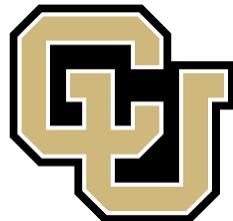


Discourse Anaphora, Part 2 & Multilingual issues

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Relations: Types

- A United Nations assessment team was dispatched to the province after two quakes, measuring 7.6 and 7.4, struck west of Manokwari Jan. 4. Many of the 14,000 refugees have returned home but some are still too fearful to go back Kacong said in an interview after the team's arrival.

■ Temporal

- [arrival] BEFORE [interview]
- {Jan. 4} CONTAINS [quakes]
- [interview] CONTAINS-SUBEVENT [said]

■ Causal

- CAUSES: [fearful] OVERLAP/CAUSES [go]neg
- PRECONDITIONS: [quakes] BEFORE/PRECONDITIONS [dispatched]

Relations: Types

- A United Nations assessment team was dispatched to the province after two quakes, measuring 7.6 and 7.4, struck west of Manokwari Jan. 4. Many of the 14,000 refugees have returned home but some are still too fearful to go back Kacong said in an interview after the team's arrival.

■ Reporting

- [said] REPORTS [returned], [fearful], [go]neg

■ Coreference

- IDENTICAL: two mentions point to the same referent
 - [team] IDENT [team]
- WHOLE/PART: one ENTITY is compositionally part of another
 - [United Nations]*WHOLE*, [team]*PART*
 - [province]*WHOLE*, [Manokwari]*PART*
- SET/MEMBER: a group of things and a member of that group
 - [refugees]*SET*, [Many]*MEMBER*, [some]*MEMBER*

Relations: Issues

- Preconditioning: Where do we “draw the line”?
- Sometimes it’s explicit in the text:
 - His license was **suspended** because of a drug **addiction**.
 - [addiction] OVERLAP/PRECONDITIONS [suspended]
- Often it’s not. We don’t want relations like:
 - Christchurch, the first city **established** in New Zealand has endured several earthquakes that have **destroyed** its homes.
 - [established] BEFORE/PRECONDITIONS [destroyed]

Relations: Issues

- But we do want:
 - The rockfall made the **over-full** dam **burst**, flooding the town below.
 - [over-full] OVERLAP/PRECONDITIONS [burst]
- What about:
 - Without notice, the officers **entered** the room and **boxed** up its contents.

Relations: Issues

- WHOLE/PART: What counts as “compositional”?
- [West Papua Province]*WHOLE*, [Manokwari]*PART*
- But not:
 - The refugee [camp] in the neighboring [province]
- What about:
 - A dance [club] in [Berlin]

How do we capture temporal relations? UMR

- s1: *Edmund Pope.... (s1p)*
- s3: *He denied any wrongdoing.*
(**s3d / deny-01**
 - :ARG0 (**s3h / he**)
 - :ARG1 (**s3t / thing**)
 - :ARG1-of (**s3d2 / do-02**
 - :ARG0 **s3h**
 - :ARG1-of (**s3w / wrong-02**))))

(s3 / sentence
:temporal ((**s3d** :before DCT)
:temporal (**s3w** :before **s3d**))
:coref ((**s3h** :same-entity **s1p**)))

*Crucial for medical histories (NIH),
For identifying IED scenarios (DARPA),
etc.*

How do we capture temporal relations? UMR

- s1: *Edmund Pope.... (s1p)*
- s3: *He denied any wrongdoing.*
(**s3d / deny-01**
:ARG0 (**s3h / he**)
:ref-number *Singular*
:ref-person *3rd*)
- :ARG1 (**s3t / thing**
:ARG1-of (**s3d2 / do-02**
:ARG0 **s3h**
:ARG1-of (**s3w / wrong-02**))))

(**s3 / sentence**
:temporal ((**s3d** :before DCT)
:temporal (**s3w** :before **s3d**))
:coref ((**s3h** :same-entity **s1p**)))

