI) (Dreams → Output) (Reality → Verification process) (Mental instability → Model unreliability) (consequences → misinformation, reliability concerns). (Hallucinations → errors/misleading outputs)
lk	AI is a thief	Theft	AI as an intellectual property threat	(Thief → AI) (victims → artists and authors) (intellectual property → Target) (Theft → Unlawful generation)

The second category of the Organic and Environmental Metaphors (Table 20) exhibits strong structural alignment with cognitive, biological, and ecological schemas. THE AI IS A MIND metaphor is particularly prominent, with FEs that map human cognition (thinking, memory, decision) onto AI's computational processes. The LIVING ORGANISM and VIRUS/DISEASE metaphors operate through ingestion, growth, or infection schemas, with consistent mappings between food/data and organism/AI. NATURAL FORCE metaphors, such as water and storm, rely on spread and impact as core elements, while simultaneously, in addition to the ANIMAL/BEAST metaphor, they invoke the need to control, autonomy, and containment, or the lack thereof.

Table 20.*English Frame-Level Mapping of Organic and Environmental Metaphors*

No.	Metaphor	Source Frame(s)	Target Frame(s)	FEs (Source to target)
2	Organic and Environmental Metaphors			
2a	AI is a mind	Cognition	AI cognitive capabilities	(Mind → AI system) (Thinking → Data inference) (Decision → Output) (Memory → Data storage) (Consciousness → Autonomy)
2b	AI is an evolution/ superbeing	Evolution and Superhuman Capability	AI exceeding human capacity	(Species → AI) (Superbeing → AGI) (Evolution → Tech development) (Extinction → Human obsolescence)
2c	AI is a living organism	Organic growth, Ingestion	AI evolution and development	Organism → AI system) (Food → Data) (feeding → training models) (Growth → Learning and model expansion) (Appetite → Computational demand)
2d	AI is a natural force	Natural Forces	AI's strong and wide-ranging effects	(Force of nature → AI surge) (Wave, gush, sea → levels of technological spread) (Flood → Disruption) (Eruption → Rapid innovation) (Physical Impact → Societal transformation)
2e	AI is a virus/disease	Contagion, Danger, Immunity	AI spread and its negative impact	(Virus → AI) (Host → Society) (Transmission → Adoption/Deployment) (Disruption → Collapse)
2f	AI is an animal/beast	Beast (power) Beast taming	AI power Controlling AI power	(Wild animal → AI) (Taming → Regulation) (Roaming → Unchecked deployment) (Attack → risk of losing control)

The third English category is the Economic and Object metaphors as presented in Table 21.

Table 21.

English Frame-Level Mapping of Economic and Object Metaphors

No.	Metaphor	Source Frame(s)	Target Frame(s)	FES (Source to target)
4	Economic and Object Metaphors			
4a	AI is a building	-Building (as a Process), -Physical Support, -Function	AI system development and stability, AI functions	(Building → AI system) (Builders → developers) (Foundation → Core algorithms/data) (Structure → Design and functionality) (Foundation → Dataset/algorithm base)
4b	AI is a tool	-Mechanism -Utility	AI application/use	(Tool → AI) (User → Human operator) (Utility → Task execution) (Control → User-driven operation)
4c	AI is a weapon/ double-edged sword	Ambivalent Tool	AI dual impact (positive/negative)	(Sword → AI system) (User → Human) (Edge 1 → Benefit) (Edge 2 → Harm)
4d	AI is a vehicle	Progression, Direction	Control and progression of AI	(Vehicle → AI) (Driver → Human/society) (Path → Development plan) (Destination → Future outcomes) (Speed → Acceleration of change)
4e	AI is a resource	Economic	AI as economic value	(Asset → AI/data) (Investor → Stakeholder) (Return → Profit/performance) (Control → Ownership) (Scarcity → Competitive advantage)
4f	AI is a black box	Opacity	AI transparency issues	(Black box → AI system) (User → Outsider) (Inside → Data given) (Outside → Decision made) (Process → Hidden logic)

No.	Metaphor	Source Frame(s)	Target Frame(s)	FEs (Source to target)
4g	AI is a product	Commercial commodities	AI systems	(Product → AI system) (Seller → Tech Companies) (Consumer → User) (Market → Tech industry) (Features → Capabilities) (Value → Utility, profitability)
4h	AI is a toy	Entertainment	AI experimentation and amusement	(User → player) (AI → toy) (Function → amusement or testing) (Outcome → enjoyment, curiosity)
4i	AI is a mirror	Reflection	AI reflecting society's norms and data	(Mirror → AI system) (Reflection → Societal patterns) (User → Source data provider) (Image → Amplified output)

The reifying Economic and Object metaphors consistently frame AI as a constructed or owned entity. For reference, the BUILDING and TOOL metaphors organise elements around construction, use, and functional control. The WEAPON metaphor adds a binary evaluative element (edge 1 and 2). The VEHICLE metaphor includes directional control and acceleration, whereas the RESOURCE and PRODUCT metaphors draw from economic value. The BLACK BOX metaphor foregrounds opacity by removing access to inner workings, while the TOY metaphor minimises seriousness through a play schema. The MIRROR metaphor forms a feedback structure with user input and AI-generated output forming a reflection loop. However, it is also critical in the sense that it unearths human biases as part of its training data. In aggregate, these metaphors' mappings are rooted in human benefit and utility (Table 21).

Table 22.*English Frame-Level Mapping of Social and Event Metaphors*

No.	Metaphor	Source Frame(s)	Target Frame(s)	FEs (Source to target)
3	Social and Event Metaphors			
3a	AI is a competitive game/war	Competing in sports games/ War	Competing for dominance in AI	(Player → Nations, AI companies/ models) (Game → Market competition) (Strategy → Model design) (Win/Loss → Success/failure) (battleground → AI market)
3b	AI is a race	Competing in a race	AI progression and leadership	(Racer → Nation/company) (Track → AI Innovation) (Finish Line → AGI, global dominance)
3b	AI is an (arms) race	Military Competition	Geopolitical pursuit of AGI supremacy	(Weapon → AI system) (Arms race → Geopolitical competition)
3c	AI is an apocalypse	Doom Sci-fi dystopia	AI potential catastrophe	(Apocalypse → AI robots taking over) (Humanity → Victim) (Catastrophe → Technological dominance)

Last in resonance, Table 22 highlights how metaphors of the Social and Event category are structured around competition, conflict, and escalation. The GAME/WAR and RACE metaphors share overlapping frames with shared participants (players or racers) and outcomes (finish line, falling behind). The ARMS RACE metaphor introduces a militarised component while retaining core elements of strategic competition. The apocalypse metaphor diverges by placing AI as a catastrophic agent. Overall, this category is framed by high-stakes dynamics with clearly defined participants and endpoints.

Table 23.*Metonymic Types in the English Corpus*

Metonym	Pattern	Explanation
The Systems	Whole-for-part Instrument-for-agent	Refers to collective or specific AI agents by naming the overall structure that encompasses them. Sometimes anthropomorphised to imply agency in outcomes ("the system rejected the request").
The Technology	Category- for- member	A general term that stands in for specific AI applications, tools, or systems, highlighting how a broad category activates particular instantiations.
The Robots	Prototype- for- category	Uses the most familiar and tangible prototype of AI to refer to the entire spectrum of AI technologies, including non-embodied forms.
The Machine	Instrument- for-agent Part-for-whole Concrete-for-abstract	The physical artefact stands for the entire AI system. These patterns can be all applicable and used to highlight its mechanical and non-human qualities.
The Model	product-for-process Product-for-producer	Refers to the final output of AI training (the model) while conceptually invoking the entire process of data tuning, system development, and especially developers.
The Algorithms	part-for-whole	Highlights a single core component of AI systems, algorithms, while using it to stand in for the broader decision-making processes and system behaviours.
The Automation	process-for-agent	Refers to the process of automation as though it were an agent or actor making decisions or performing tasks, thus assigning agency to the system itself.

Table 23 presents six key metonymic expressions identified in the English corpus and their metonymic patterns. The metonymic patterns follow a context-sensitive interpretation of media discourse. While alternative classifications (e.g., instrument-for-agent or abstraction-for-concrete) may also apply, the patterns chosen here are those that most clearly reflect the surface realisation evident in the corpus.

As discussed in the Theoretical Framework section, these metonyms function as FEs within the overarching AI frame. The use of one metonym over another strategically foregrounds particular aspects (employed FE) of AI while simultaneously backgrounding others. All these metonyms, being FEs,

help paint a bigger picture of AI as a frame, while simultaneously overlapping with and evoking other frames.

For example, “the systems,” through a whole-for-part or instrument-for-agent pattern, foregrounds the system as a complete entity and downplays its individual components. “The technology,” uses a a category-for-member mapping to highlight the technical aspect of it through the use of the broader field of technology in a way that places AI on equal footing with all other technologies already integrated into our daily lives. “The robots” relies on a prototype-for-category pattern which makes the familiar, embodied exemplar the main point of reference. The machine uses concrete-for-abstract and other patterns to also embody AI, which is a common tendency in line with metaphors that serve to explain abstract notions through concrete ones. In “the model,” product-for-process or product-for-producer mappings bring the finished output into focus while the developmental processes are backgrounded. “The algorithms,” following a part-for-whole pattern, emphasises one internal element as a representative of the entire system. Finally, “the automation,” using a process-for-agent pattern, presents the process itself as the key conceptual unit through which the system is referenced.

4.2.2 Arabic Media Frames

The frames and FEs of the metaphors detected in the Arabic corpus are detailed in Tables 24-28 below, ordered by most to least frequent conceptual key.

Table 24.*Arabic Frame-Level Mapping of Economic and Object Metaphors*

No.	Metaphor	Source Frame	Target Frame	FEs (source to target)
5.	Economic and Object Metaphors			
5a	AI is a Tool	-Mechanism -Utility	AI application/use	(Tool → AI) (User → Human operator) (Utility → Task execution) (Control → User-driven operation)
5b	AI is a Precious Resource/ Asset	-Economic Resource -Natural Extraction	-AI data/information as exploitable wealth	(Resource → AI data) (Extraction → Data processing/mining) (Scarcity → Rare datasets) (Wealth → Information value) (Market dominance → Tech leadership)
5c	AI is a Product	Commercial commodities	AI systems	(Product → AI system) (Seller → Tech Companies) (Consumer → User) (Market → Tech industry) (Features → Capabilities) (Value → Utility, profitability)
5d	AI is a Building	-Building (as a Process), -Physical Support, -Function	AI system development and stability, AI functions	(Building → AI system) (Builders → developers) (Foundation → Core algorithms/data) (Structure → Design and functionality) (Foundation → Dataset/algorithm base)
5e	AI is a Weapon/ double-edged sword	Ambivalent Tool	AI dual impact (positive/negative)	(Weapon → AI system) (User → Human) (Edge 1 → Benefit) (Edge 2 → Harm)
5f	AI is a black box	Opacity/mystery	AI system opacity and lack of transparency/ understanding	(Black box → AI system) (User → Disempowered actor) (Contents → Unobservable processes) (Control → Illusion of governance)

The most circulated Arabic metaphors (Economic and Object, Table 24) draw on construction, utility, commercialisation, and risk-benefit frames. The TOOL metaphor includes mappings such as (user → human) and (function → task execution). The RESOURCE metaphor maps AI data onto economic

assets, including (resource → data) and (wealth → information value). The PRODUCT metaphor links AI systems to market goods through mappings. The BUILDING metaphor draws on architectural structure, while the WEAPON metaphor employs a dual-utility frame through mapping (weapon → AI) and (edge → benefit or harm). Finally, the BLACK BOX metaphor frames AI as an opaque system, with mappings such as (contents → unknown process) and (user → observer). Collectively, these frames treat AI as a constructed, controlled, or traded object with measurable outputs.

Second in resonance, the Arabic corpus includes a diverse set of human-centred metaphors (the Human Metaphors conceptual key) that draw from frames of education, parenting, employment, competition, and others, as detailed in Table 25.

Table 25.

Arabic Frame-Level Mapping of the Human Metaphors

No.	Metaphor	Source Frame	Target Frame	FEs (source to target)
1.	The Human Metaphors			
1a	AI is a Student/ Trainee	-Human Learning -Training	-AI model refinement	(Student → AI model) (training → New input processing) (Lesson → Dataset/training input) (correct answer → accurate output) (Pass/fail → accurate output) (Improvement → Fine-tuning)
1b	AI is a Child/ offspring	-Child rearing -Growing -Familial-ties	-AI creation -Development -AI-human relations	(Parent → Developer) (Child → AI system) (Nurturing → Training) (Maturity → Model performance) (Parenting Anxiety → Ethical and Societal fears).

No.	Metaphor	Source Frame	Target Frame	FEs (source to target)
1c	AI is an Employee/ assistant	-Human service - Job -Assistance	-AI resource -AI task delegation	(Employee/ human assistant → AI system) (Employer → Human user) (Task → Data processing, content creation) (Performance Evaluation → Accuracy and output quality) (Productivity → Automation of labour)
1d	AI is a Competitor / replacement	-Competitive interaction	-Human-AI relationship	(Competitor → AI) (Arena → Job market) (Superiority → Performance advantage) (Threat → Job loss) (performance → evaluation)
1e	AI is a Clone/ hybrid	-Genetic engineering -Biological hybridisation	-AI imitation of humans -AI/ Human as inseparable	(Original organism → Human) (Clone → AI system) (Hybridisation → Integration of human and machine) (Human agency → Algorithmic replication)
1f	AI is a Superhero/ superbeing	-superhuman abilities	-Extraordinary AI capabilities (speed, accuracy, etc.)	(Hero → AI) (Superpower → High processing capability) (Awe → Public reception) (Heroic Deed → assisting with complex tasks)
1g	AI is a Driver	-control -journey -destination	-AI controls and navigates humans' lives -	(Driver → AI) (Passenger → user) (Vehicle → Software system) (Road → Development pathway/ users' lives) (crossroad/ steering → making decisions) (Obstacle → Technical/regulatory challenge)
1h	AI is a Hallucinator	-Mental Health -Human cognition	-AI glitches -inaccuracies/misinformation	(hallucinations → errors/misleading outputs), (hallucinator → AI), (Mental instability → Model unreliability) (consequences → misinformation, reliability concerns).

The most frequently deployed frame in this category is that of education and training, in which the AI system is conceptualised as a STUDENT/TRAINEE undergoing testing and refinement. Roles such as teacher, lesson, and test are consistently mapped onto developers, datasets, and performance benchmarks,

respectively. A structurally similar but culturally distinct mapping is observed in the CHILD/OFFSPRING metaphor, where AI is positioned as a maturing entity under the guidance of a human parent-developer.

Other metaphors in this category include the EMPLOYEE/ASSISTANT, which aligns with human resource schemas and includes mappings between (employer → user) and (task → automation). The COMPETITOR/REPLACEMENT metaphor draws from economic rivalry structures, with mappings from (competitor → AI) and (arena → labour market). The CLONE/HYBRID metaphor invokes biological replication and integration, which aligns AI with the imitation of human cognitive models and behaviour. This metaphor has several layers as it builds on other spatial and temporal metaphors. The DRIVER metaphor uses control and navigation schemas to structure AI as an agent that can guide or navigate people's lives. Finally, the AI IS A HALLUCINATOR borrows from pathological schema to illustrate the glitches or flaws of these systems (Table 25).

The third conceptual key in resonance in the Arabic corpus is the Social and Event metaphors. All metaphors in this category follow different schemas of human/AI interaction as detailed in Table 26.

Table 26.*Arabic Frame-Level Mapping of Social and Event Metaphors*

No	Metaphor	Source Frame	Target Frame	FEs (source to target)
3.	Social and Event Metaphors			
3a	AI is a [general] Threat	Risk/danger	AI implications	(Threat → AI system) (Target → Privacy, jobs, humanity) (Consequences → Displacement, control loss) (Defensive response → Regulation, protective actions)
3b	AI is a Military Invasion	Warfare	AI as an enemy force or hostile takeover	(Invader → AI system) (Battlefield → Economic or job sectors) (Human → Defending entity) (Invasion → Market or control penetration)
3c	AI is a Race/ Journey	Competitive Sport / Global Rivalry	Global AI development race	(Runners → Countries/Corporations) (Track/Course → Technological development timeline) (Finish Line → AGI, global dominance) (Speed → Rate of innovation)
3c		Journey / Pilgrimage	Arab national AI development	(Traveller → Arab government, society) (Road/ path → Strategic plans, policy implementation) (Detours/Barriers → Challenges, limitations, dependencies) (Destination → AGI- Technological independence)
3d	AI is a Competitive Game	Competing in sports games	Competing for dominance in AI	(Player → Nations, AI companies/ models) (Game → Market competition) (Strategy → Model design) (Win/Loss → Success/failure)
3e	AI is a Revolution	Political/ social upheaval	AI societal impact	(Revolution → transformative change, disruption, new order) (State → Job market) (Resistance → Resisting Change and rigid Regulation)

The Social and Event metaphors (Table 26) are derived from threat, conflict, competition, and transformation frames. The danger/risk frame maps danger-related roles onto AI, such as (threat → AI) and (consequence → job loss or privacy invasion). The warfare frame in the MILITARY INVASION

metaphor includes roles like (invader → AI) and (battlefield → societal domains) to depict AI as an opposing force, juxtaposed by the similar REVOLUTION metaphor, which depicts it as a positive emerging one.

