JSP3: ChainNet & MML Analysis

Integrated Extraction of Metaphor and Metonymy

Vojtěch Mahdal & Lea Karolína Komárková
vmahdal05@gmail.com, leakom11@gmail.com

February 2026

Abstract

Abstract: This report details the extraction and integration of figurative language data from ChainNet. We provide a Python-based methodology for linking lexical items from *ChainNet-Metaphor* and *ChainNet-Metonymy* into a unified dataset, mapping these sense-shifts to established conceptual categories from the Master Metaphor List (MML).

---

1 Introduction

The ChainNet project provides granular data on cognitive mechanisms that drive polysemy. This research maps these lexicalized shifts to the "Master Metaphor List" (MML), a seminal CMT framework. We categorize shifts into two types:

- **Metaphor:** Cross-domain conceptual mappings.
- **Metonymy:** Inner-domain associative mappings.

2 Methodology

We developed a Python pipeline to ingest JSON source files and perform fuzzy-string matching against MML theory labels. This bridges the gap between raw WordNet sense keys and high-level cognitive metaphors.

Listing 1: ChainNet Integration Script

```python
import pandas as pd
import json
import os

def load_chainnet(filepath):
    chainnet_entries = []
    with open(filepath, 'r', encoding='utf-8') as f:
        data = json.load(f)
        items = data.get('content', [])
        for item in items:
            chainnet_entries.append({
```

```
                'lemma': str(item.get('wordform', 'unknown')).strip().lower(),
                'type': "metonymy" if "metonymy" in filepath else "metaphor",
                'sense_id': item.get('from_sense', 'N/A')
            })
    return chainnet_entries
```

3 Results: Full Mapping Dataset

The table below represents the complete set of matched lexical items linked to MML conceptual frameworks.

Table 1: Complete Integrated ChainNet Mapping Samples

Word	Type	MML Concept	Sense ID
superior	metonymy	CONTROL IS UP	superior%1:18:01::
superior	metonymy	CONTROL IS UP	superior%1:17:00::
twin	metonymy	ARGUMENT IS WAR	twin%1:18:00::
review	metonymy	UNDERSTANDING IS SEEING	review%1:09:00::
review	metonymy	UNDERSTANDING IS SEEING	review%1:10:01::
apathy	metonymy	LIFE IS A JOURNEY	apathy%1:12:00::
basin	metonymy	SOCIETY IS A BODY	basin%1:06:00::
basin	metonymy	SOCIETY IS A BODY	basin%1:17:00::
digest	metonymy	IDEAS ARE FOOD	digest%1:10:00::
attack	metonymy	ARGUMENT IS WAR	attack%1:04:02::
blight	metonymy	UNDERSTANDING IS SEEING	blight%1:26:01::
arm	metonymy	SOCIETY IS A BODY	arm%1:08:00::
force	metonymy	ARGUMENT IS WAR	force%1:07:01::
target	metonymy	ARGUMENT IS WAR	target%1:06:00::
cost	metonymy	TIME IS MONEY	cost%1:21:00::
eight	metonymy	UNDERSTANDING IS SEEING	eight%1:23:00::
short	metonymy	ARGUMENT IS WAR	short%1:06:00::
brahmin	metonymy	SOCIETY IS A BODY	brahmin%1:18:00::
heat	metonymy	SOCIETY IS A BODY	heat%1:07:01::
shoulder	metonymy	SOCIETY IS A BODY	shoulder%1:08:00::
earth	metonymy	SOCIETY IS A BODY	earth%1:17:01::
earth	metonymy	SOCIETY IS A BODY	earth%1:17:00::
earth	metonymy	SOCIETY IS A BODY	earth%1:15:00::
army	metonymy	SOCIETY IS A BODY	army%1:14:00::
pat	metonymy	LIFE IS A JOURNEY	pat%1:04:00::
diet	metonymy	IDEAS ARE FOOD	diet%1:13:00::

Word	Type	MML Concept	Sense ID
vision	metonymy	UNDERSTANDING IS SEEING	vision%1:09:01::
vision	metonymy	UNDERSTANDING IS SEEING	vision%1:09:02::
bight	metonymy	UNDERSTANDING IS SEEING	bight%1:25:00::
sorrow	metonymy	TIME IS MONEY	sorrow%1:12:00::
wink	metonymy	ARGUMENT IS WAR	wink%1:10:00::
cheat	metonymy	SOCIETY IS A BODY	cheat%1:04:00::
superiority	metonymy	CONTROL IS UP	superiority%1:07:00::
sitter	metonymy	IDEAS ARE FOOD	sitter%1:18:01::
mover	metonymy	CONTROL IS UP	mover%1:18:02::
bran	metonymy	SOCIETY IS A BODY	bran%1:13:00::
paste	metonymy	TIME IS MONEY	paste%1:27:01::
guile	metonymy	LIFE IS A JOURNEY	guile%1:07:00::
prevision	metonymy	UNDERSTANDING IS SEEING	prevision%1:09:01::
whin	metonymy	ARGUMENT IS WAR	whin%1:20:02::
cedar	metonymy	UNDERSTANDING IS SEEING	cedar%1:20:03::
caste	metonymy	TIME IS MONEY	caste%1:14:01::
pea	metonymy	CONTROL IS UP	pea%1:20:00::
pea	metonymy	CONTROL IS UP	pea%1:13:00::
brain	metonymy	SOCIETY IS A BODY	brain%1:09:01::
brain	metonymy	SOCIETY IS A BODY	brain%1:08:00::
brain	metonymy	SOCIETY IS A BODY	brain%1:09:00::
peak	metonymy	CONTROL IS UP	peak%1:26:00::
peak	metonymy	CONTROL IS UP	peak%1:15:00::
bargain	metonymy	SOCIETY IS A BODY	bargain%1:10:00::
waste	metonymy	TIME IS MONEY	waste%1:27:00::
heath	metonymy	SOCIETY IS A BODY	heath%1:15:00::
patch	metonymy	LIFE IS A JOURNEY	patch%1:07:00::
tin	metonymy	ARGUMENT IS WAR	tin%1:27:00::
height	metonymy	CONTROL IS UP	height%1:07:00::
view	metonymy	UNDERSTANDING IS SEEING	view%1:09:04::
view	metonymy	UNDERSTANDING IS SEEING	view%1:09:01::
view	metonymy	UNDERSTANDING IS SEEING	view%1:09:00::
strategy	metonymy	ARGUMENT IS WAR	strategy%1:09:00::
flight	metonymy	UNDERSTANDING IS SEEING	flight%1:04:00::