*Crucial for medical histories (NIH),
For identifying IED scenarios (DARPA),
etc.*

UMR sentence-level additions

- ▶ An *Aspect* attribute to event concepts
 - ▶ *Aspect* refers to the internal constituency of events - their temporal and qualitative boundedness
- ▶ *Person* and *number* attributes for pronouns and other nominal expressions
- ▶ A set of concepts and relations for discourse relations between clauses
- ▶ Quantification scope between quantified expressions to facilitate translation of UMR to logical expressions

UMR attribute: coarse-grained aspect

- ▶ *State*: unspecified type of state
- ▶ *Habitual*: an event that occurs regularly in the past or present, including generic statements
- ▶ *Activity*: an event that has not necessarily ended and may be ongoing at Document Creation Time (DCT).
- ▶ *Endeavor*: a process that ends without reaching completion (i.e., termination)
- ▶ *Performance*: a process that reaches a completed result state

Coarse-grained Aspect as an UMR attribute

He wants to travel to London.

(w / want
:aspect **State**)

He was writing his paper yesterday.

(w / write
:aspect **Activity**)

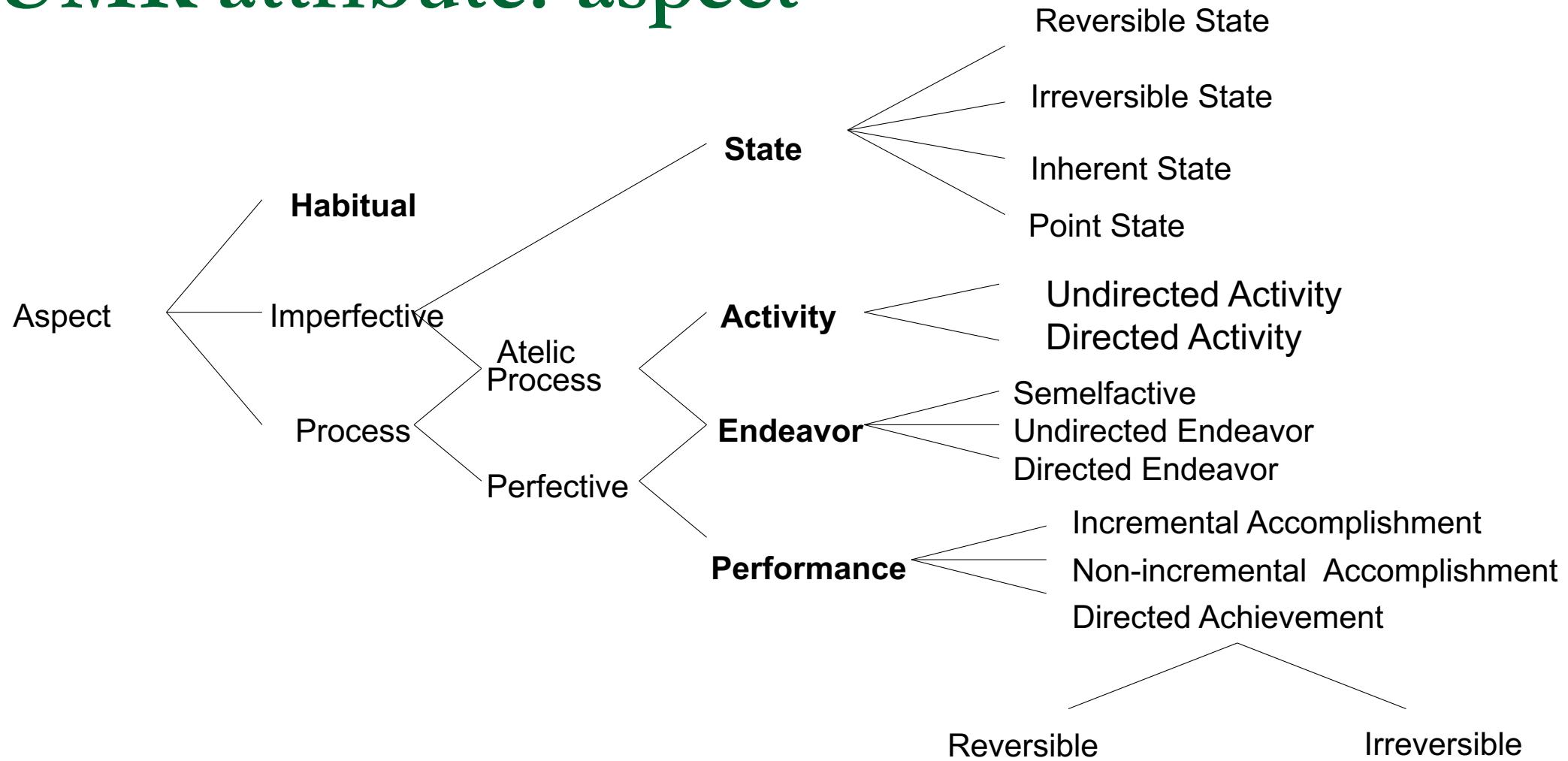
She rides her bike to work.