The fourth category (Organic and Environmental Metaphors) includes four metaphors that map different ecological FEs onto AI (Table 27).

Table 27.

Arabic Frame-Level Mapping of Organic and Environmental Metaphors

No.	Metaphor	Source Frame	Target Frame	FEs (source to target)
2.	Organic and Environmental Metaphors			
2a	AI is a Mind	Human cognition	AI's cognitive capabilities	(Mind → AI system) (Thinking → Data inference) (Decision → Output) (Memory → Data storage) (Consciousness → Autonomy)
2d	AI is a living organism	Organic growth and ingestion	AI evolution and development	(Organism → AI system) (Food → Data) (feeding → training models) (Appetite → Computational demand) (Growth → Learning and model expansion) (farming → data acquisition)
2e	AI is a part of the Ecosystem	Ecological/ biological cohabitation	AI/ Human interaction	(Ecosystem → AI environment) (Species → AI and human actors) (Symbiosis → interdependence)
2f	AI is a Natural Force	Natural Forces	AI strong and wide-ranging effects	(Natural Force → AI surge) (Eruption → Sudden proliferation) (Impact zone → Employment and ethics) (Victims → Displaced humans)

The Organic and environmental metaphors in the Arabic corpus reflect biological and ecological framings of AI. The MIND metaphor maps cognitive processes such as thinking, memory, and consciousness onto AI systems. The LIVING ORGANISM metaphor maps food onto data and growth onto model

expansion. The ECOSYSTEM metaphor incorporates interdependence and adaptability, with mappings between symbiosis and cooperative integration. These metaphors are similarly grounded in concepts of dynamic systems, adaptation, and environmental causality.

The fifth and last in resonance is the Spatial and Temporal Metaphors (Table 28). Unique to Arabic, these low-resonance metaphors are culturally rich and contain layers of mappings.

Table 28.

Arabic Frame-Level Mapping of Spatial and Temporal Metaphors

No.	Metaphor	Source Frame	Target Frame	FEs (source to target)
4.	Spatial and Temporal Metaphors			
4a	AI is a physical space	Physical boundaries	AI	(Physical Space → AI) (Boundaries → digital borders limited capabilities)
	AI is a physical space [merging into human or life as another physical space]	Physical space Space merge	AI as an integrated part of human identity/self	(Space1 → Humans and Humans experience) (Space2 → AI) (Boundaries → Physical and digital borders) (Integration → Merging into daily life) (Extension → Cognitive and physical augmentation) (Virtual-Real Blend → Seamless interaction) (Inseparability → Embeddedness in everyday life) (redefined space → Human-technological fusion)
4b	AI is an Era/Time	Pivotal Historical Periods	Societal transformations via AI	(Era → AI period) (Transformation → Labour and industry change) (Golden age → Idealised future) (Historical parallel → Tech progression, implications for cultural shifts)
4c	AI is a World	Spatial/ Geographical	AI development ecosystem	(World → AI domain) (Inhabitants → Users, agents, companies) (Boundaries → Technical access points) (Landscape → Infrastructure)

The Spatial and Temporal metaphors conceptualise AI as a SPACE, AN ERA, or a WORLD. These metaphors activate cultural frames that position AI as a civilisation-level shift and present it as a physical or temporal domain. In the physical space frame, AI is conceptualised as a bounded or integrated space, with mappings such as (space → AI) and (boundary → capability limit). An extension of this metaphor frames AI as an extension of the human self or environment. The ERA/TIME metaphor maps historical structuring onto AI, with (era → AI period) and (transformation → socio-technical change). The WORLD metaphor positions AI as a bounded ecosystem through mapping (world → AI environment), and (inhabitants → developers, and users).

Alongside metaphors, the nine metonyms detected in the Arabic corpus (Table 29) function as FEs of AI as a standalone frame, while they simultaneously partake in other frames (e.g., “robots” are FEs of science fiction). The patterns of these metonyms are illustrated in Table 29 based on Radden and Kövecses’ metonymic distribution.

Table 29.

Metonymic Frames in the Arabic Corpus

Metonym	Metonymy patterns	Explanation
التكنولوجيا technology	Category-for-Member	A broad technological category used to refer to specific AI tools or systems deployed in practice.
الروبوت robot	Prototype-for-Category	A familiar, embodied prototype representing the broader and often non-embodied domain of artificial intelligence.
التقنية technology	Category-for-Member	General reference to applied technological practices used to signify specific AI applications or capabilities.
الخوارزميات algorithms	Part-for-Whole	A core component of AI systems metonymically representing the overall computational logic or operation.

Metonym	Metonymy patterns	Explanation
الآلة the machine	Instrument- for-agent Part-for-whole Concrete-for-abstract	The physical artefact stands for the entire AI system. These patterns can be all applicable and used to highlight its mechanical and non-human qualities.
النموذج the model	Product-for-Process Product-for-Producer	The final AI model stands in for the entire process of data training, algorithmic learning, and refinement.
الأتمتة automation	Process-for-Agent	The automation process is framed as an autonomous actor performing tasks, displacing human agency.
النظام the system	Whole-for-part	The term refers to an overarching system while activating its constituent technologies and architectures.
البرمجيات softwares	Product-for-function	Software is used as a container term representing the specific functionalities and modules it carries.

As shown in Table 29, the Arabic corpus exhibits a set of metonymic expressions. For example, التكنولوجيا (technology) and التقنية (technology) both function as category-for-member metonyms. Both metonyms invoke the broader technological field while referring to specific AI systems or applications, thus highlighting AI as part of the general field of technological advancement. This makes the broad category the salient entry point into the frame while individual tools or components remain backgrounded.

Similarly, الروبوت (the robot) exemplifies a prototype-for-category pattern. It relies on the most familiar and embodied prototype associated with AI to stand in for the entire domain, including software-based or non-embodied systems. Similarly, the machine uses concrete-for-abstract and other patterns to also embody AI. Other expressions emphasise internal elements of AI architecture. الخوارزميات (the algorithms) follows a part-for-whole mapping, as it uses one component of AI systems to refer to the full computational structure. This pattern brings into focus the role of algorithmic logic while keeping surrounding infrastructures implicit. النموذج (the model)

exemplifies product-for-process and product-for-producer mappings. The trained model stands in for the entire AI system as well as for the developers who construct it.

A different pattern appears in الأتمتة (automation), which uses a process-for-agent mapping. The process of automation is treated as if it were the entity performing actions, with its enabling systems or operators left unexpressed. This pattern positions the process itself as the conceptual actor in the frame. The term النظام (the system) follows a whole-for-part mapping, using the overarching system to implicitly activate its constituent modules and technological layers. This makes the system the salient conceptual unit while its subcomponents remain unstated. Finally, البرمجيات (software) reflects a product-for-function pattern. The software product stands in for the functionalities it provides, as it emphasises operational capabilities rather than internal code or structure.

4.2.3 Comparative Observations

A comparative analysis of the frame-level structures across the English and Arabic corpora reveals both areas of overlap and distinctions in FEs, distribution, and emphasis. In answering the first research question, several metaphors were part of both English and Arabic AI discourses. However, an in-depth analysis of these cross-linguistic metaphors and how they are realised through different FEs illuminates nuanced differences and suggests that while metaphors can be common between different cultures or languages, the same metaphor in two different languages or cultures can still carry some different meanings or connotations due to differences in FEs.

Addressing similarities across both corpora, many of the common metaphors employ similar FEs. For example, the AI IS A STUDENT/TRAINEE metaphor consistently draws on an educational frame that involves roles such as teacher, lesson, and evaluation. Both corpora also employ frames based on assistance, and competition, which indicates structural parallels in mapping human occupational roles onto AI.

The metaphors unique to one corpus would, by extension, employ unique frames. The CHILD/OFFSPRING and SUPERHERO metaphors in Arabic introduce family and heroic frames that are absent in the English data. Conversely, English includes metaphorical frames such as interpersonal support which were not observed in Arabic texts.

In Organic and Environmental Metaphors, both corpora include cognition, organic growth, and ingestion. However, the Arabic corpus uniquely adds the ecological/biological cohabitation frame. Within Social and Event Metaphors, shared frames include competition (GAME, RACE, ARMS RACE), which reflects both similar and unique FE. The English frames tend to focus more on market rivalry and sci-fi dystopia, whereas Arabic frames reflect cultural particularities in their use of the military invasions and revolutions, potentially shaped by the historical experiences of most Arab countries with foreign occupation.

While shared metaphors employ shared frames and unique metaphors employ unique frames, some metaphors appear in both corpora, but with distinctions in FEs. Although it is challenging to account for all variations in FEs, the AI IS A BLACK BOX metaphor (Table 30) effectively demonstrates

how subtle divergences may influence the overall tone and the assumed function of a given metaphor.

Table 30.

A Comparison of the Black Box Metaphor FEs

Language	Metaphor	Source Frame	Target Frame	Example Expressions	FEs (source to target)
English	AI is a black box	Opacity	AI transparency issues	AI is a black box, AI decisions are opaque, AI lacks transparency	(Black box → AI system) (User → Outsider) (Inside→ Data given) (Outside→ Decision made) (Process → Hidden logic)
Arabic	AI is a black box	Opacity/ mystery	AI transparency issues	كل العيوب ..تؤدي إلى نتيجة واحدة- وهي انعدام الشفافية، أشبه بصناديق سوداء، ترك مصير البشرية في يد "الصندوق الأسود" للخوارزميات	(Black box → AI system) (User → Disempowered actor) (Contents → Unobservable processes) (Control → Illusion of governance)

The AI IS A BLACK BOX metaphor appears prominently in both corpora, yet it is slightly elaborated through different FEs that reflect different orientations toward the question of AI opacity. While both corpora invoke the metaphor to critique AI transparency, in the English discourse, the metaphor centres on the technical inscrutability of AI models, which foregrounds a desire to dissect and decode their internal mechanisms. Lexical realisations from the media corpus, such as “AI decisions are opaque” and “AI lacks transparency”, emerge within a frame where users are outsiders attempting to understand the concealed input–output logic of algorithmic processes. By contrast, the Arabic instantiation of the same metaphor adds an effective layer of mystery. Illustrating with examples from the media, phrases like ("leaving humanity’s fate in the hands of the algorithmic black box"), originally

(*"ترك مصير البشرية في يد الصندوق الأسود للخوazميات"*) intensify the metaphor's emotional resonance and frame the user as a powerless subject in the face of concealed algorithmic agency.

Overall, the frame-level structures across the two corpora exhibit both similarities in the overlapping frames with their source-to-target FE mappings and differences in the presence, elaboration, and distribution of certain frames and FEs, particularly those that include social and historical conceptualisations.

Finally, both corpora use a range of similar metonymic patterns to refer to AI in compressed form, though with different frequencies. To illustrate with examples, the English corpus relies more on whole-for-part (system), category-for-member (technology), and prototype-for-category (robots). The Arabic corpus shows a parallel tendency, with category-for-member dominating in *التكنولوجيا* (technology) and *التقنية* (technology), followed by prototype-for-category in *الروبوت* (robot).

Both corpora also share metonyms such as *الأتمتة* (automation) and *النظام* (system), which appear in similar process-for-agent and whole-for-part patterns respectively. While the Arabic corpus uniquely includes (software), that does not negate its use in the English language. However, it might hint that it is used much less frequently, and did not occur in the sampled data.

4.3 Ideological and Socio-Cultural Insights

This section addresses the third and most significant research question: *What ideological and socio-cultural insights can be derived through a critical metaphor and metonymy analysis of the identified expressions?* The following section offers an interpretive reading of the metaphorical patterns in both corpora. Following Charteris-Black's (2004) model, it identifies the *socio-cultural functions, power dynamics, audience positioning, and reflexivity* associated with the metaphors and metonymies thus far addressed.

Whereas the previous two sections unfold by introducing numbers, patterns, and subsequently supplement with examples, the critical stage of explanation in this section diverges in proceeding from specific notions and examples to identifying potential patterns that ideologically govern each corpus. The reasoning behind this inductive presentation is the premise that the contextual nuances and specificities must be carefully attended to before drawing overarching conclusions on attitudes and ideologies.

4.3.1 Agency and Audience Positioning

The question of agency is a recurring one in both CDA and its niche CMA. It refers to the capacity of an entity, usually a person, but also technologies like AI, as in the present study, to act, make decisions, and exert power. In CMA, agency is a discursively constructed phenomenon that is often negotiated through source-target mappings that ascribe autonomy or passivity to AI. In the sampled data, the level of agency attributed to AI oscillates

Between mere object-position instruments and quasi-human subjects.

Table 31.

Conceptual Key Percentages in both Corpora

conceptual key	English Corpus		Arabic Corpus	
	Resonance	(%)	Resonance	(%)
The Human Metaphor	9,687	45.60%	5,829	31.61%
Organic and Environmental Metaphors	4,655	21.90%	2,304	12.50%
Social / Event Metaphors	2,448	11.52%	3,344	18.14%
Spatial and Temporal Metaphors	0	0%	719	3.90%
Economic and Object Metaphors	4,460	20.98%	6,240	33.85%
Cumulative total	21,250	100%	18,436	100%

Agency can be better understood if the conceptual keys are viewed as a subject-object continuum. On the first end of the spectrum, Human Metaphors would assign the highest level of agency to AI (anthropomorphism), followed by Organic and Environmental metaphors, which often invoke living systems, growth, or natural processes, which in turn suggest partial autonomy. Social and Event metaphors typically involve action and relationality, which implies a level of agency. In contrast, Spatial and Temporal metaphors tend toward physicality and positionality. On the other end of the spectrum, Economic and Object metaphors most clearly strip AI of intentionality and position it as a passive instrument (reification). While the English corpus is more invested in Human Metaphors (45.60%) and Organic/Environmental Metaphors (21.90%), the Arabic corpus favours Economic/Object Metaphors (33.85%). These cross-corpus differences are proven statistically significant based on a series of log-likelihood (LL) tests conducted to examine each conceptual-key

using both raw token counts and MR (Appendix E). In addition, within the same Arabic corpus, a chi-square test was conducted to confirm the statistical significance between the Human and Economic and Object conceptual keys. While the test proved statistical significance ($p < 0.001$), the Cramér's V's effect size was a small one (0.034) (Appendix E).

Building on this, cross-corpus differences in conceptual keys may suggest that English-language discourse is more inclined to construct AI as an agentive, quasi-human presence, while Arabic discourse depicts it predominantly as a functional instrument (Table 31), followed by a substantial representation of Human metaphors.

From a CDA perspective, agency is never neutral; it is constructed, delegated, or withheld according to broader cultural, political, and ethical motives. A deeper dive into what particular metaphors constitute each key may hint at more nuanced differences. For instance, in the English discourse, Agency appears problematised, as AI is portrayed as dangerously agentive in the AI IS A WITCH, AI IS A SUPERBEING and AI IS AN ORACLE metaphors, which suggest epistemic supremacy, and in the AI IS A THIEF, AI IS A VIRUS/DISEASE, and AI IS A BEAST, all exclusive to English, which evoke loss of human control. Furthermore, the metaphor AI IS A FRIEND/THERAPIST, while seemingly benign, may hint at schemas of human-machine intimacy and emotional outsourcing. In the Arabic discourse, on the other hand, agency can be seen as somewhat more domesticated in which AI is portrayed as an agent that requires guidance or discipline as in AI AS A CHILD, and AI AS AN EMPLOYEE, or one with limited capabilities as in AI IS A CLONE/HYBRID

which maintain human superiority (Table 17).

Positioning of the audience refers to the ways in which metaphors guide readers into specific subject positions or ideological roles. It is examined through the roles the metaphor ascribes to public participants, whether as empowered users, passive observers, or ethically responsible agents. In dissecting FEs, the audience appears to be a recurrent element in direct interaction with other metaphorical FEs in both corpora. The FEs of the AI IS A STUDENT/TRAINEE metaphor (Table 32), for example, showcase a difference in positioning the audience, which in turn affects both power dynamics and sociocultural functions.

Table 32.