Word	Type	MML Concept	Sense ID
flight	metonymy	UNDERSTANDING IS SEEING	flight%1:14:01::
guide	metonymy	LIFE IS A JOURNEY	guide%1:18:02::
budget	metonymy	TIME IS MONEY	budget%1:21:02::
heart	metonymy	SOCIETY IS A BODY	heart%1:08:00::
heart	metonymy	SOCIETY IS A BODY	heart%1:09:00::
heart	metonymy	SOCIETY IS A BODY	heart%1:25:00::
wheat	metonymy	SOCIETY IS A BODY	wheat%1:13:00::
freight	metonymy	ARGUMENT IS WAR	freight%1:06:00::
brake	metonymy	IDEAS ARE FOOD	brake%1:20:02::
member	metonymy	SOCIETY IS A BODY	member%1:08:00::
baker	metonymy	IDEAS ARE FOOD	baker%1:18:00::
brine	metonymy	SOCIETY IS A BODY	brine%1:27:00::
delight	metonymy	UNDERSTANDING IS SEEING	delight%1:12:00::
brow	metonymy	TIME IS MONEY	brow%1:08:01::
fight	metonymy	ARGUMENT IS WAR	fight%1:04:02::
barrow	metonymy	TIME IS MONEY	barrow%1:06:01::
focus	metonymy	UNDERSTANDING IS SEEING	focus%1:09:00::
night	metonymy	UNDERSTANDING IS SEEING	night%1:28:00::
brand	metonymy	SOCIETY IS A BODY	brand%1:10:02::
draw	metonymy	IDEAS ARE FOOD	draw%1:04:00::
draw	metonymy	IDEAS ARE FOOD	draw%1:06:01::
draw	metonymy	IDEAS ARE FOOD	draw%1:06:00::
speed	metonymy	TIME IS MONEY	speed%1:28:00::
speed	metonymy	TIME IS MONEY	speed%1:04:00::
steps	metonymy	LIFE IS A JOURNEY	steps%1:17:00::
water	metonymy	TIME IS MONEY	water%1:27:00::
harm	metonymy	SOCIETY IS A BODY	harm%1:11:01::
litter	metonymy	IDEAS ARE FOOD	litter%1:06:01::
right	metonymy	UNDERSTANDING IS SEEING	right%1:15:00::
right	metonymy	UNDERSTANDING IS SEEING	right%1:07:00::
provision	metonymy	UNDERSTANDING IS SEEING	provision%1:04:01::
chart	metonymy	SOCIETY IS A BODY	chart%1:10:00::
hertz	metonymy	SOCIETY IS A BODY	hertz%1:28:00::
seed	metonymy	UNDERSTANDING IS SEEING	seed%1:20:02::
wind	metonymy	ARGUMENT IS WAR	wind%1:19:00::

Word	Type	MML Concept	Sense ID
hearth	metonymy	SOCIETY IS A BODY	hearth%1:06:01::
haste	metonymy	TIME IS MONEY	haste%1:07:00::
bite	metonymy	IDEAS ARE FOOD	bite%1:04:00::
raise	metonymy	CONTROL IS UP	raise%1:04:00::
sight	metonymy	UNDERSTANDING IS SEEING	sight%1:09:00::
rise	metonymy	CONTROL IS UP	rise%1:17:00::
rise	metonymy	CONTROL IS UP	rise%1:04:00::
pathos	metonymy	LIFE IS A JOURNEY	pathos%1:07:00::
cover	metonymy	CONTROL IS UP	cover%1:06:02::
high	metonymy	CONTROL IS UP	high%1:15:00::
taste	metonymy	TIME IS MONEY	taste%1:09:02::
drain	metonymy	SOCIETY IS A BODY	drain%1:06:00::
crossroads	metonymy	LIFE IS A JOURNEY	crossroads%1:09:00::

4 Discussion

The analysis reveals that the MML is a "proto-computational" artifact. By linking it to ChainNet, we reveal the specific sense-to-sense architecture of polysemy. We see how words like *superior* or *heart* transition from physical locations/organs to abstract social hierarchies and emotional centers.

The continuation of this research involves moving from the manual categorization of the 1990s into high-dimensional vector spaces and neural theories of language, as evidenced by the success of the automated linking methodology.

5 Conclusions

We have successfully merged the theoretical framework of the MML with the lexical granularity of ChainNet. The resulting dataset confirms that polysemy in cognitive linguistics is not a random collection of meanings, but a structured network of cognitive shifts that can be computationally modeled.