(r / ride
:aspect **Habitual**)

Mary mowed the lawn for thirty minutes.

(m / mow
:aspect **Endeavor**)

UMR attribute: aspect



Fine-grained Aspect as an UMR attribute

My cat is hungry.

(h / have-mod-91
:aspect **Reversible state**)

The wine glass is shattered.

(h / have-mod-91
:aspect **Irreversible state**)

My cat is black and white.

(h / have-mod-91
:aspect **Inherent state**)

It is 2:30pm.

(h / have-mod-91
:aspect **Point state**)

Adding Aspect to UMR

- s1: *Edmund Pope.... (slp)*,, s3: *He denied any wrongdoing.*

(d / deny-01

:Aspect Performance

:ARG0 (h / he)

:ref-number Singular
:ref-person 3rd)

:ARG1 (t / thing

:ARG1-of (d2 / do-02

:Aspect Process

:ARG0 h

:ARG1-of (w / wrong-02))))

Adding Aspect and Coref to UMR

- s1: *Edmund Pope.... (s1p)*,, s3: *He denied any wrongdoing.*

(d / deny-01

:Aspect Performance

:ARG0 (h / he)

:ref-number Singular
:ref-person 3rd)

:ARG1 (t / thing

:ARG1-of (d2 / do-02

:Aspect Process

:ARG0 h

:ARG1-of (w / wrong-02))))

(s3 / sentence

:coref ((s3h :same-entity s1p)))

Adding Aspect, Temporal links, Modality & Coref

- s1: *Edmund Pope.... (s1p)*,, s3: *He denied any wrongdoing.*

(d / deny-01

:Aspect Performance

:ARG0 (h / he)

:ref-number Singular

:ref-person 3rd)

:ARG1 (t / thing

:ARG1-of (d2 / do-02

:Aspect Process

:ARG0 h

:ARG1-of (w / wrong-02))))

(s3 / sentence

:temporal ((s3d :before DCT)

:temporal (s3w :before s3d))

:modal ((s3d :AFF AUTH)

(s3d2 :NEG (s3h :AFF AUTH)))

:coref ((s3h :same-entity s1p)))

Mapping AMR to UMR: Resources for Adapting Existing Corpora for Cross-Lingual Compatibility