A Comparison of the Student/Trainee Metaphor FEs

Corpus	Metaphor	FEs (source to target)	
English	AI is a student/trainee	(Student → AI model) (Teacher → Developer- user) (Lesson → Dataset/training input) (training → New input processing)	(Test → developers' benchmark) (Pass/fail → meeting set criteria) (Improvement/ upping a grade → fine-tuning)
Arabic	AI is a student/trainee	(Student → AI model) (training → New input processing) (Lesson → Dataset/training input)	(correct answer → accurate output) (Pass/fail → accurate output) (Improvement → Fine-tuning)

In the English discourse, this metaphor is more developer-oriented, where AI is a system subject to evaluation, testing, and progressive refinement. This may emphasise the West's role as the primary site of AI production and pedagogical control. FEs such as (test → developers' benchmark) and (pass/fail → meeting developers' criteria) underline this

construction. In contrast, the Arabic corpus deploys an end-user instantiation of the same metaphor. Here, the emphasis is on end-users' satisfaction with AI outputs rather than system refinement. The metaphor thus functions rhetorically to position the West as the educator and designer, in which the audience partakes in the teaching process, and the Arab world as user and consumer.

Another exemplary metaphor is AI IS A RACE, inclusive to both corpora, but slightly differing to include AI IS A RACE/ARMS RACE in English and AI IS A RACE/JOURNEY in Arabic (Appendix F). The Arabic media uses the RACE metaphor in reference to the West and other countries attempting to achieve dominance over AI tools and the global market, while presumably consciously and cautiously excluding Arabs from this race. Arabs are conversely cast as FEs of the AI IS A JOURNEY part of the metaphor, which implies steadiness, rationality, and national progression and benefit (Table 7, Table 26). Arms race (English) also juxtaposes with military invasion (Arabic) in highlighting the historical aspect of metaphorical production; a metaphor produced by a culture that conquered, and the other was occupied.

4.3.2 Power Relations

Another core element of CDA, and subsequently CMA and CMeA, is power relations and dynamics. This is evident in the ways AI metaphors and metonymies may configure who holds authority and who gets to define technological futures. Power relations are therefore interrogated to reveal which actors gain authority or political legitimacy through metaphorical and metonymic framing. The English examples discussed thus far hint at

anxieties over human-machine power dynamics through constructing AI as an actor that may exceed or escape human authority. Adding to this, other metaphors such as the AI [SPREAD] IS AN APOCALYPSE, the AI IS A NATURAL EVOLUTION, and other English metaphors suggest technopessimism invoked by AI's potential to gain more epistemic power and supremacy. This is further juxtaposed with other English metaphors such as AI IS A MIRROR and AI IS A TOY that limit, even ridicule AI's potential. Arabic metaphors, on the other hand, while simultaneously oscillating between optimism and pessimism, appear to be more ambivalent in tone, and seem to avoid situating AI within the extremes of the hyperagentic WITCH-ORACLE, or oversimplified TOY analogies exclusive to the English corpus, which may point toward the simultaneous desire to control AI and the fear of its uncontrollability.

Besides the human-machine dynamics, the developer-machine and developer-human (as beneficiary) dynamics are also central to the critical study of AI discourse. Metonymy best explores these dynamics; terms like "the model", "the system", and "the algorithm" function as category-for-process or producer-for-product metonymies that seem to abstract human labour and accountability. Often used to substitute for companies, developers, and investors, said metonymic choices obscure their role, which creates a rhetorical fiction in which AI appears to act independently of its human creators. In doing so, these metonyms may mask the role of these agents behind a veil of neutral machinery and anthropomorphise technology as autonomous, inevitable, and ungovernable. All identified English and Arabic metonyms have been used as (personification-with-metonymy) devices, which is therefore reflected in the prominence of the Human metaphors. The

The “system”, ranking first in English and second-to-last in Arabic (Table 18, Appendix E), is of particular importance, due to its entanglement with other frames of surveillance, Orwellian dystopia, and the broader Western sci-fi literature.

The Arabic corpus interestingly uses the robot metonym substantially more than its English counterpart (Table 18, Appendix F), which provokes humanoid and embodiment associations. Robots are recurrent FEs in sci-fi in which they are often depicted to coexist with human beings, in harmony at times, and in war at others. Additionally, the widespread Arabic use of *التقنية* and *التكنولوجيا* (technology) situates AI within broader national discourses of technological transformation and economic growth, which are prominent themes as suggested by the prominence of Object metaphors. The frequent use of these metonyms also gestures towards situating AI within the wider set of everyday technologies that are already integrated into daily life. This may serve to normalise AI and downplay or background potential controversy often associated with AI. Contrariwise, less frequently used terms such as *الأتمتة* (automation) tend to evoke stronger associations with labour displacement, system-level transformation, and loss of human control. Thus, choosing “technology” over more charged terms contributes to a more neutral and less contested representation of AI in Arabic media.

In comparing both corpora, the emergence of the Arabic temporal and spatial conceptual key is of particular importance. One of the most conceptually layered metaphorical structures in the corpus is AI IS A PHYSICAL SPACE, a metaphor that emerges from and builds upon earlier

metaphorical constructions of the human as physical space, or container in some instances (Maalej, 2007).

Crucially, this metaphor interacts with and is deepened by a parallel metaphor in which the human body is framed as space or terrain. The examples “امتداد لأجسادنا” [an extension of our bodies] and “يتسلل إلى وعينا” [it infiltrates our consciousness] conceptualise the self as a porous landscape. This results in a conceptual blend: HUMAN AS PHYSICAL SPACE and AI AS PHYSICAL SPACE metaphors create a fused space in which both entities inhabit and constitute one another, as materialised in the subsequent Arabic AI IS A CLONE/HYBRID metaphor. AI is thereafter rendered as co-extensive with bodily and cognitive domains, articulated in expressions such as “الذكاء الاصطناعي يسكن تفاصيلنا اليومية” [AI dwells in our daily details]. This blending process leads to an emergent metaphorical construct where AI is not an external artefact but the very space of human motion and embodiment: “الذكاء الاصطناعي أصبح هو المساحة التي نتحرك فيها، وامتدادا لأجسادنا” [AI has become the space in which we move, and an extension of our bodies].

The final stage of this metaphorical trajectory is the emergence of the AI IS A HYBRID/CLONE metaphor, wherein AI is conceptualised as a human-machine fusion. In this schema, metaphors such as “الهجين الرقمي” [the digital hybrid] and “امتداد ذكي للوعي الإنساني” [an intelligent extension of human consciousness] shift the framing from spatial immersion to ontological merging. The source domain of the biological clone or hybrid organism maps onto a target conceptualisation of shared cognitive and bodily agency, where AI does not merely mimic or support human action, but becomes indistinguishable from the self. What begins as a metaphor of containment

or proximity evolves into one of identity fusion and existential entanglement (Figure 4). A prime example from the corpus is “الثاني ويدك الثالثة الذكاء” [AI is your second brain and third hand].

Thus, the AI AS PHYSICAL SPACE metaphor, far from being a static spatial image, reflects a dynamic, multi-level process of metaphorical blending. Other similar metaphors of merging and fusion in Arabic are often positive. A prominent example of which is العام دمج الأطفال ذوي القدرات الخاصة في الفضاء التعليمي referring to the “integration/merging” of special-needs kids in the public educational sphere. The same metaphorical fusion is illustrated in the AI IS [A PART OF] AN ECOSYSTEM metaphor, similarly exclusive to Arabic, that builds on the THE HUMAN IS A LIVING ORGANISM AND THE AI IS A LIVING ORGANISM fusion, resulting in a space where both coexist in symbiosis. Both of these metaphors reflect a balanced AI-human power dynamic.

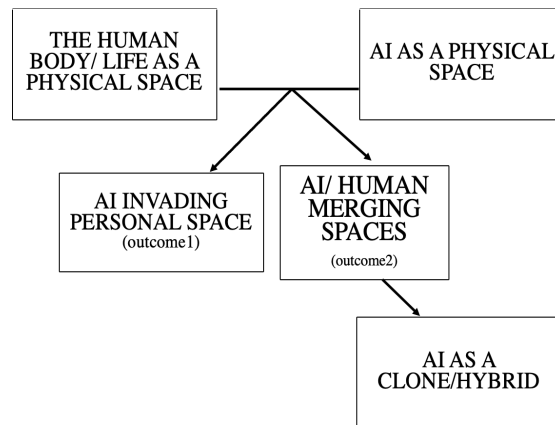


Figure 4.

A Visual Representation of AI AS A CLONE/HYBRID Metaphor

4.3.3 Sociocultural Functions

All previous steps of analysis culminate in assessing the *sociocultural functions*, in reference to the ways detected metaphors and metonymies serve a role within their respective culture, such as naturalising policies, promoting certain agendas, or supporting particular technological imaginaries. In other words, sociocultural functions explain why a certain metaphor appears in a given cultural context, what role it plays in discourse, and how it resonates with shared experiences, beliefs, and identities.

The starting point of this analysis is where metaphors primarily originate from: The English language and the West, particularly the United States and the United Kingdom, home to both the most widely adopted AI tools and the most circulated newspapers as sampled in this study, are the primary generators of both the technology and its attendant metaphorical repertoire, according to the earlier research of Gozzi (1994) and others. In this light, the Arab region can be conceptualised as both a secondary adopter of AI technologies and a secondary producer of AI metaphors. The region is faced with the task of adapting imported analogies to local cultural, political, and moral contexts. The process of metaphor circulation (Liu et al., 2024) from English to Arabic thus becomes a crucial site for identifying the sociocultural functions at play: which metaphors travel intact, which are selectively modified, and which are omitted altogether. The alterations to FEs, whether by addition, deletion, or recontextualisation, can offer evidence of how English technological discourse is modified through region-specific priorities. Equally important are the metaphors exclusive to the Arabic corpus, as these reflect conceptualisations that arise from within the sociocultural milieu

rather than from technological centres of production (The West). While the majority of metaphors occur in both corpora, it is the divergences, especially in frame-level instantiations and in culturally unique metaphorical constructs, that provide the most telling insights into how AI is culturally domesticated across contexts. These sociocultural functions are discussed thereafter in light of all previously stated findings.

The English and Arabic corpora exhibit overlapping metaphorical structures, ones that potentially first emerged in English and were borrowed into Arabic. These common metaphors, such as AI IS A BLACK BOX, BUILDING, TOOL, and MIND, among others, appear to be more explanatory or constitutive in nature, an issue that calls for a separate academic inquiry. It is the other metaphors, exclusive to either language, that may be more ideologically charged, which informs the focus on said exclusive metaphors in the present study, especially in the critical analysis of sociocultural functions.

Building on all analysed metaphors and metonymies, the English metaphors seem to oscillate between control and loss of agency. In this corpus, dominant metaphorical framings construct AI through binaries of utility versus threat and mastery versus mystery, resulting in the English discourse to frequently alternate between technophilia and technophobia. For example, the prevalence of human-centred metaphors, wherein Western developers and users are represented as FEs with agency and control, such as AI IS A STUDENT/TRAINEE, ASSISTANT, aligns AI with ideals of productivity and optimisation. These metaphors imply human control and gradual refinement. Contrariwise, uniquely English metaphors like AI IS A WITCH, THIEF, and

APOCALYPSE introduce suspicion, opacity, and danger. These metaphors function by externalising accountability and positioning AI as an autonomous or even malicious actor, which may help nurture discourses of anxieties that portray AI as a threat to transparency and control. The ORACLE and THERAPIST metaphors, while ostensibly positive, also gesture towards framing AI as emotionally intelligent or spiritually wise. In doing so, they tackle issues that border human-AI intimacy, dependency, and datafication of care. This polarity can be attributed to the possibility that AI is more of a public opinion case in the West. As the home of AI experimentation, people are more in contact with and subject to its effects. Henceforth, AI could be more polarising and polarised, and people adopt either an optimistic or a pessimistic sentiment. Another reason is the media's responsible role in emphasising both AI's benefits and drawbacks to inform the public highly susceptible to AI aftermath.

The analysis hints that AI in the Arab region, on the other hand, is more of a product and a national tool for progression. The Arabic corpus foregrounds a distinct set of themes that are comparatively more neutral and institutional in orientation. As prevailed by the Economic and Object Metaphors, it gestures towards a developmentalist mindset in which AI is constructed as a utility or a product. The use of these metaphors may nurture discourses of digital transformation and future visions, in which AI becomes a vehicle for modernisation.

To illustrate with examples, the uniquely Arabic metaphor AI IS A REVOLUTION is primarily positive in nature, and juxtaposes with the AI IS AN APOCALYPSE English counterpart. The Arabic human metaphors, second in

rank order, such as AI IS A CHILD/OFFSPRING and EMPLOYEE, support hierarchical relationships between humans and machines, wherein AI is positioned as a subordinate and a dependent. The SUPERHERO metaphor, uniquely present in Arabic, juxtaposes with the English counterpart by providing a more benign, more comical, and friendlier version of AI IS A SUPERBEING/ NATURAL EVOLUTION metaphor. Finally, Arabic spatial and temporal metaphors (e.g., ERA, WORLD) spatialise AI as a new physical domain, one that must be domesticated or integrated into existing socio-political realities, which suggests long-term societal restructuring rather than individual utility.

4.4 Rhetorical Interaction

This section addresses the fourth and final research question: *How do metaphorical and metonymic expressions interact with other rhetorical devices in shaping AI discourse in each respective culture?* To explore this, 10 randomly selected texts from both corpora were examined for patterns of rhetorical interplay. Examples from each corpus are presented and discussed in the following section to illustrate how metaphors and metonymies are usually deployed with other rhetorical devices that either reinforce or challenge them. While all sampled articles included a variety of rhetorical interplay, the focus of the present thesis is to analyse the specific rhetorical devices of contrast, repetition, and rhetorical questions, as observed in the practice of Charteris-Black (2011) and Hamilton (2012). Other niches of contrast, such as irony and antithesis, are also analysed and presented in Table 33 and Table 34. Both tables present 11 examples to illustrate a sample of the observed rhetorical interplay in all articles.

4.4.1 English Media: Rhetorical Interaction

Table 33 displays a sample of the analysed rhetorical strategies. It showcases how English metaphors and metonymies interact with other rhetorical strategies.

Table 33.

English Corpus: Rhetorical Interactions with Metaphors and Metonymies

Rhetorical Strategy	Quote	Relevant Metaphor/Metonym
Irony (contrast)	“The stupidity of AI”	“Artificial Intelligence”
Irony (contrast)	“It’s hard to think of anything more utterly stupid than artificial intelligence.”	“Artificial Intelligence”
Rhetorical Questions and Repetition	“How AI can bring productivity and prosperity, without putting people under more intense stress and pressure? How can it help us identify and deliver new opportunities, without exacerbating growing divides cross the country?”	AI is a double-edged sword
Contrast	“Of course, bad people will use A.I. to do harm, but most people are pretty decent and will use A.I. to learn more”	AI is a double-edged sword/ AI is a tool
Rhetorical Question	“Do we think the benefits outweigh the drawbacks?”	AI is a double-edged sword
Contrast-Historical Analogy-	Archived clip of John F. Kennedy: For space science, like nuclear science and all technology, has no conscience of its own. [...] sea of peace or a new terrifying theater of war.”	AI is a double-edged sword / AI is an arms race/ AI is a human/ the technology
Contrast - Antithesis	“Side of artists... or on the side of deep fakes”	AI is a creator / AI is a competitor
Contrast	Michael Ignatieff: “What we do is not processing. [...] It is a distinctively, incorrigibly human activity [...]”	AI is a mind/ algorithms
Metaphor (contrast)	“The brain is its own universe.”	AI is a mind
Contrast	[Angus Fletcher]: Some differences between human thinking and A.I. “thinking.”	AI is a mind
Contrast	“It is the product of an incredibly complex, mathematical ordering of the world, as opposed to the historical, emotional way in which humans order their thinking.”	AI is a mind Algorithms
Rhetorical Question	Somebody’s getting paid... so why not the guy who wrote Yesterday?	AI is a creator / AI is a competitor

Irony emerges as a striking device in the English corpus, particularly in sarcastic critiques of the term “Artificial Intelligence”. Such ironic expressions destabilise the term by exposing the dissonance between its exalted label and its perceived underperformance.

Contrast and antithesis are particularly salient in discussions that oppose “artists” to “deepfakes” (AI IS A CREATOR / AI IS A COMPETITOR) or “human thinking” to “AI thinking” (AI IS A MIND). The contrast in general has been used to juxtapose AI to humans in challenging the HUMAN metaphors. They emphasise the human consciousness, sentiment, and complex mental processing that cannot be mathematically duplicated by AI. This invites the reader to choose sides and position the metaphor as a site of ethical decision-making. Contrast in different forms, including irony and antithesis, mainly serves a dual purpose: to challenge the dominant anthropomorphism of AI and to highlight the good-bad dichotomy surrounding this discourse.

Rhetorical questions frequently interact with metaphors such as AI IS A DOUBLE-EDGED SWORD, which further foregrounds the polarising nature of the English discourse and invites audiences into a deliberative stance. Rhetorical questions are often employed in a repetitive structure that amplifies tension between AI’s promises of prosperity and its risks of inequality, which reinforces the metaphor’s ambivalent tone.

John F. Kennedy’s historical analogy that is embedded with forms of contrast further extends metaphorical frames by situating AI within legacies of transformative but contested technologies. Invocations of nuclear science and space exploration map AI onto trajectories of progress and peril. These

analogies strengthen metaphors and metonyms, such as AI IS A DOUBLE-EDGED SWORD, AI IS AN ARMS RACE and the technology, caution against both naïve optimism and neglect of ethical governance. It also challenges the metaphor AI IS A HUMAN in implying that it has no consciousness of its own.

In aggregate, these interactions illustrate that English media discourse does entangle metaphors and metonymies with other rhetorical devices. Crucially, these strategies reveal awareness of the metaphors in circulation: while some uses reinforce common metaphors, others destabilise and challenge them. The most reinforced metaphor in the sampled articles is AI IS A DOUBLE-EDGED SWORD, while the most challenged is AI IS A MIND.

4.4.2 Arabic Media: Rhetorical Interaction

Table 34 displays how the detected metaphors in the Arabic corpus interact with other rhetorical strategies.

Table 34.

Arabic Corpus: Rhetorical Interactions with Metaphors and Metonymies

Rhetorical Strategy	Quote	Relevant Metaphor/ Metonym
Contrast	اغتنام الفرص والتخفيف من المخاطر “Seizing opportunities and mitigating risks”	AI is a double-edged sword
Rhetorical Question	هل ينافس الذكاء الاصطناعي العلماء البشر على جوائز نوبل؟ “Does AI compete with human scientists for Nobel Prizes?”	AI is a competitor
Contrast	“It cannot replace humans ... لأنه لا يقدم تعاطف البشر because it does not provide human empathy”	AI is a competitor/ the robot
Rhetorical Question	هل تثق في الذكاء الاصطناعي؟ “Do you trust AI?”	AI is a black box / AI is a hallucinator
Contrast	البساطة مقابل التعقيد / الإبداع البشري مقابل الحسابات التقنية “Simplicity versus complexity / human creativity versus technical calculations”	AI is a tool/ AI is a human Algorithms

Rhetorical Strategy	Quote	Relevant Metaphor/ Metonym
Contrast	الذكاء الاصطناعي يسبق الإنسان... بينما البشر محدودون فيزيولوجيًا “AI surpasses humans... while humans are physiologically limited”	AI is a superhuman / AI is a competitor
Rhetorical Question	من المسؤول؟ “Who is responsible?”	AI is an object versus AI is a human (agency displacement) Personification-with-metonymy (all metonyms)
Contrast	الذكاء الاصطناعي لا يمكن أن يستبدل العناصر البشرية في التعليم؛ لأنه لا يقدم تعاطف البشر وتحفيزهم وتنشئتهم الاجتماعية “AI cannot replace human elements in education; it does not provide human empathy, motivation, or socialisation”	AI is an assistant/ AI is a competitor
Contrast	دماغ الإنسان بطيء ومعالجته ضعيفة، لكنه يتمتع بالمرونة والإبداع والتفكير الخلاق، وهو ما لا تملكه الحواسيب “The human brain is slow and weak in processing, but it possesses flexibility, creativity, and imaginative thinking, which computers lack”	AI is a mind (versus Human cognition) Automation/ algorithms
Paradox / Contrast	فهو يشبه الدماغ البشري ولا يشبهه في نفس اللحظة “It resembles the human brain and does not resemble it at the same time”	AI is a mind
Rhetorical Question	كيف تحمي وظيفتك من الذكاء الاصطناعي؟ “How do you protect your job from AI?”	AI is a competitor AI is a general threat

In the Arabic corpus, contrast emerges as the most recurrent device, which amplifies the internal dualities of dominant metaphors such as AI IS A DOUBLE-EDGED SWORD, AI IS A TOOL, and AI IS A MIND. Binary constructions (e.g., “creativity versus calculation” or “simplicity versus complexity”) intensify the ambivalence of these metaphors.

Arabic rhetorical questions function as dialogic devices in interplay with metaphors like AI IS A COMPETITOR or AI IS A BLACK BOX. Questions such as “Does artificial intelligence compete with human scientists for Nobel Prizes?” and “Who is responsible?” invite audiences to act as co-interpreters and position them as active participants in the ideological assessment of AI. Antithesis, a heightened form of contrast, similarly compels readers to align with one side of the dichotomy (e.g., privileging “human

creativity” over “technical calculation”) and thus situates metaphor as a site of ethical deliberation.

Collectively, the Arabic examples also demonstrate that metaphors are rarely employed in isolation. The way they interact with other rhetorical devices is further elaborated on in the following subsection.

4.4.3 Comparative Observations

A cross-cultural comparison of rhetorical interaction reveals both convergences and divergences in how English and Arabic media integrate metaphor and metonymy with broader rhetorical devices.

Convergences arise in the overall pattern that metaphors are not deployed in isolation. In both corpora, metaphors serve as cognitive frames that structure understanding, whereas rhetorical devices such as contrast, rhetorical questions and repetition either amplify their persuasiveness or attempt to destabilise them. In this sense, both traditions exhibit what Charteris-Black (2011) terms *metaphorical interaction*. For instance, the metaphor AI IS A DOUBLE-EDGED SWORD appears in both datasets and is reinforced through contrastive expressions that emphasise its ambivalence and invite readers to weigh opportunity against threat.

Yet divergences are equally telling. In the English corpus, the historical analogy (e.g., comparisons to nuclear science or space exploration) situate AI within legacies of technological transformation and embed metaphors like AI IS A DOUBLE-EDGED SWORD and AI IS AN ARMS RACE in narratives of Cold War rivalry or scientific triumph. These rhetorical choices lend English

discourse a more adversarial character, where metaphors are sometimes endorsed and sometimes contested.

By contrast, the Arabic corpus demonstrates a more consistent rhetorical pattern. Contrast remains dominant, but it is typically mobilised to consolidate rather than destabilise metaphorical framings. Dichotomies such as “creativity versus calculation” or “simplicity versus complexity” reinforce metaphors like AI IS A TOOL, and all object metaphors which are prominent in the Arabic corpus. Rhetorical questions, such as “Who is responsible?” may guide audiences toward consensus positions on responsibility.

In short, while English discourse exhibits a greater degree of reflexivity and contestation, using irony, rhetorical questions, and contrast to destabilise or problematise dominant metaphors, the Arabic discourse tends toward reinforcement, where rhetorical devices bolster metaphors. This comparative account of rhetorical interaction also complements the ideological patterns discussed in answering the third research question.

4.4.4 A Note on Rhetorical Interaction and Reflexivity

It must be noted that the analysis of rhetorical interaction in this study only scratches the surface of a wider discursive phenomenon. The interplay of metaphors and metonymies with other rhetorical devices gestures toward a broader network of meaning-making practices in media discourse; ones that exceed the scope of this thesis. While it is not the task of the present author to account for all possible rhetorical or ideological mechanisms at work, the illustrative examples provided here serve to demonstrate that metaphors

and metonymies can be both reinforced or challenged by other rhetorical devices.

It should also be noted that this analysis is informed by the researcher's cultural background and theoretical lens. While every effort has been made to ground claims in the corpus, and the specific context of all metaphors and metonymies, it is acknowledged that metaphor analysis is inherently interpretive, and biases of mother tongue and origin may affect the findings. The author also acknowledges that exposure to previous research on the subject matter has undeniably guided some of the findings.

4.5 Comparison of the Present Study's Results to Previous Research

This subsection is dedicated to situating this study's findings within the broader academic canon and comparing them to the studies summarised in the literature review section.

A starting point would be to compare the detected metaphors to the ones identified by Kövecses (2010, 2002) and Lakoff and Johnson (1980) as common metaphorical sources that help us understand most common abstract and intricate phenomena. These sources are the human body (AI IS A MIND), animals (AI IS A BEAST), plants (AI IS A LIVING ORGANISM), buildings (AI IS A BUILDING), machines and tools (AI IS A TOOL), games and sports (AI IS A COMPETITIVE GAME), forces (AI IS A NATURAL FORCE), health (AI IS A VIRUS) and direction (AI IS A RACE/JOURNEY). All these sources are organised human experiences (Kövecses, 2002) and have been recognised in literature by eminent scholars.

Focusing on recent AI discourse studies as the subject of the present thesis, the metaphorical and metonymic patterns identified thus far align with, and further nuance, existing scholarship. Nguyen (2024) similarly identifies common metaphors, namely HUMAN BEING, ANIMAL, and NATURAL FORCE. Under AI development, it identifies RACE and WAR. Some of the metaphors in the present study have been similarly identified by Ye and Li (2024), namely BUILDING, HUMAN, OBJECT, and JOURNEY. Some of their metaphors (e.g., COMPETITIVE GAME versus SPORTS AND CONTAINER versus BLACK BOX, MONEY versus ASSET) share some conceptual similarities with the ones identified in the present thesis.

Besides presenting metaphors, many scholars have analysed their sociocultural functions and criticised them. AI discourse is full of metaphors that exaggerate its autonomy and agency (Bones et al., 2021; Rehak, 2021). The common anthropomorphism of AI, which some scholars referred to as a trope in news coverage (Bunz & Braghieri, 2021), is well-documented in the human metaphor conceptual key of the present study, and all subordinate metaphors. In a previous analysis of a sample of UK- and US-based news outlets, this anthropomorphism served to depict AI as somewhat superior to human experts (EPRS, 2021; Bunz & Braghieri, 2021; Ye & Li, 2024). In the present study, this culminates in the AI IS A SUPERBEING/ NATURAL EVOLUTION metaphor. Notwithstanding the examples in which AI is depicted as an assistant and a subordinate that enhances human performance, common UK and US framing practices of anthropomorphism imply AI superiority in a problematic manner (Nguyen & Hekman, 2024; Nguyen, 2024; Ye & Li, 2024; EPRS, 2021). Nguyen and Hekman (2024) argue that the problematic nature of this arises from two concerns. First, depicting AI as superior to

humans obscures its fundamentally human-made character and the extent to which it reflects the biases of its creators. Second, the anthropomorphisation of AI facilitates the deflection of questions concerning accountability and responsibility away from its developers, a process they described as black-boxing. The EPRS (2021) suggests another potential drawback to this anthropomorphism; it may constrain how AI is conceptualised and discussed, as users struggle to frame the subject in alternative terms. This drawback, in turn, can hinder the exploration of other possible directions for its development.

In addition to anthropomorphism, technology has long been understood in metaphorical comparison to the human body and its functions (McLuhan, 1964). The enduring dominance of the computational metaphor AI IS A BRAIN (approximately 10% in each corpus) has been widely documented as one of the most influential cognitive models (McLuhan, 1964; Carbonell et al., 2016; Baria & Cross, 2021; EPRS, 2021). By extension, the common terms used to describe AI operations as documented and criticised by Bones et al. (2021), EPRS (2021), and other scholars, such as “brain”, “memory”, “neural networks”, and “learning”, are detected in both corpora. Within the biomedical schema, Ungerer and Schmid (2006) identified computing metaphors such as BUG or VIRUS that make technological malfunctions more relatable by mapping familiar concepts (illness, infection) onto abstract technological issues. The AI IS A HALLUCINATOR (English and Arabic) similarly explains AI models' malfunctions by mapping them onto human pathology.

English AI discourse has been described as polarised, as the tension between harm and benefit has been emphasised in previous studies (Nguyen & Hekman, 2024). The present study finds that AI IS A HUMAN BEING and AI IS AN OBJECT are two prominent conceptual keys in both corpora, which reflects the broader polarity where AI is anthropomorphised in some narratives and instrumentalised, or reified in others. Ye and Li (2024) attribute the use of object metaphors and the general reification of AI to the depiction of AI as a business product, the desire to maximise its utilitarian value, and treat it as human-dependent. They also juxtapose this with the HUMAN metaphors. This duality mirrors the progress-versus-risk framing dichotomy discussed by Nguyen and Hekman (2024) and Nguyen (2024), in which AI is alternately celebrated as a tool for innovation or cautioned against as a source of harm, which specifically renders the English discourse as a highly polarised one.

In the present thesis, these dichotomies were echoed in both corpora but appear to be more extreme in the English discourse. Nguyen and Hekman discuss these dichotomies along two temporal trajectories. The first of which is a vaguely defined future in which different scenarios along the greyscale between utopian and dystopian visions are put forward. The second of which is the present, in which the benefits and risks of AI are already observable (2024). Both of these trajectories are reflected in the English metaphors detected in this study, especially AI IS A DYSTOPIA, AI IS AN ORACLE, and AI IS A WITCH.

The policy and legal discourse also reflects this ideological tension. For instance, the EPRS (2021), Ye and Li (2024), and Kajava and Sawhney (2023) delineate other environmental and social metaphors, such as AI AS A JOURNEY, AI AS A RACE, and AI AS A FORCE, which carry ideological implications of directionality, competition, and urgency. This is also reflected in the politics, competition, and weapon frames common in English AI media discourse (Nguyen & Hekman, 2024). The present findings confirm that such metaphors are not only present but culturally reframed: in English texts, RACE metaphors often invoke technological supremacy and East/West war for dominance. The Arabic discourse, on the other hand, recontextualised it to reflect regional aspiration. The EU Parliament (EPRS, 2021) and scholars like Baria and Cross (2021) have critiqued militarised and competitive metaphors (e.g., AI ARMS RACE, AI IS A TERMINATOR), under the premise that these framings distort policy priorities by inflating threats or overpromising capabilities.

The NATURAL FORCE metaphor may provoke familiarity with the audience because, throughout history, humans have managed to deal with nature, and thus have enough experience in source mapping. Verbal extensions of the NATURAL FORCE metaphor, such as waves, tides, and storms, are usually associated with an uncontrollable and unpredictable power that impacts human life, which renders it effective in illustrating AI influence (Nguyen, 2024; Ye & Li, 2024).

In response to the limitations posited by the use of some problematic AI metaphors, several studies propose reframing efforts. For example, Roe et al. (2024) advocate pedagogically driven metaphors such as AI AS A

BLACK BOX, MAP, or FUNHOUSE MIRROR, two of which were also detected in the corpus (BOX in both corpora and MIRROR in the English one). For metonymy, all instances were used as personification-with-metonymy, which attributes agency to AI, in line with Kajava and Sawhney (2023).

The next chapter summarises the findings, draws together their theoretical and practical implications, and outlines directions for future research.

Chapter Five

Conclusion

Chapter Five

Conclusion

The concluding chapter summarises the main findings, reflects on their theoretical and practical implications, and proposes recommendations for future research.

This study has undertaken a cross-cultural comparative investigation into the cognitive rhetoric underpinning the conceptualisation of AI in Arab and Western media. Drawing on two purposively sampled corpora and grounded in an integrated theoretical framework that synergises CMT, ECMT, and CMA, the present research examined how metaphors and metonymies conceptualise AI, reflect sociocultural functions, and interact with broader rhetorical strategies.

The findings addressed four interrelated research questions. First, a comprehensive identification and categorisation of metaphorical and metonymic expressions revealed both overlapping and distinct metaphorical patterns across the two corpora. All metaphors were categorised under five conceptual keys: Human, Living Organism, Social/Event, Spatial/Temporal and Economic/Object metaphors. The English corpus leaned more heavily on human-based metaphors, which resulted in the anthropomorphisation of AI, whereas the Arabic discourse drew more extensively on object-based metaphors, thereby reifying AI as a tool or resource more than its English counterpart. Arabic media also employed Human metaphors as the second most dominant conceptual key. However, the qualitative nature of these

metaphors differed in orientation from those detected in the English corpus. Under the conceptual keys, many metaphors were found in both corpora, though their percentages and lexical realisations varied. Both corpora also had unique metaphors which served to highlight cultural and ideological differences. Second, the analysis of the frame-level structures illuminated how these metaphors are scaffolded by culturally specific conceptual frames and FEs. While some metaphors shared between Arabic and English employed common frames and FEs and unique metaphors employed distinct frames and FEs, some metaphors appeared in both corpora with distinctions in FEs. These distinctions also served to highlight cultural and ideological differences. Third, the sociocultural function analysis revealed clear cultural divergences in how AI is positioned within public discourse. The English corpus oscillated between technophilia and technophobia, which gave rise to a markedly polarised discourse. This polarity was anchored in the good–bad dichotomies, evident in metaphors such as AI IS AN ORACLE/ AI IS A WITCH, and AI IS A SUPERBEING on the one extreme, and AI IS AN APOCALYPSE on the other extreme. Such polarisation reflects the sociocultural reality that the Western world is at the forefront of AI experimentation and adoption, which makes the Western public more directly susceptible to both the benefits and the risks of emerging technologies. By contrast, the Arabic corpus was characterised by a more neutral stance. AI was predominantly framed as an object. The prominence of AI IS A TOOL and all object metaphors reflected this orientation. Rather than polarisation, the discourse emphasised managed optimism in which AI was positioned as a vehicle for progress. Fourth, the rhetorical analysis demonstrated that metaphors and metonymies did not function in isolation but interacted dynamically with other rhetorical strategies. In the

English corpus, rhetorical devices such as irony, rhetorical questioning, and historical analogy often challenged and destabilised the detected metaphors and metonymies. By contrast, the Arabic corpus showed rhetorical devices working largely to reinforce the Arabic metaphors and metonymies, which reveals more consensus but less awareness of the metaphors in circulation in the Arabic discourse.