TLT-SyntaxFest 2023

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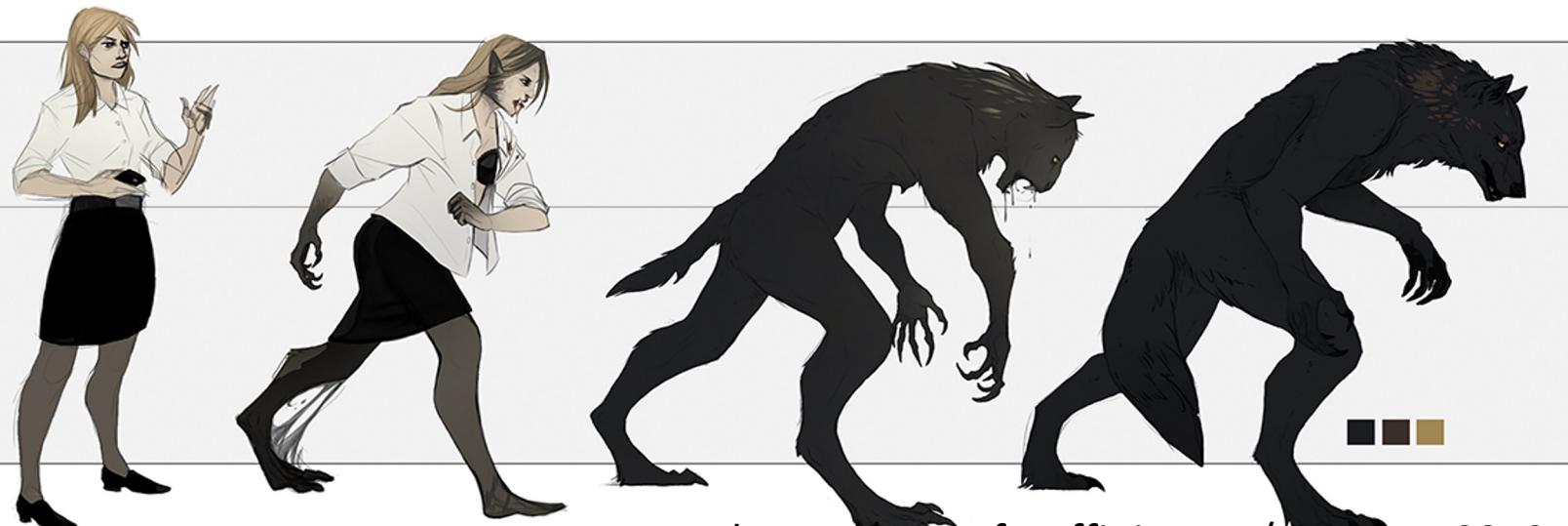
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1. Mapping AMR to UMR: Introduction

- Symbolic meaning representations endure! AMR is a popular one
- UMR improves on AMR-- how?
 - More expressive: now with document level annotation, alignments, and TAM!
 - Designed to handle *any* language, and aid in documentation and lexical resource development
- But, lots of AMR corpora already. Time to retrofit!
- **This Paper:** for users who have an AMR corpus they would like to retrofit, or who already know AMR annotation and would like to learn UMR.



AMR is a nice respectable meaning representation.

UMR is a beast!

1. Introduction: Existing AMR Corpora

- English AMR:
 - LDC corpora: 60,000 sentences
 - Special domain projects:
 - Dialogue AMR (1000) [Bonial et al., 2020](#)
 - NIH THYME (8,000) [Wright-Bettner et al., 2020](#)
 - Spatial AMR (26,000) [Bonn et al., 2020](#)
 - Multi-sentence AMR (8,000, 300 documents) [O'Gorman et al., 2018](#)
 - ...and more

1. Introduction: Existing AMR Corpora

- Other Languages with AMR (or compatible):
 - Chinese <https://www.cs.brandeis.edu/clp/camr/camr.html>
 - Czech Xue et al., 2014
 - Spanish Migueles-Abraira et al., 2018; Wein et al., 2022
 - Turkish Oral et al., 2022; Azin and Eryiğit, 2019
 - Vietnamese Linh and Nguyen, 2019
 - Portuguese Anchiête and Pardo, 2018; Sobrevilla, Cabezudo & Pardo 2019
 - Korean Choe et al., 2019
 - Persian Takhshid et al., 2022
 - ...and more

1. Introduction: Czech & Chinese Corpora:

Chinese:

- **AMR corpus:** 6,500 sentences
 - Little Prince (1,562), Chinese Treebank (5,000)
 - Uses Chinese PropBank Frames
 - Adds roles: :cunit, :tense, :aspect
 - Adds discourse relations in Chinese Discourse Treebank
 - Alignments!