5.1 Theoretical and Practical Contributions

This study contributes to both the theoretical and practical aspects of research. It theoretically extends ECMT and CMA by operationalising them in tandem across different corpora. It also advances ECMT by showing how metaphors' frame-level structures and FEs vary across languages and cultures. Methodologically, it presented a unique mutli-stage method of data analysis that is informed by both CMA and ECMT and offered a replicable approach for future metaphor studies in multilingual settings. This study also attempts to bridge several gaps in literature as detailed in Chapter Two of the present thesis.

On a practical level, this study offers value for media practitioners, policymakers, educators, and AI developers. For media professionals, it stresses the importance of more culturally sensitive storytelling and provides insight into how figurative framing can either promote or hinder public engagement with AI (Nguyen & Hekman, 2024). It also highlights the role of the media as a cultural intermediary and emphasises the need to develop intentional and inclusive narratives that connect technical expertise with the wider public (Wyatt, 2021). For Arab media and policymakers in particular, the study calls for developing metaphors that reflect local values and

aspirations, thereby ensuring that the local AI discourse resonates with regional identities and developmental goals. Policymakers and educators alike may also benefit from insights into how language influences attitudes toward regulation and integration, and the necessity to test and prescribe new metaphors in line with national and educational objectives. Furthermore, Critical AI Literacy (CAIL) frameworks could be introduced in the Arabic classrooms, informed by the findings of the present study. For AI developers, these findings offer a reminder of how public trust in technology is shaped not only by functionality and performance but also by the rhetorical narratives that surround it. More broadly, this research contributes to efforts to democratise technological discourse by illustrating how cognitive and rhetorical strategies shape access to knowledge, ideological framing, and public trust. These factors are increasingly recognised as essential for ensuring the ethical and equitable development of emerging technologies (Floridi et al., 2018).

5.2 Limitations of the Study

Like all research endeavours, the present study is subject to several limitations that merit critical reflection. These limitations pertain primarily to the scope of data, the nature of metaphorical and metonymic expressions analysis, the complexity of the adopted theoretical frameworks, and the interpretive positioning of the researcher, such as the influence of the mother tongue. Acknowledging said limitations is necessary for transparency, contextualising the findings, and delineating the scope of their applicability. First, the data's temporal scope, limited to the past four years, privileges contemporary framings while potentially overlooking diachronic shifts in

metaphorical conceptualisation. The relatively small size of data concerning metonymy, especially when compared to the more frequent use of metaphor, warrants caution in drawing conclusions. The limited number of instances weakens the evidential basis for many potential claims in comparative analysis, which explains why metonymy has not been adequately addressed in the present thesis. Second, the purposive sampling suggests the potential for media selection bias, a limitation that may, in turn, influence the diversity of metaphorical and metonymic expressions recorded in the data, thereby potentially constraining the generalisability of the findings. Third, despite the systematic procedures adopted for metaphor and metonymy identification, interpretive subjectivity remains an unavoidable aspect of qualitative metaphor research (Imani, 2022), especially in cross-cultural contexts where figurative language is embedded in deeply localised schemas and communication norms. Fourth, while the dual-theoretical integration of ECMT and CMA offers greater contextual and schematic sensitivity, it still brings analytic complexity. Operationalising frame-level structures across two languages and cultures demanded interpretive judgements that could not exhaust all possible variables. Fifth, and crucially, the lack of formalised linguistic resources for Arabic, such as a robust Arabic FrameNet, posed a substantive methodological limitation. The absence of culturally sensitive and linguistically rich NLP tools that can handle Arabic metaphor and metonymy with precision further restricted the scope of computational analysis. This limitation is especially pronounced considering the context-sensitive and culturally embedded nature of figurative language. Finally, as with all qualitative analysis, the researcher's positionality, which includes but is not limited to language proficiency, cultural familiarity, and interpretive framing,

inevitably influences the analysis. However, reflexivity and methodological transparency were upheld throughout to mitigate this effect.

5.3 Directions for Future Research

Future research may expand on this study along several promising trajectories. A key recommendation is to build larger and more temporally diverse corpora, which would allow for the tracking of metaphor evolution and the emergence of new frames as AI technology and its surrounding discourse continue to unfold. This is especially pivotal for a more effective analysis of metonymy. Due to being used comparatively less than metaphors, expanding the corpus will give grounds to any potential claims and enable more informed and justified conclusions regarding the use and function of metonymy in AI discourse.

Another recommendation is to create and incorporate advanced NLP tools for metaphorical detection, as this could enhance precision and scalability. This is pronounced in Arabic contexts due to the perceived lack of NLP tools capable of detecting figurative language.

Additionally, future research may investigate translated metaphors and cross-linguistic metaphor circulation. The present study's preliminary observation that Arabic media may import English-origin metaphors, attributable to the West's role in both AI development and narrative primacy, warrants further examination. In this regard, the methodology proposed by Liu et al. (2024) that combines corpus linguistics and multimodal CDA to trace time-stamped, cross-linguistic metaphor circulation, offers a compelling

blueprint for future endeavours. Their methodology could illuminate both the textual importation of metaphors and the mechanisms by which cultural factors reframe their reception in local contexts.

Furthermore, greater attention should be given to the directionality of metaphor movement. Evident in the early research of Gozzi (1994) and others, English media, particularly American and British, not only generate widely circulated metaphors but also function as the conceptual centre of AI discourse. This dynamic places Arab media at the intersection of adapting imported metaphors to the local context and producing context-specific metaphors that are rooted in local sociocultural norms. Future research could thus bring more attention to which metaphors move intact, which are modified, and which are omitted altogether. Such patterns would provide crucial evidence of how technological imaginaries are domesticated, resisted, or hybridised in the process of cross-cultural circulation.

References

- Albufalasa, M., & Vorobeva, Y. (2020). Realizations of conceptual metaphors of anger in Arabic, Russian and English: A contrastive corpus-based approach. *International Journal of English Linguistics*, 10(6), 264–274. <https://doi.org/10.5539/ijel.v10n6p264>
- Almaany. (n.d.). *Arabic–English dictionary*. Retrieved June 11, 2025, from <https://www.almaany.com/en/dict/ar-en/>
- Alshater, M. (2022). *Exploring the role of artificial intelligence in enhancing academic performance: A case study of ChatGPT* [Preprint]. SSRN. <https://doi.org/10.2139/ssrn.4312358>
- Anderson, S. S. (2023). “Places to stand”: Multiple metaphors for framing ChatGPT's corpus. *Computers and Composition*, 69, 102338. <https://doi.org/10.1016/j.compcom.2023.102338>
- Andor, J. (2010). George Lakoff's theories on language and thought: An appraisal. *Annual Review of Cognitive Linguistics*, 8(1), 219–248.
- Barcelona, A. (Ed.). (2003). *Metaphor and metonymy at the crossroads: A cognitive perspective*. Mouton de Gruyter.
- Barcelona, A. (2011). Reviewing the properties and prototype structure of metonymy. In R. Benczes, A. Barcelona, & F. J. Ruiz de Mendoza Ibáñez (Eds.), *Defining metonymy in cognitive linguistics* (pp. 7–58). John Benjamins Publishing Company.

- Baria, A. T., & Cross, K. (2021). *The brain is a computer is a brain: Neuroscience's internal debate and the social significance of the computational metaphor* [Preprint]. arXiv:2107.14042.
- Bones, H., Ford, S., Hendery, R., Richards, K., & Swist, T. (2021). In the frame: The language of AI. *Philosophy & Technology*, 34 (Suppl 1), 23-44.
- Bucher, T. (2017). The algorithmic imaginary: Exploring the ordinary affects of Facebook algorithms. *Information, Communication & Society*, 20(1), 30–44.
- Bucher, T. (2018). *If...Then: Algorithmic power and politics in the age of big data*. Oxford University Press.
- Bunz, M., & Braghieri, M. (2021). The AI doctor will see you now: Assessing the framing of AI in news coverage. *AI & Society*, 37, 9–22. <https://doi.org/10.1007/s00146-021-01145-9>
- Burke, K. (1966). *Language as symbolic action*. University of California Press.
- Catalano, T., & Waugh, L. R. (2013). The ideologies behind newspaper crime reports of Latinos and Wall Street/CEOs: A critical analysis of metonymy in text and image. *Critical Discourse Studies*, 10(4), 406–426. <https://doi.org/10.1080/17405904.2013.813774>
- Charteris-Black, J. (2004). *Corpus approaches to critical metaphor analysis*. Palgrave Macmillan.

- Charteris-Black, J. (2005). *Politicians and rhetoric: The persuasive power of metaphor*. Palgrave Macmillan.
- Charteris-Black, J. (2011). *Politicians and rhetoric: The persuasive power of metaphor* (2nd ed.). Palgrave Macmillan.
- Chown, E., & Nascimento, F. (2023). *Meaningful Technologies: How Digital Metaphors Change the Way We Think and Live*. Lever Press.
<https://doi.org/10.3998/mpub.12668201>
- de Guerrero, M. C. M., & Villamil, O. S. (2002). Metaphorical conceptualizations of ESL teaching and learning. *Language Teaching Research*, 6(2), 95–120. <https://doi.org/10.1191/1362168802lr101oa>
- Eadon, T., & Wood, R. (2024). Framing environmental crises through metaphor: The role of media in shaping perceptions of climate change. *Environmental Communication Quarterly*, 20(1), 45–63.
- European Parliamentary Research Service. (2021). *What if we chose new metaphors for artificial intelligence?* European Union.
[https://www.europarl.europa.eu/RegData/etudes/ATAG/2021/690024/EPRS_ATA\(2021\)690024_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2021/690024/EPRS_ATA(2021)690024_EN.pdf)
- Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51–58.
<https://doi.org/10.1111/j.1460-2466.1993.tb01304.x>
- Fauconnier, G. (1994). *Mental spaces: Aspects of meaning construction in natural language*. Cambridge University Press.

- Fauconnier, G., & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities*. Basic Books.
- Fairclough, N. (1995a). *Critical discourse analysis: The critical study of language*. Longman.
- Fairclough, N. (1995b). *Media discourse*. Edward Arnold.
- Ferreira, G. M. dos S., Lemgruber, M. S., & Cabrera, T. L. (2023). From didachography to AI: Metaphors teaching is automated by. *Journal of Interactive Media in Education*, 2023(1), 5.
<https://doi.org/10.5334/jime.798>
- Fillmore, C. J. (1968). The case for case. In E. Bach & R. T. Harms (Eds.), *Universals in linguistic theory* (pp. 1–88). Holt, Rinehart, & Winston.
- Fillmore, C. J. (1982). Frame semantics. In Linguistic Society of Korea (Ed.), *Linguistics in the morning calm* (pp. 111–137). Hanshin Publishing Company.
- Fillmore, C. J. (2008). Frame semantics. In D. Geeraerts & H. Cuyckens (Eds.), *The Oxford handbook of cognitive linguistics* (pp. 373–400). Oxford University Press.
- Fillmore, C. J., & Baker, C. F. (2009). A frames approach to semantic analysis. In B. Heine & H. Narrog (Eds.), *The Oxford handbook of linguistic analysis* (pp. 313–340). Oxford University Press.
- FrameNet. (n.d.). *FrameNet: A lexical database of English*. International Computer Science Institute. <https://framenet.icsi.berkeley.edu>

- Furze, L. (2024, July 19). *AI metaphors we live by: The language of artificial intelligence*. Leon Furze.
<https://leonfurze.com/2024/07/19/ai-metaphors-we-live-by-the-language-of-artificial-intelligence/>
- Geeraerts, D. (2010). *Theories of lexical semantics*. Oxford University Press.
- Gibbs, R. W. (1994). *The poetics of mind: Figurative thought, language, and understanding*. Cambridge University Press.
- Gibbs, R. W. (2006). *Embodiment and cognitive science*. Cambridge University Press.
- Gibbs, R. W. (2008). Metaphor and thought: The state of the art. In Gibbs R. W. (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 3–14). Cambridge University Press.
<https://doi.org/10.1017/CBO9780511816802.002>
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Harper & Row.
- Google. (n.d.). [Search query: the age of AI]. Google.
<https://www.google.com/search?q=the+age+of+AI>
- Gozzi Jr, R. (1994). A Note on the Metaphorically Charged Discourse of Early Artificial Intelligence. *Metaphor and Symbol*, 9(3), 233-240.
- Gupta, A., Atef, Y., Mills, A., & Bali, M. (2024). Assistant, parrot, or colonizing loudspeaker? ChatGPT metaphors for developing critical AI literacies. *Open Praxis*, 16(1), 37–53.
<https://doi.org/10.55982/openpraxis.16.1.631>

- Hamilton, C. (2012). Tony Blair's cognitive rhetoric. In A. Kwiatkowska (Ed.), *Texts and minds: Papers in cognitive poetics and rhetoric* (pp. 201–225). Peter Lang.
- Hellsten, I. (2002). The politics of metaphor: Biotechnology and biodiversity in the media. *Science Communication*, 24(1), 41–56.
- Hu, C., & Xu, Y. (2017). War metaphor in the Chinese economic media discourse. *Higher Education Studies*, 7(1), 94–99.
<https://doi.org/10.5539/hes.v7n1p94>
- Imani, A. (2022). Critical metaphor analysis: A systematic step-by-step guideline. *LSP International Journal*, 9(1), 1–15.
<https://doi.org/10.11113/lspi.v9.17975>
- Imperiale, M. G., & Phipps, A. (2022). Cuts destroy, hurt, kill: A critical metaphor analysis of the response of UK academics to the UK overseas aid budget funding cuts. *Global Discourse*, 12(1), 61–77.
<https://doi.org/10.1080/17447143.2021.2024838>
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason*. University of Chicago Press.
- Ju, Y.-M. (2010). A study of Kenneth Burke's philosophy of language from his concept of "terministic screen." *Modern Foreign Languages*, 33(1), 39–47.
- Kajava, K., & Sawhney, N. (2023). Language of algorithms: Agency, metaphors, and deliberations in AI discourses. In S. Lindgren (Ed.),

- Handbook of Critical Studies of Artificial Intelligence* (pp. 224–236).
Edward Elgar. <https://doi.org/10.4337/9781803928562.00025>
- Komatsubara, T. (2023). Multi-layered metaphorical framings of the
COVID-19 pandemic in newspaper articles. In A. Musolff & H. Z.
Yang (Eds.), *Framing and metaphor in media discourse* (pp.
274–290). Routledge. <https://doi.org/10.4324/9781003289746-23>
- Kövecses, Z., & Radden, G. (1998). Metonymy: Developing a cognitive linguistic
view. *Cognitive Linguistics*, 9(1), 37–78.
<https://doi.org/10.1515/cogl.1998.9.1.37>
- Kövecses, Z. (2002). *Metaphor: A practical introduction* (1st ed.). Oxford
University Press.
- Kövecses, Z. (2005). *Metaphor in culture: Universality and variation*.
Cambridge University Press.
- Kövecses, Z. (2009a). Aspects of metaphor in discourse. *Belgrade English
Language and Literature Studies*, 1(1), 85–91.
- Kövecses, Z. (2009b). Metaphor, culture, and discourse: The pressure of
coherence. In A. Musolff & J. Zinken (Eds.), *Metaphor and discourse*
(pp. 11–24). Palgrave Macmillan.
https://doi.org/10.1057/9780230594647_2
- Kövecses, Z. (2010). *Metaphor: A practical introduction* (2nd ed.). Oxford
University Press.

- Kövecses, Z. (2015a). *Where metaphors come from: Reconsidering context in metaphor*. Oxford University Press.
- Kövecses, Z. (2015b). *Context in cultural linguistics: The case of metaphor*. Department of American Studies, Eötvös Loránd University.
- Kövecses, Z. (2017a). Context in cultural linguistics: The case of metaphor. In F. Sharifian (Ed.), *Advances in cultural linguistics* (pp. 307–323). Springer. https://doi.org/10.1007/978-981-10-4056-6_14
- Kövecses, Z. (2017b). *The Interplay Between Metaphor and Culture*. Peter Lang International Academic Publishers.
<https://doi.org/10.3726/b10542>
- Kövecses, Z. (2017c). Levels of metaphor. *Cognitive Linguistics*, 28(2), 321–347. <https://doi.org/10.1515/cog-2017-0010>
- Kövecses, Z. (2020). *Extended Conceptual Metaphor Theory*. Cambridge University Press.
- Kuhn, T. S. (1993). *The structure of scientific revolutions*. University of Chicago Press.
- Kwiatkowska, A. (2012). From the editor. In A. Kwiatkowska (Ed.), *Texts and minds: Papers in cognitive poetics and rhetoric* (pp. 7–10). Peter Lang.
- Lakoff, G. (1987). *Women, fire, and dangerous things: What categories reveal about the mind*. University of Chicago Press.

- Lakoff, G. (1991). *Metaphor and war: The metaphor system used to justify war in the Gulf*. George Lakoff's homepage.
<http://georgelakoff.com/metaphor-and-war>
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought*. Basic Books.
- Lakoff, G. (1996). *Moral politics: How liberals and conservatives think*. University of Chicago Press.
- Lakoff, G. (2004). *Don't think of an elephant!: Know your values and frame the debate*. Chelsea Green Publishing.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.
- Lakoff, G., & Turner, M. (1989). *More than cool reason: A field guide to poetic metaphor*. University of Chicago Press.
- Landau, M. J., Meier, B. P., & Keefer, L. A. (2018). A metaphor-enriched social cognition framework for understanding moral judgments. *Psychological Bulletin*, 144(6), 497–520.
- Langacker, R. W. (1987). *Foundations of cognitive grammar: Theoretical prerequisites* (Vol. 1). Stanford University Press.
- Li, Z.-Y., & Fang, X.-Z. (2003). *Luxing renzhi moxing yu yinyi gongneng de yinyu* [Ideal cognitive model and pragmatic function of metonymy]. *Shandong Waiyu Jiaoxue*, 3, 53–57.
<https://doi.org/10.3969/j.issn.1002-2643.2003.03.012>

- Liu, Y., Li, D., & Feng, J. (2024). Incorporating cross-linguistic and time-based dimensions to Critical Metaphor Analysis: A specialised hands-on analytical approach. *Critical Discourse Studies*.
<https://doi.org/10.1080/17405904.2024.2400874>
- Liu, Y.-M. (2008). *Xifang xiuci shi* [History of Western rhetoric]. Foreign Language Teaching and Research Press.
- Luokkanen, M., & Huttunen, T. (2014). The metaphorical framing of technology in media discourse: A study of artificial intelligence narratives. *New Media & Society*, 16(5), 643–662.
- Maalej, Z. (2007). The heart and cultural embodiment in Tunisian Arabic. *Discourse & Society*, 18(1), 77–96.
- McCarthy, J., Minsky, M., Rochester, N., & Shannon, C. E. (1955). *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence*.
<http://www-formal.stanford.edu/jmc/history/dartmouth/dartmouth.html>
- McGrath, I. (2006). Using insights from teachers' metaphors. *Journal of Education for Teaching*, 32(3), 303–317.
<https://doi.org/10.1080/02607470600782443>
- McLachlan, M. (2021). Neoliberal rules: A critical multimodal analysis of metonymy on high school webpages. *Linguistics and Education*, 65, 100957. <https://doi.org/10.1016/j.linged.2021.100957>
- McLuhan, M. (1964). *Understanding media: The extensions of man*. McGraw-Hill.

- Musolff, A. (2016). *Political metaphor analysis: Discourse and scenarios*. Bloomsbury Academic.
- Musolff, A. (2023). Metaphor and political communication: Mapping the rhetoric of public debates. *Discourse & Society*, 34(2), 167–185.
- Nguyen, D., & Hekman, E. (2024). The news framing of artificial intelligence: A critical exploration of how media discourses make sense of automation. *AI & Society*, 39(2), 437–451.
<https://doi.org/10.1007/s00146-022-01511-1>
- Nguyen, T. M. (2024). Conceptual metaphors of artificial intelligence and AI development in *The Guardian* newspaper. *VNU Journal of Foreign Studies*, 40(4), 128–141.
<https://doi.org/10.63023/2525-2445/jfs.ulis.5345>
- Oakley, T. (2005). Force-dynamic dimensions of rhetorical effect. In B. Hampe (Ed.), *From perception to meaning: Image schemas in cognitive linguistics* (pp. 444–473). Mouton de Gruyter.
- Ottati, V., Rhoads, S., & Graesser, A. C. (1999). The effect of metaphor on processing style in a persuasion task: A motivational resonance model. *Journal of Personality and Social Psychology*, 77(5), 688–697.
<https://doi.org/10.1037/0022-3514.77.5.688>
- Oxford University Press. (n.d.). *Oxford English Dictionary*. Retrieved June 11, 2025, from <https://www.oed.com/>
- Panther, K.-U., & Radden, G. (1999). *Metonymy in language and thought*. John Benjamins Publishing.

- Potapenko, S. (2016). Cognitive rhetoric of effect: Energy flow as a means of persuasion in inaugurals. *Topics in Linguistics*, 17(2), 12–25.
- Pragglejaz Group, (2007). MIP: A Method for Identifying Metaphorically Used Words in Discourse. *Metaphor and Symbol*, 22(1), 1–39.
<https://doi.org/10.1080/10926480709336752>
- Princeton University. (2010). *WordNet: A lexical database for English* (Version 3.0) [Data set]. <https://wordnet.princeton.edu/>
- Rakova, M. (2002). The philosophy of embodied realism: A high price to pay? *Cognitive Linguistics*, 13(3), 215–244.
<https://doi.org/10.1515/cogl.2002.015>
- Radden, G., & Kövecses, Z. (1999). Towards a theory of metonymy. In K.-U. Panther & G. Radden (Eds.), *Metonymy in language and thought* (pp. 17–59). John Benjamins.
<https://doi.org/10.1075/hcp.4.03rad>
- Rehak, R. (2021). The language labyrinth: Constructive critique on the terminology used in the AI discourse. In P. Verdegem (Ed.), *AI for everyone? Critical perspectives* (pp. 87–102). University of Westminster Press. <https://doi.org/10.16997/book55.f>
- Roe, J., Furze, L., & Perkins, M. (2024). *Funhouse mirror or echo chamber? A methodological approach to teaching critical AI literacy through metaphors* [Preprint]. James Cook University Singapore, Deakin University, and British University Vietnam.

- Saban, A. (2006). Functions of metaphor in teaching and teacher education: A review essay. *Teaching education*, 17(4), 299–315.
- Santa Ana, O. (2002). *Brown tide rising: Metaphors of Latinos in contemporary American public discourse*. University of Texas Press.
- Schmitt, R. (2005). Systematic metaphor analysis as a method of qualitative research. *The Qualitative Report*, 10(2), 358–394.
<https://doi.org/10.46743/2160-3715/2005.1854>
- Sharifian, F. (2015). Cultural Linguistics and world Englishes. *World Englishes*, 34(4), 515–532. <https://doi.org/10.1111/weng.12156>
- Si, J. (2018). *Jiyu yinyu shijiao de xinwen huayu pipan fenxi* [Critical discourse analysis of news discourse from the perspective of metonymy]. *Modern Linguistics*, 6(3), 532–538.
<https://doi.org/10.12677/ml.2018.63062>
- Sperber, D. (1975). Rudiments de rhétorique cognitive. *Poétique*, 6(6), 389–415.
- Steen, G. (2007). *Finding metaphor in grammar and usage: A methodological analysis of theory and research*. John Benjamins.
- Steen, G. J. (2008). The paradox of metaphor: Why we need a three-dimensional model of metaphor. *Metaphor and Symbol*, 23(4), 213–241.

- Steen, G. J. (2011). What does really deliberate metaphor mean? More than a cognitive linguistic perspective. In H. Colston & A. Katz (Eds.), *Figurative language comprehension: Social and cultural influences* (pp. 59–78). Lawrence Erlbaum Associates.
- Steen, G. J. (2013). Deliberate metaphor affords conscious metaphorical thought. *Journal of Cognitive Semiotics*, 5(1–2), 179–197.
- Stocchetti, M. (2023). A matter of meaning, life, and death: Text, AI, and the human condition. *Hipertext.net*, 26, 77–81.
<https://doi.org/10.31009/hipertext.net.2023.i26.12>
- Sudajit-apa, M. (2017). A critical metaphor analysis of disability identity and ideology in the Thai undergraduates' home for children with disabilities website project. *Journal of Language and Politics*, 16(5), 674–694.
- Sullivan, K. (2023). Three levels of framing. *Wiley Interdisciplinary Reviews: Cognitive Science*. Advance online publication.
<https://doi.org/10.1002/wcs.1651>
- Talmy, L. (1988). Force dynamics in language and cognition. *Cognitive Science*, 12(1), 49–100. https://doi.org/10.1207/s15516709cog1201_2
- Terwiesch, C. (2023). Would chat GPT3 get a Wharton MBA. *A prediction based on its performance in the operations management course*.
- Turner, M. (1987). *Death is the mother of beauty: Mind, metaphor, criticism*. University of Chicago Press.

- Turner, M. (1991). *Reading minds: The study of English in the age of cognitive science*. Princeton University Press.
- UNESCO. (n.d.). *AI Competency Framework for Students*.
<https://www.unesco.org/en/articles/ai-competency-framework-students>
- Ungerer, F., & Schmid, H. J. (2006). *An introduction to cognitive linguistics*. Longman.
- van Dijk, T. A. (1988). *News analysis: Case studies of international and national news in the press*. Lawrence Erlbaum.
- van Dijk, T. A. (2009). *Society and discourse: How social contexts influence text and talk*. Cambridge University Press.
- Wodak, R. (2008). The contribution of critical linguistics to the analysis of discriminatory prejudices and stereotypes in the language of politics. In R. Wodak & V. Koller (Eds.), *Handbook of communication in the public sphere* (pp. 291–316). De Gruyter Mouton.
- Wyatt, S. (2021). *Metaphors and Sociotechnical Imaginaries: A Comparative Analysis*.
- Ye, Z., & Li, J. (2024). Artificial intelligence through the lens of metaphor: Analyzing the EU AIA. *International Journal of Digital Law and Governance*, 5(1), 1–15. <https://doi.org/10.1515/ijdlg-2024-0016>
- Zhang, Q. (2014). Ideology in critical metonymy analysis. *International Journal of English Linguistics*, 4(3), 67–76.
<https://doi.org/10.5539/ijel.v4n3p67>

Appendix A: English Corpus Text Collection

Source	Headline	Date
The Guardian	AI-based automation of jobs could increase inequality in UK, report says	Jan 27, 2025
The Guardian	Elton John backs Paul McCartney in criticising proposed overhaul to UK copyright system	Jan 27, 2025
The Guardian	Will AI pit the oligarchs against the people?	Jan 27, 2025
The Guardian	Tuesday briefing: How an unknown Chinese startup wiped \$593bn from the value of an AI giant	Jan 28, 2025
The Guardian	The Guardian view on DeepSeek and a global AI race: geopolitics, innovation and the rise of chaos	Jan 26, 2025
The Guardian	AI is a force for good – and Britain needs to be a maker of ideas, not a mere taker	Jan 26, 2025
The Guardian	Elon Musk says all human data for AI training ‘exhausted’	Jan 9, 2025
The Guardian	The stupidity of AI	Mar 16, 2023
The Guardian	Man v machine: everything you need to know about AI	May 6, 2023
The Guardian	Artificial intelligence is powering politics – but it could also reboot democracy	Jul 28, 2023
The Guardian	‘Godfather of AI’ Geoffrey Hinton quits Google and warns over dangers of misinformation	May 2, 2023
The Guardian	Becoming a chatbot: my life as a real estate AI’s human backup	Dec 3, 2022
The Guardian	The problem with artificial intelligence? It’s neither artificial nor intelligent	Mar 30, 2023
The Guardian	I have been an AI researcher for 40 years – what tech giants are doing to book publishing is akin to theft	Mar 7, 2025
The Guardian	The English schools looking to dispel doom and gloom around AI	Mar 6, 2025
The Guardian	They wanted to save us from a dark AI future. Then six people were killed	Mar 5, 2025
The Guardian	Artificial intelligence: ‘We’re like children playing with a bomb’	Jun 12, 2016
The New York Times	A Conversation With Bing's Chatbot Left Me Deeply Unsettled	Feb 16, 2023
The New York Times	How Do You Change a Chatbot's Mind?	Aug 30, 2024
The New York Times	An A.I. Hit of Fake 'Drake' and 'The Weeknd' Rattles the Music World	Apr 19, 2023
The New York Times	Will A.I. Ruin the Planet or Save the Planet?	Aug 26, 2024
The New York Times	We Need to Talk About How Good A.I. Is Getting	Mar 24, 2023

The New York Times	The New Chatbots Could Change the World. Can You Trust Them?	Dec 10, 2022
The New York Times	AI Poses 'Risk of Extinction,' Industry Leaders Warn	May 30, 2023
The New York Times	When A.I. Passes This Test, Look Out	Jan 23, 2025
The New York Times	The Government Knows A.G.I. Is Coming	Mar 4, 2025
The New York Times	Human Therapists Prepare for Battle Against A.I. Pretenders	Feb 24, 2025
The New York Times	OpenAI Unveils A.I. Technology for 'Natural Conversation'	Feb 27, 2025
The New York Times	AI Fears: Risks and Ethical Dilemmas	Jul 31, 2024
The New York Times	AI Chatbots: A New Era of Interaction	Mar 3, 2022
The New York Times	Sara Menker and the Role of AI in Agriculture	Jan 7, 2022
The New York Times	Tech 2021: Augmented Reality, Chatbots, and WiFi	Jan 6, 2021
The New York Times	At the Intersection of A.I. and Spirituality	Jan 3, 2021
The Washington Post	Microsoft deal would reopen Three Mile Island nuclear plant to power AI	Sep 20, 2024
The Washington Post	AI is exhausting the power grid. Tech firms are seeking a miracle solution.	Jun 21, 2024
The Washington Post	My patient was using a therapy chatbot. Was that okay?	Feb 23, 2025
The Washington Post	Online education company Chegg sues Google, says AI is killing business	Feb 25, 2025
The Washington Post	The DeepSeek app is impressively strange. Here's what the fuss is about.	Jan 28, 2025
The Washington Post	American workers are skeptical AI will help them on the job	Feb 25, 2025
The Washington Post	AI can now create any image in seconds, bringing wonder and danger	Sep 28, 2022
The Washington Post	How AI could accidentally extinguish humankind	Aug 31, 2022
The Washington Post	The Google engineer who thinks the company's AI has come to life	Jun 11, 2022
The Washington Post	Meta's new AI is skilled at a ruthless, power-seeking game	Dec 1, 2022
The Washington Post	We warned Google that people might believe AI was sentient. Now it's happening.	Jun 17, 2022
The Washington Post	What if the United States loses the AI race against China?	Sep 13, 2022
The Washington Post	The year AI became eerily human	Dec 28, 2022
The Washington Post	Google is training its robots to be more like humans	Aug 16, 2022
The Washington Post	Your selfies are helping AI learn. You did not consent to this.	Dec 9, 2022
The Washington Post	When you should (and shouldn't) rely on AI tools	Feb 28, 2024
The Washington Post	These robots were trained on AI. They became racist and sexist.	Jul 16, 2022