1. Introduction: Czech & Chinese Corpora:

Czech:

- **AMR corpus:** 100 sentences (Xue et al., 2014)
- **AMR/UMR-compatible corpora:** (Oepen et al., 2019, 2020)
 - Czech Tectogrammatical (TR) annotation
 - For Prague Dependency Treebank (Hajič et al., 2020)
 - & Czech English Dependency Treebank (Hajič et al., 2012)
 - Parallel with WSJ portion of Penn TB
 - Valency structures similar to PropBank (Hajič et al., 2003)

2. AMR vs UMR: Abstract Meaning Representation

English AMR graph:

They were just doing sign language back and forth.

English PropBank Roleset:

Sign-08 *use a sign language*

Arg0-PAG: signer

ARG1-PPT: info communicated

ARG2-GOL: recipient

(s / **sign-08**
:ARG0 (t / they)
:ARG2 t
:mod (j / just)
:manner (b / back-and-forth))

2. AMR vs UMR: *They were just doing sign language back and forth.*

(s / sign-08

:ARG0 (p / person

:ref-person 3rd

:ref-number Plural)

**they*

:ARG2 p

:ARG1-of (c / contrast-91)

**just*

:Aspect Activity

**back and forth*

:MODSTR FullAff)

2. AMR vs UMR: Uniform Meaning Representation

AMR graph

→

UMR graph

[They didn't speak.] They were just doing sign language back and forth.

(s / sign-08
:ARG0 (t / they)
:ARG2 t
:mod (j / just)
:manner (b / back-and-forth))

(s / sign-08
:ARG0 (p / person **they*
:ref-person 3rd
:ref-number Plural)
:ARG2 p
:ARG1-of (c / contrast-91) **just*
:Aspect Activity
:MODSTR FullAff) **back and forth*

2. A WRENCH IN THE GEARS of UMR Annotation:

UMR's Aim → uniform annotation across morphosyntactically-different languages

But → UMR based on AMR (AMR designed for English)

- Schema expects roughly 1:1 ratio between tokens & semantic concepts

ENGLISH:

‘He ailed’ vs. ‘He got sick’ vs. ‘He came down with [X]’

TOKENS:

2

3

5

ARAPAHO:

‘nih3iikoncebeit’ lit. “*a ghost shot him with an arrow*”

TOKENS:

1

7

Arapaho, same sentence

Text:

Beni'beebee3sohowuuneti3i' .

Morphological breakdown:

beni'- bee- bee3sohowuuneti -3i'

English glosses:

IC.just- REDUP- do sign language to each other -3PL

Parts of speech:

prefix- prefix- vai.RECIP -infl

2. AMR vs UMR: English vs Arapaho

English

AMR

Arapaho

UMR

Text:

Morphological breakdown:

English glosses:

Parts of speech:

→

Beni'beebee3sohowuuneti3i' .

beni'- bee- bee3sohowuuneti -3i'

IC.just- REDUP- do sign language to each other -3PL

prefix- prefix- vai.RECIP -infl

(b / beni'beebee3sohowuuneti3i'-00)

(b / beebee3sohowuuneti-00

:actor (p / person **they*

:ref-person 3rd

:ref-number Plural)

:recipient p **to each other*

:ARG1-of (c / contrast-91) **just*

:Aspect Activity

**REDUP (back and forth)*

:MODSTR FullAff)

2. AMR vs UMR: English vs Arapaho

AMR

→

UMR

[They didn't speak.] They were just doing sign language back and forth.