Appendix B: Arabic Corpus Text Collection

Newspaper	Headline	Date
العربية	هل ينافس الذكاء الاصطناعي مستقبلاً العلماء البشر على جوائز نوبل؟	05 October 2024
الجزيرة	وظيفة لا غنى عنها رغم تحدي الذكاء الاصطناعي.. تعرف عليها 100	03 October 2024
الجزيرة	لماذا تتوجه غوغل بعنادها التكنولوجي إلى الهند؟	06 October 2024
الجزيرة	الذكاء الاصطناعي.. عقلك الثاني ويدك الثالثة لكن احذر من الثقة الزائدة	26 September 2024
العربية	إصدمة تكلفة.. تدريب الذكاء الاصطناعي أغلى مما تتخيل	29 September 2024
العربية	مؤشر.. السعودية تتربع على عرش الذكاء الاصطناعي عربياً	22 September 2024
الجزيرة	قوانين جمة لتقويض الذكاء الاصطناعي.. ما أثرها؟	04 September 2024
العربية	انفجار الذكاء الاصطناعي.. نمو هائل بنسبة تصل إلى 55% سنوياً	25 September 2024
العربية	الذكاء الاصطناعي يستهلك الطاقة بشراهة.. كبرى الشركات تتكتم	15 September 2024
العربية	تحذير عاجل.. الذكاء الاصطناعي يستهدف حساباتك البنكية	19 September 2024
الجزيرة	شريان الحياة للذكاء الاصطناعي.. كيف تواجه شركات التقنية معضلة انتهاء البيانات	20 July 2024
الجزيرة	باحثون بجامعة أكسفورد يقترحون منهجية جديدة لاكتشاف 'هلوسة' الذكاء الاصطناعي	29 June 2024
الجزيرة	المحلل هال براندز: هكذا سيقودنا الذكاء الاصطناعي إلى الحرب العالمية الثالثة	11 June 2024
العربية	إثورة جديدة.. 'أوبن إيه آي' تكشف عن ذكاء اصطناعي يفكر	13 September 2024
الجزيرة	مترجمون قلقون: الذكاء الاصطناعي سرق وظائفنا	27 May 2024
الجزيرة	أمثلة على 'خداع' الذكاء الاصطناعي البشر... والآتي أعظم	12 May 2024
الحررة	تقرير: ثورة الذكاء الاصطناعي تفقد قوتها	01 June 2024
الجزيرة	الذكاء الاصطناعي يقف في صف البشرية في حربها على السرطان.. دراسة جديدة	09 May 2024
الحررة	تسونامي الذكاء الاصطناعي يضرب الوظائف حول العالم.. ما وضع المنطقة؟	15 May 2024
الحررة	كيف يهدد الذكاء الاصطناعي انتخابات الرئاسة الأميركية؟	24 May 2024
الجزيرة	هل يمكن للذكاء الاصطناعي التوسط في الصراعات أفضل من البشر؟	01 March 2024
الجزيرة	أحد آباء الذكاء الاصطناعي يورغن شميد هوبر لـ'الجزيرة نت': لا تخافوا من أبنائي	12 March 2024
الحررة	خبير لـ'الحررة': الإنسان في معركة مع الذكاء الاصطناعي على الوظائف	12 October 2024

العربية	رئيس 'إنفيديا' يشكك في القدرة على الوثوق بالذكاء الاصطناعي	25 November 2024
العربية	هل يمكن لصوت روبوتات الدردشة أن يكون بشريًا للغاية في الحديث؟	02 March 2025
العربية	نموذج ذكاء اصطناعي جديد يمكنه التحكم والتلاعب بالروبوتات .. 'Magma'	23 February 2025
الحررة	العالم أعمى!.. كيف يهدد الذكاء الاصطناعي السلم والأمن الدوليين؟	20 December 2024
الحررة	أحياناً عبر نظرة العين!.. كيف يهدد الذكاء الاصطناعي في الهاتف خصوصيتك؟	18 November 2024
الحررة	ChatGPT يتميز بالتعاطف!.. مؤسس 'لينكدان' يطلق منافساً!	03 May 2023
الحررة	حرب 'النفط الجديد' بين واشنطن وبكين	12 February 2025
العربية	إمليار روبوت بشري سيعيشون معنا خلال 20 عاماً	30 January 2024
الجزيرة	من السيلفي للمساعد الرقمي.. كيف يستخدم هاتفك الذكاء الاصطناعي؟	14 May 2020
الجزيرة	ماذا يعني أن تكون مبدعاً بالنسبة للذكاء الاصطناعي؟	09 March 2022
الجزيرة	أشياء لا يستطيع الذكاء الاصطناعي فعلها مهما امتلك من قدرات.. تعرف عليها	1 May 2022
العربية	التحديات الأخلاقية والاقتصادية للذكاء الاصطناعي	09 December 2021
الجزيرة	فورين أفيرز: كيف يمكننا تفادي كارثة من الذكاء الاصطناعي؟	16 August 2023
العربية	تحذير: الذكاء الاصطناعي متحيز ضد المسنين وقد يهدد صحتهم	10 February 2022
العربية	الذكاء الاصطناعي يفشل في مهمة بسيطة يؤديها البشر	16 March 2025
العربية	شات جي بي تي 'يشعر بالقلق مثل البشر'	09 March 2025
العربية	مانوس.. المنافس الصيني الجديد لـ 'شات جي بي تي' يثير الجدل بين الحماسة والقلق	11 March 2025
العربية	ينافس 'ديب سيك'.. بايدو الصينية تطلق نموذجين جديدين للذكاء الاصطناعي	16 March 2025
الجزيرة	الذكاء الاصطناعي: ما هو وما أبرز مظاهره؟	16 May 2022
الجزيرة	يعرفك أكثر من زوجتك.. هكذا سيكتشف الذكاء الاصطناعي شخصيتك	25 April 2021
الجزيرة	الذكاء الاصطناعي الشخصي.. تكنولوجيا قد تغير حياتنا	19 January 2022
الحررة	كيف عرف البشر الذكاء الاصطناعي؟ حقائق عن أصل الفكرة	25 August 2023
الحررة	إبادة الكائن البشري.. سيناريوهات مخيفة ترافق التطور السريع لأنظمة الذكاء الاصطناعي	12 June 2023
الحررة	الذكاء الاصطناعي.. هل بلغنا مرحلة الاستغناء كلياً عن الحكم البشري؟	15 July 2023
الحررة	خبراء يحذرون.. الذكاء الاصطناعي يلاحق وظائف مطوريه	02 July 2023
الحررة	الجانب المظلم: حقيقة الذكاء الاصطناعي	21 March 2025
الحررة	من ينجو ومن يُستبدل؟.. البشر والذكاء الاصطناعي بمعركة المصير	31 March 2025
الحررة	سألنا 'شات جي بي تي' عن شبيهه الصيني: لا يُنافسني	28 January 2025

الحررة	الصين وأميركا.. توقعات باشتداد المنافسة على الذكاء الاصطناعي	17 November 2024
الحررة	مخاوف من الذكاء الاصطناعي.. هل التطورات المذهلة تمنع التحكم به؟	13 February 2025
الجزيرة	هل قول 'من فضلك' للذكاء الاصطناعي يضر بالبيئة؟	22 April 2025
الجزيرة	الذكاء الاصطناعي وتغيير صورة الإنسان عن نفسه	24 April 2025
الجزيرة	ما لغة الذكاء الاصطناعي السرية 'جيبيرلينك' ولماذا أثارت المخاوف؟	10 April 2025
الجزيرة	الذكاء الاصطناعي.. بدايات متعثرة ونتائج مبشرة	19 November 2024
الجزيرة	مجاناً.. كيفية استخدام الذكاء الاصطناعي لتعديل الصور	08 April 2025
الجزيرة	الذكاء الاصطناعي الفائق.. ابتكار ينفذ البشرية أم سلاح للفناء؟	11 April 2025
العربية	أحدث صيحة بواسطة 'شات جي بي تي' تكشف عن تهديد كبير للخصوصية	18 April 2025
الجزيرة	الصحافة العربية تسأل: ماذا نفعل بكل هذا الحديث عن الذكاء الاصطناعي؟	01 February 2025
العربية	اكتشاف كذب روبوتات الدردشة بات ممكناً	16 March 2025
الجزيرة	هل بإمكان العرب اللحاق بسباق الذكاء الاصطناعي؟	18 December 2022
العربية	الذكاء الاصطناعي في الرياضة	02 May 2022
العربية	تطبيقات الذكاء الاصطناعي في الطاقة الكهربائية	28 September 2022
العربية	'الذكاء الاصطناعي يساعد بترميم نصوص تاريخية بدقة' لا مثيل لها	10 March 2022
العربية	الإدارة عبر الذكاء الاصطناعي.. هل تحقق الرضى الوظيفي؟	31 August 2021
الحررة	الدول العربية والذكاء الاصطناعي.. تأخر عن الركب وجهود تتباين	03 September 2023
الجزيرة	اللغة العربية في ظل الذكاء الاصطناعي	11 September 2023
الحررة	العربية.. هل لغة الضاد عصية على الذكاء الاصطناعي؟	19 December 2023
العربية	بعد تحذيرات عديدة.. هل يتسبب الذكاء الاصطناعي في فناء البشرية؟	11 June 2023
الحررة	الإمارات تطلق تطبيقاً للذكاء الاصطناعي يعمل باللغة العربية	31 August 2023
العربية	إطلاق 'جزيرة ياس' كوجهة في عالم الميتافيرس	19 July 2023
الحررة	ماذا تعرف عن أهم سلعة في وادي السيليكون؟	31 August 2023
الحررة	تجسس وابتزاز وخطف وهمي.. الذكاء الاصطناعي والجريمة	13 August 2023
الجزيرة	الذكاء الاصطناعي.. آلة للإعمار والدمار	26 December 2023
الجزيرة	نيويورك تايمز تقاضي شركات الذكاء الاصطناعي	28 December 2023
الجزيرة	الذكاء الاصطناعي شريك المستقبل في إدارة الأعمال	22 May 2023
الجزيرة	الذكاء الاصطناعي.. أبهى صور التفاعل بين البشر والتكنولوجيا	24 December 2023
الحررة	الذكاء الاصطناعي والأسلحة القاتلة.. لماذا يتخوف العالم؟	28 July 2023

الحررة	أبرز لاعبي الذكاء الاصطناعي الذي طُرد من شركته: سام ألتمان	18 November 2023
الحررة	ذكي لكنه ساذج.. مخاطر الذكاء الاصطناعي على اليزنس	18 November 2023
الحررة	كيف تستغل الذكاء الاصطناعي للعثور على وظيفة أحلامك؟	22 August 2023
العربية	توقع صادم.. الذكاء الاصطناعي سيتفوق على البشري 10 مرات	04 October 2023
العربية	استطلاع.. الذكاء الاصطناعي سيقضي على وظائف البشر	17 December 2023
الحررة	فجوة رقمية.. أين العرب من ثورة الذكاء الاصطناعي؟	09 June 2023
الجزيرة	مجالاً جديداً للذكاء الاصطناعي تساعدك في تطوير أعمالك 14	04 July 2022
الجزيرة	شاهد قدرات الذكاء الاصطناعي 'جيميني' من غوغل	07 December 2023
الجزيرة	الذكاء الاصطناعي يتنبأ بالموت المفاجئ	22 November 2023
الجزيرة	خبير: الذكاء الاصطناعي أقرب لذكاء القطط والكلاب	04 December 2023
العربية	صديقان طوعا الذكاء الاصطناعي لجني عشرات الآلاف	17 October 2023
الجزيرة	كيف توظفين الذكاء الاصطناعي في أداء الواجبات المدرسية؟	22 November 2023
الحررة	غوغل تتحرك لكشف صور الذكاء الاصطناعي المزيفة	15 May 2023
العربية	الذكاء الاصطناعي واقتصاديات المستقبل	29 October 2023
الجزيرة	بين الذكاء الاصطناعي والبشري	16 July 2024

Appendix C: All English Metaphors in Resonance Order

Rank	Metaphor	Types	Tokens	Resonance	%
1	AI is a student/trainee	9	485	4365	20.54%
2	AI is a mind	5	490	2450	11.53%
3	AI is a traveller	10	220	2200	10.35%
4	AI is a building	7	216	1512	7.11%
5	AI is a natural evolution / superbeing	7	185	1295	6.09%
6	AI is a competitive game/war	10	130	1300	6.12%
7	AI is a creator	5	226	1130	5.32%
8	AI is an assistant	5	189	945	4.44%
9	AI is a tool	3	266	798	3.75%
10	AI is a weapon/double-edged sword	8	92	736	3.46%
11	AI is a friend/therapist	11	66	726	3.42%
12	AI is an apocalypse	11	63	693	3.26%
13	AI is a living organism	5	82	410	1.93%
14	AI is a vehicle	8	74	592	2.79%
15	AI is a race/arms race	7	65	455	2.14%
16	AI is a natural force	7	32	224	1.05%
17	AI is a black box	5	55	275	1.29%
18	AI is a virus/disease	6	24	144	0.68%
19	AI is an animal/beast	6	22	132	0.62%
20	AI is a mimic/impersonator	6	31	186	0.87%
21	AI is an oracle	8	37	296	1.39%
22	AI is a product	4	34	136	0.64%
23	AI is a witch	7	21	147	0.69%
24	AI is a toy	3	25	75	0.35%
25	AI is a resource	5	64	320	1.51%
26	AI is a competitor/replacement	3	18	54	0.25%
27	AI is a dreamer/hallucinator	2	27	54	0.25%
28	AI is a mirror	2	8	16	0.08%
29	AI is a thief	2	4	8	0.04%

Appendix D: All Arabic Metaphors in Resonance Order

Rank	Metaphor	Types	Tokens	Resonance	%
1	AI is a Tool	5	747	3735	20.25%
2	AI is a Mind	8	236	1888	10.24%
3	AI is a [General] Threat	6	245	1470	7.97%
4	AI is a Student/Trainee	7	205	1435	7.78%
5	AI is a Child/Offspring	10	139	1390	7.54%
6	AI is a Military Invasion	12	87	1044	5.66%
7	AI [Data] is a Precious Resource/Asset	7	140	980	5.31%
8	AI is an Employee/Assistant	5	172	860	4.66%
9	AI is a Competitor/Replacement	6	121	726	3.94%
10	AI is a Clone/Hybrid	5	141	705	3.82%
11	AI is a Product	6	106	636	3.45%
12	AI is a Physical Space	6	103	618	3.35%
13	AI is a Race/Journey	5	102	510	2.77%
14	AI is a Superhero/Superbeing	5	86	430	2.33%
15	AI is a Building	5	82	410	2.22%
16	AI is a Weapon/Double-edged Sword	4	101	404	2.19%
17	AI is a Living Organism	6	56	336	1.82%
18	AI is a Competitive Game	3	93	279	1.51%
19	AI is a Driver/Traveller	7	31	217	1.18%
20	AI is an Era/Physical Time	3	31	93	0.50%
21	AI is a Black Box	3	25	75	0.41%
22	AI is a Part of Ecosystem	6	12	72	0.39%
23	AI is a Hallucinator	2	33	66	0.36%
24	AI is a Revolution	1	41	41	0.22%
25	AI is a Natural Force	2	8	16	0.09%
26	AI is a World	1	8	8	0.04%

Appendix E: Statistical Significance (Log-Likelihood and Chi-square)

This appendix presents the statistical procedures used to assess whether the distribution of conceptual-key metaphor categories and metonymic expressions differed significantly between the English and Arabic corpora. Two log-likelihood (LL) analyses were conducted: a token-based LL test using raw metaphor frequencies, and an MR-based LL test using Metaphor Resonance values.

E.1 Log-Likelihood Formula

The LL statistic compares observed frequencies in two corpora with expected frequencies based on corpus size:

$$LL = 2 \left[O_1 \ln \left(\frac{O_1}{E_1} \right) + O_2 \ln \left(\frac{O_2}{E_2} \right) \right]$$

Where O_1, O_2 : = observed frequencies in each corpus

E_1, E_2 : = expected frequencies based on proportional corpus size

Values above 10.83 indicate significance at $p < 0.001$. All tests were conducted as one-tailed LL analyses to determine which corpus exhibited higher proportional frequency.

E.2 Token-Based Log-Likelihood Test

This test used raw metaphor token counts (English total = 3,251; Arabic total = 3,151). All five conceptual-key categories showed statistically significant differences. In the table, (E) and (A) stand for English and Arabic.

Conceptual Key	Tokens (E/A)	LL Value	p-value	Dominant Corpus
Human	1326 / 928	≈ 20.51	$p < 0.0001$	English
Organic & Environmental	762 / 312	≈ 89.17	$p < 0.0001$	English
Economic & Object	877 / 1201	≈ 48.61	$p < 0.0001$	Arabic
Social & Event	258 / 568	≈ 99.16	$p < 0.0001$	Arabic
Spatial & Temporal	0 / 142	≈ 163.08	$p < 0.0001$	Arabic

E.3 MR-Based Log-Likelihood Test

MR values reflect the conceptual resonance of each metaphor category within the corpora. The MR-based LL test produced larger LL values due to the greater magnitude of MR counts, but confirmed the same directional differences.

Conceptual Key	MR (E/A)	MR % (E/A)	LL Value	Dominant Corpus
Human	9,687 / 5,829	45.60 / 31.60	≈ 817.1	English
Organic & Environmental	4,655 / 2,314	21.90 / 12.54	≈ 610.2	English
Economic & Object	4,460 / 6,240	20.98 / 33.83	≈ 827.0	Arabic
Social & Event	2,448 / 3,344	11.52 / 18.13	≈ 345.5	Arabic
Spatial & Temporal	0 / 719	0.00 / 3.90	≈ 1117.4	Arabic

E.4 Summary

Both token-based and MR-based LL analyses show that all conceptual-key categories differ significantly between the two corpora ($p < 0.0001$). English metaphors dominate the Human and Organic/Environmental domains, while Arabic metaphors dominate the Economic/Object, Social/Event, and Spatial/Temporal domains. These

results confirm that the cross-corpus contrasts identified in the findings are statistically robust.

E.5 Log-Likelihood Test for Metonymy

To determine whether metonymic expressions also differ significantly between the English and Arabic corpora, a separate LL test was conducted using the raw metonym counts (English total = 760; Arabic total = 869). The analysis applied the same log-likelihood formula and significance thresholds described above.