English

(s / sign-08
 :ARG0 (t / they)
 :mod (j / just)
 :manner (b / back-and-forth))

:ARG0 (p / person
 :ref-person 3rd
 :ref-number Plural)
 *they
 :ARG2 p
 *back
and forth
 :ARG1-of (c / contrast-91) *just
 :Aspect Activity
 *back
and forth
 :MODSTR FullAff)

Arapaho

Text:

Morphological breakdown:

English glosses:

Parts of speech:

(b / beni'beebee3sohowuuneti3i'-00)

beni'- bee- bee3sohowuuneti -3i'
 IC.just- REDUP- do sign language to each other -3PL
 prefix- prefix- vai.RECIP -infl

Beni'beebee3sohowuuneti3i' .

(b / beebee3sohowuuneti-00)

:actor (p / person
 :ref-person 3rd
 :ref-number Plural)
 *they
 :recipient p
 *to each
other
 :ARG1-of (c / contrast-91) *just
 :Aspect Activity
 *REDUP
(back and forth)
 :MODSTR FullAff)

3. From AMR to UMR: Graph Building Blocks

- **Language-specific rolesets**
- **General semantic roles**
- **Abstract rolesets**
- **Abstract concepts**

AMR:



Keep in mind that this is only my opinion, based upon my own experiences with "Nessie-like" creatures in the lake.

(k / keep-in-mind-08 :mode imperative
:ARG1 (y / you)
:ARG2 (t / thing
:ARG1-of (o / opine-01
:ARG0 (i / i)
:mod (o2 / only))
:domain (t2 / this)
:ARG1-of (b / base-02
:ARG2 (e / experience-01
:ARG0 i
:ARG1 (c / creature
:ARG1-of (r2 / resemble-01
:ARG2 (a / animal :wiki Loch_Ness_Monster
:name (n / name :op1 "Nessie")))
:location (l / lake))))

Roles for non-DWD events

Central roles	Actor, Undergoer, Theme, Recipient, Force, Causer, Experiencer, Stimulus
Peripheral roles	Instrument, Companion, Material/Source, Place, Start, Goal, Affectee
Roles for entities and events	Cause, Manner, Reason, Purpose, Temporal, Extent

Table 2: UMR non-lexical roles

Mapping to PropBank

Central Roles	Peripheral Roles	Roles for Entities and Events
Actor	Instrument	Cause
Undergoer	Companion	Manner
Theme	Material/Sou rc e	Reason
Recipient	Place	Purpose
Force	Start	Temporal
Causer	Goal	Extent
Experiencer	Affectee	
Stimulus		

PB Roles	Central Roles	PB Roles	Peripheral Roles	PB Roles	Roles for Events
A0_pag	Actor	AM_mnr	Instrument	AM_cau	Cause
A1_ppt	Undergoer	AM_mnr	Companion	AM-mnr	Manner
A1_ppt	Theme	A2_dir	Material/Source	AM_prp	Reason
A2_gol	Recipient	AM_loc	Place	AM_prp	Purpose
A0_pag	Force	A2_dir	Start	AM_tmp	Temporal
A0_pag	Causer	A2_gol	Goal	AM_ext	Extent
A0_ppt/A1_ppt	Experiencer	A1	Affectee		
A0_pag//A1_pag OR A0_cau/A1_cau	Stimulus				

Role-Role Mappings:

Participant Roles:

AMR	UMR
:Arg0	:actor
:Arg1	:undergoer
:Arg1	:theme
:Arg0/1	:experiencer
:Arg0	:force
:Arg0	:causer
:Arg0/1	:stimulus

new roles

:location	:place
:time	:temporal
:accompanier	:companion
:beneficiary	:affectee

renamed roles:

semantic boundaries
adjusted

:mod	→ :other-role
:cause	→ :cause
	→ :reason
:part	→ :part
:consist-of	→ :group
	→ :material
:source	→ :source
	→ :start
:destination	→ :goal
	→ :recipient

split roles

:purpose	:purpose
:instrument	:instrument
:manner	:manner
:extent	:extent

unchanged roles

NonParticipant/Attribute Roles:

AMR	UMR
say-01	:ARG2
and	:vocative
or	:pure-addition
instead-of-91	:apprehensive
except-01	:substitute
	:subtract