E.5.1 Results

Metonym	English Count	Arabic Count	LL Value	Significance
The Systems / النظام	283	24	293.27	$p < 0.0001$
Technology (التقنية + التكنولوجيا)	235	453	44.15	$p < 0.0001$
Robots / الروبوت	92	207	31.32	$p < 0.0001$
Machine / الآلة	61	42	6.53	$p < 0.05$
Model / النموذج	41	49	0.04	Not significant
Algorithms / الخوارزميات	39	52	0.53	Not significant
Automation / الأتمتة	9	28	7.86	$p < 0.01$
Software البرمجيات (Arabic only)	0	14	17.59	$p < 0.0001$

E.5.2 Interpretation

The LL test shows that several metonymic categories differ significantly between the two corpora. Three metonyms show clear statistical significance: “The system(s)” is more frequent in English, while “technology” (التقنية + التكنولوجيا) and “robot” (الروبوت) are significantly more

common in Arabic. Other metonyms such as “model” and “algorithms” show no statistical difference.

E.6 Summary of Metonymy Results

The metonymic LL analysis demonstrates strong cross-corpus differences. English discourse heavily prioritises “system” metonymy, whereas Arabic discourse leans towards technology, with robot as a secondary metonym.

E.7 Chi-Square Significance Test: Within-Corpus Distribution of Conceptual-Key Categories (Arabic Corpus)

To examine whether the five conceptual-key metaphor categories occur with equal likelihood within the Arabic corpus, a chi-square (χ^2) goodness-of-fit test was conducted using the total metaphor token counts. This test assesses whether the observed frequencies differ significantly from a uniform distribution.

The five categories and their token totals were:

Conceptual Key	Tokens
Economic & Object	6,240
Human	5,829
Social & Event	3,344
Organic & Environmental	2,314
Spatial & Temporal	719
Total	18,446

Under the null hypothesis of equal frequency, the expected count for each category was:

$$E = \frac{18,446}{5} = 3,689.2$$

The chi-square statistic was calculated as: $\chi^2 = \sum \frac{(O - E)^2}{E}$

The results indicated an extremely significant deviation from equal distribution: $\chi^2(4, N = 18,446) = 5918.6, p < 0.0001$

Cramér's V was: $V = \sqrt{\frac{\chi^2}{N(k-1)}} = 0.28,$

Which indicates a medium-to-large effect size, and confirms substantial disparities across categories.

E.7.1 Focused Chi-Square Comparison: Human vs Economic/Object Metaphors

Because Human and Economic/Object metaphors are the dominant categories in the Arabic corpus, a pairwise chi-square test was conducted to determine whether the difference between these two high-frequency domains is statistically significant.

Observed token counts

1. Economic/Object = 6,240
2. Human = 5,829
3. Total = 12,069

Expected frequency for each category under the null hypothesis:

$$E = \frac{12,069}{2} = 6,034.5$$

Applying the chi-square formula: $\chi^2(1, N = 12,069) = 14.00, p < 0.001$

Cramér's V:
$$V = \sqrt{\frac{14}{12,069}} = 0.03$$

Interpretation

The difference between Human and Economic/Object metaphors is statistically significant, but the effect size is small, indicating a modest practical difference.

In other words: Economic/Object metaphors occur slightly more frequently, but both categories are heavily represented and structurally central to the Arabic framing of AI.

E.7.2 Summary of Within-Corpus Significance Findings

The full-category chi-square test demonstrates substantial and statistically robust differences across the five metaphor domains. The Arabic corpus heavily emphasises Economic/Object and Human metaphors. The pairwise test further confirms that although Human and Economic/Object metaphors dominate the corpus, their frequencies differ significantly, with Economic/Object metaphors showing a slight but meaningful statistical advantage. These findings reinforce and validate the frequency patterns described in the Findings chapter and provide statistical evidence for the prominence of specific metaphorical frames in Arabic AI discourse.

Appendix F: Elaboration on frames and frame elements

This appendix provides a detailed explanation of the frames and Frame Elements (FEs) used in the analysis of metaphorical expressions across the English and Arabic corpora. The identification of FEs follows the principles of Frames as proposed in ECMT (Kövecses, 2020), where each metaphor maps a structured source frame onto a target frame.

Importantly, FEs were not predetermined. Instead, all FEs were derived through close, manual examination of lexical choices, collocations, and contextual cues in the corpus. In practice, this means that the same metaphor may activate different frame elements depending on surrounding lexical cues and discourse setting.

language	Metaphor	Source Frame	Target Frame	FEs	Sample Expressions
Eng	AI is a Natural Force	Natural Forces	AI's strong and wide-ranging effects	(Force of nature → AI surge) (Wave, gush, sea → levels of technological spread) (Flood → Disruption) (Eruption → Rapid innovation) (Physical Impact → Societal transformation)	“this new wave of consumer “, “the gush of AI we’re seeing is the result”, “ eruption of a start-up,” a tsunami... that remakes everything in its path” “A tsunami of automation is disrupting traditional labor markets.” “The impact of this technological storm is...”
Ar	AI is a Natural Force	Natural Forces	AI strong and wide-ranging effects	(Natural Force → AI surge) (Eruption → Sudden proliferation) (Impact zone → Employment and ethics) (Victims → Displaced humans)	"موجة الذكاء الاصطناعي تجتاح العالم بسرعة غير مسبوقه." "تسونامي الابتكارات الرقمية يغير شكل الاقتصاد العالمي." "ضحايا التسونامي الرقمي هم العمال..."

A manual review of the English data showed greater lexical variety for this metaphor than in Arabic (e.g., wave, tsunami, gush, flood, eruption,

storm. This diversity required a broader set of frame elements (e.g., impact, pressure, spread, eruption), as each lexical item activated a slightly different part of the natural-force schema. In Arabic, the lexical range is narrower but more human-impact-oriented. Different lexical items active frame elements relating to victims and impact zones. This explains the emphasis on *human harm* and *ethical consequences* in the FE structure.

Corpus	Metaphor	Source Frame	Target Frame	FEs	Sample Expressions
Eng	AI is a dreamer/hallucinator	-Mental Health -Human cognition -perception	-AI glitches -inaccuracies/misinformation -output	(Dreamer/hallucinator → AI) (Dreams → Output) (Reality → Verification process) (Mental instability → Model unreliability) (consequences → misinformation, reliability concerns). (Hallucinations → errors/misleading outputs)	“It is dreaming sentences that sound about right, but are not real ” “the dreams of badly programmed machines” “Instead, they are selling us back dreams repackaged as output.”. “Musk also warned that AI models’ habit of generating “hallucinations..”. ““hallucination,” making up facts that have no tether to reality .”
Ar	AI is a Hallucinator	-Mental Health -Human cognition	-AI glitches -inaccuracies/misinformation	(hallucinator → AI), (Mental instability → Model unreliability) (consequences → misinformation, reliability concerns). (hallucinations → errors/misleading outputs)	"الذكاء الاصطناعي يهلوس عندما يقدم معلومات لا وجود لها في الواقع." "تكرار الهلوسات الاصطناعية يثير تساؤلات حول موثوقية النماذج الجديدة." "تخريف النموذج جعله يرى أنماطاً وهمية في البيانات." "هذه الهلوسة الرقمية قد تؤدي إلى معلومات مضللة وخطر في الاعتماد على الآلة." "ومع أن النموذج الجديد يهلوس أقل من سلفه،"

The English corpus data repeatedly used both lexical items (dreaming and hallucination) often side by side. For example, an article may describe AI “dreaming sentences” and then immediately mention “hallucinations.” Because these two words appeared concurrently and interchangeably, the FEs derived (e.g., output → dreams; errors/misleading outputs → hallucination) overlapped. Therefore, both terms were combined into one unified metaphor with shared FEs. Arabic uses only two lexical items: hallucination and confabulation (التخريف), with consistent terminology across texts. This, used in context with other FEs, explains the difference between Arabic and English FEs. Unlike English, no dream-related expressions appeared.

Corpus	Metaphor	Source Frame	Target Frame	FEs	Sample Expressions
Eng	AI is a race	Competing in a race	AI progression and leadership	(Racer → Nation/company) (Track → AI Innovation) (Finish Line → AGI, global dominance)	“ prevent China catching up with the US AI industry.” “In the race to dominate this technology, the greatest risk isn’t falling behind. ”
	AI is an (arms) race	Military Competition	Geopolitical pursuit of AGI supremacy	(Weapon → AI system) (Arms race → Geopolitical competition)	“they will not halt the AI arms race on their own” “ Global AI arms race ”
Ar	AI is a Race/ Journey	Competitive Sport / Global Rivalry	Global AI development race	(Runners → Countries/Corporations) (Track/Course → Technological development timeline) (Finish Line → AGI, global dominance) (Speed → Rate of innovation)	"سباق الذكاء الاصطناعي" يتحدث الرئيس المنتخب دونالد ترامب عن جهود لدعم التفوق الأمريكي في السباق مع الصين في مجال الذكاء الاصطناعي "لكنها لحقت بالولايات المتحدة بسرعة أكبر وبشكل دراماتيكي أكثر مما توقعه كثيرون" .. "من سيفوز بسباق المساعد الشخصي الفائق الذكاء" " للسباق الشرس الذي يخوضه عمالقة التكنولوجيا بالفعل لتطوير الذكاء الاصطناعي".

		Journey / Pilgrimage	Arab national AI development	(Traveller → Arab government, society) (Road/ path→ Strategic plans, policy implementation) (Detours/Barriers → Challenges, limitations, dependencies) (Destination → AGI-Technological independence)	أول خطوة نحو وصولنا إلى مفهوم الذكاء الاصطناعي العام. "لكن الطريق لا يزال طويلاً وشاقاً" "لكن العائق الرئيسي أمام الاستمرار في هذا المسار،" منعطفاً حاسماً "ما يحدث يعد قفزة في طريقنا إلى الذكاء العام (Artificial General Intelligence). الاصطناعي (Intelligence).
--	--	----------------------	------------------------------	--	--

English consistently employs race terminology (compete, catch up, win) and militarised variants (arms race, rivals). Because both lexical sets share the same underlying FE structure (competition, speed), but differ in intensity, they were separated into race and arms race as. The “arms race” versions particularly triggered geopolitical and security-oriented FEs, which are not activated in Arabic to the same extent. The Arabic use of the same metaphor primarily frames the race metaphor from the perspective of an external observer, describing how other countries (US, China, Europe) compete to achieve AGI (Artificial General Intelligence). Contrariwise, Arab nations are framed as travellers on a shared journey, using vocabulary like (road, path, first step) أولى خطوة، منعطف، مسار، طريق. This divergence created two distinct FE structures: (race → external global competition) and (journey → internal national development)

Corpus	Metaphor	Source Frame	Target Frame	FEs	Sample Expressions
Eng	AI is a competitive game/war	Competing in sports games/War	Competing for dominance in AI	(Player → Nations, AI companies/ models) (Game → Market competition) (Strategy → Model design) (Win/Loss → Success/failure) (battleground → AI market)	“but now a low-cost rival from Hangzhou has turned the industry on its head” “the major American players .” “And they will also up the game : the benchmark of AI performance..” “our national AI champions ” “ battlegrounds in the AI boom.”
Ar	AI is a Competitive Game	Competing in sports games	Competing for dominance in AI	(Player → Nations, AI companies/ models) (Leader → tech giants) (Game → Market competition) (Strategy → Model design) (Win/Loss → Success/failure)	"للاعبين الرائدة حاليا في مجال الذكاء الاصطناعي" "تتصاعد حالة التنافس بين الدول الكبرى لتطوير نماذج ذكاء اصطناعي متقدمة." "توقعات باشتداد المنافسة" "قادة عالم التكنولوجيا يأملون"

The context suggests that English consistently mixes sports and warfare terminology. Shared elements like win, lose, compete, strategy overlap with Arabic, but English sometimes intensifies competition using battlefield imagery (i.e., battlegrounds). Therefore, both sets were retained under one metaphor with extended FEs capturing both game and war dimensions in the English corpus. It is empirical to note that this metaphor has also overlapped with the race metaphor in some context. While the author of the present study attempted to set clear distinctions and separate, some overlap in FEs and expressions that can be interpreted in light of both metaphors is inevitable due to the fluid and dynamic nature of language. Arabic uses a purer sports frame, without war terminology. However, FEs aligned strongly with English (win/loss, players, strategy). Thus the metaphor remains parallel but with less militarised imagery.

Corpus	Metaphor	Source Frame	Target Frame	FEs	Sample Expressions
Eng	AI is an assistant	-Human Service -Assistance	-AI resource -AI task delegation	(Human assistant → AI system) (Task → Data processing, content creation) (Productivity → Automation of labour)	“one clear trend is for it to become a kind of wise assistant ,”
Ar	AI is an Employee/assistant	-Human service - Job -Assistance	-AI resource -AI task delegation	(Employee/ human assistant → AI system) (Employer → Human user) (Task → Data processing, content creation) (Performance Evaluation → Accuracy and output quality) (Productivity → Automation of labour)	"يعمل الذكاء الاصطناعي" "التوظيف لنماذج الذكاء الاصطناعي التوليدي" "ويوظفها لصالحه ولمصلحة عمله سيحقق استفادة كبيرة"

Arabic repeatedly uses employee and assistant terminology together, sharing the same lexical field of service, performance, productivity. Because both sets triggered similar FEs and lexical items, the two were merged into one unified metaphor (AI IS AN EMPLOYEE/ASSISTANT) supported by overlapping FEs of task completion, evaluation, and assistance.

The sampled expressions referenced here may help to justify differences in FEs and reveal the role of context in determining frames and FEs.

الملخص

تتناول هذه الأطروحة الوظائف المعرفية والبلاغية للاستعارة والمجاز المرسل في الخطاب الإعلامي العربي والغربي حول الذكاء الاصطناعي، وذلك من خلال تحليل مدونتين نصيتين بالعربية والإنجليزية حيث تحتوي كل منهما على أكثر من 100,000 وحدة لغوية لكل لغة. وتتبنى الدراسة منهجاً مزدوجاً يجمع بين الكيفي والكمي، ويستند إلى نظرية الاستعارة المفاهيمية، والنظرية الممتدة للاستعارة المفاهيمية، والتحليل النقدي للاستعارة والمجاز المرسل. ومن خلال تحديد وتفسير التعبيرات المجازية بشكل منهجي، ترصد الدراسة المفاتيح المفاهيمية، والهياكل الإطارية، والتيارات الأيديولوجية الكامنة التي تساهم في تأطير الذكاء الاصطناعي في وسائل الإعلام. وقد أظهرت النتائج أن كلا المدونتين تتشاركان أنماطاً استعارية شائعة ومفاتيح مفاهيمية كبرى، إلا أنهما تختلفان بشكل ملحوظ في التكرار، والتعيينات الإطارية، والتفاعل البلاغي، والأسس الثقافية. إذ يميل الإعلام الغربي إلى تشخيص الذكاء الاصطناعي من خلال الاستخدام السائد للاستعارات البشرية، ويقدمه أطر قطبية تتراوح بين الإعجاب بالتكنولوجيا والخوف منها. وعلى النقيض، يقوم الإعلام العربي بتجسيد الذكاء الاصطناعي من خلال الاستخدام الواسع للاستعارات الاقتصادية والشبئية بدرجة أكبر مقارنة بنظيره الغربي، كما يبنيه ضمن خطابات المنفعة والحدثة الوطنية. وتعالج هذه الأطروحة التحديات المنهجية الرئيسية في أبحاث الاستعارة والمجاز المرسل الثنائية اللغة، بما في ذلك محدودية أدوات المعالجة اللغوية الطبيعية الخاصة باللغة العربية، وغياب شبكة الإطارات المفهومية العربية (Arabic FrameNet). وتوصي الدراسة بأهمية توظيف التحليل الزمني للاستعارة، إلى جانب مناهج بحثية أخرى، من أجل تتبّع تداول اللغة المجازية بصورة أدق في الخطاب العالمي حول الذكاء الاصطناعي

الكلمات المفتاحية: الذكاء الاصطناعي، الخطاب الإعلامي، الاستعارة، المجاز المرسل، الإطارات

جامعة البحرين
كلية الآداب
قسم اللغة الإنجليزية وآدابها



تحليل مقارن للبلاغة المعرفية في التغطية الإعلامية العربية والغربية للذكاء الاصطناعي

أطروحة مقدمة استكمالاً لمتطلبات الحصول على درجة الماجستير
في دراسات اللغة الإنجليزية التطبيقية

إعداد الطالبة
فاطمة محمد عبدالوهاب
الرقم الأكاديمي: 20146500

إشراف
الدكتور مدني عثمان
أستاذ مشارك في اللسانيات
جامعة البحرين

مايو ٢٠٢٥