:li	:list-item
:condition	→ :condition
	→ :concessive-condition
:concession	→ :concession
	→ :mod

:direction	:direction
:path	:path
:duration	:duration
:frequency	:frequency
:quant	:quant
:degree	:degree
:poss	:poss
:topic	:topic
:medium	:medium
:age	:age
:example	:example
:ord	:ord
:polite	:polite
:mode	:mode
:polarity	:polarity

Non-AMR Semantic Coverage

PRONOUNS:	:refer-person
COUNT:	:refer-number
ASPECT:	:Aspect
MODAL-ROLES:	:MODSTR
	:QUOT
	:MODPRD

Limited Arguments:

NES:	:name
	:wiki
QUANTITIES:	:unit
	:scale
ENTITIES:	:value
DATE-ENTITY:	:day
	:month
	:year
	:weekday
	:time
	:timezone
	:quarter
	:decade
	:century
	:calendar
	:era
CONCEPTS:	:opX
	:sntX
:ORD:	:range

Role-Role Mappings:

Participant Roles:

AMR

:Arg0

:Arg1

:Arg1

:Arg0/1

:Arg0

:Arg0

:Arg0/1

UMR

:actor

:undergoer

:theme

:experiencer

:force

:causer

:stimulus

AMR to UMR Role-Role Mappings:

:li : list-item

:location	:place
:time	:temporal
:accompanier	:companion
:beneficiary	:affectee

renamed roles:

semantic boundaries
adjusted

:mod	:other-role
:cause	:cause
	:reason
:part	:part
:consist-of	:group
	:material
:source	:source
	:start
:destination	:goal
	:recipient

split roles

:condition	:condition
	:concessive-condition
:concession	:concession
	:mod

:direction	:direction
:path	:path
:duration	:duration
:frequency	:frequency
:quant	:quant
:degree	:degree
:poss	:poss
:topic	:topic
:medium	:medium
:age	:age
:example	:example

AMR to UMR Role-Role Mappings:

AMR	UMR
say-01 :ARG2	:vocative
and	:pure-addition
or	:apprehensive
instead-of-91	:substitute
except-01	:subtract

4. Mapping Roles, renamed :location → :place

*The thing that slumped out of the lagoon **in the Amazon** was not a Nessie-like creature.*



AMR:

(c / creature
 :ARG1-of (r / resemble-91
 :polarity -
 :ARG2 (a / animal :name (n2 / name :op1 "Nessie"))
 :domain (t / thing
 :ARG1-of (s / slump-01
 :start (l / lagoon
 :location (f / forest :name (n / name :op1 "Amazon"))))

4. Mapping Roles, renamed :location → :place

The thing that slumped out of the lagoon in the Amazon was not a Nessie-like creature.



UMR:

(i / identity-91
:polarity -
:ARG1 (t / thing
:ARG1-of (s / slump-01
:start (l / lagoon
:place (f / forest :name (n / name :op1 "Amazon"))
:Aspect Activity
:MODSTR FullAff))
:ARG2 (c / creature
:ARG1-of (r / resemble-91
:ARG2 (a / animal :name (n2 / name :op1 "Nessie")))

4. Mapping Roles

Broadened Category

- Example: **:beneficiary** → **:affectee** Beneficiaries & maleficiaries

The cash monster took **Greg** to the cleaners for \$10 million.

AMR:

(**t / take-to-cleaners-00**
 :ARG0 (m / monster
 :mod (c / cash))
 :ARG1 (p / person :name (n / name :op1
“**Greg**”))
 :theme (m2 / monetary-quantity :quant
10,000,000
 :unit (d / dollar)))

UMR:

(**t / take-to-cleaners-00**
 :actor (m / monster
 :mod (c / cash))
 :affectee (p / person :name (n /
name :op1 “**Greg**”))
 :theme (m2 / monetary-quantity
:quant 10,000,000
 :unit (d / dollar)))



5. Mapping Abstract Rolesets

Reified Rolesets:

- Example: `(c / cause-01
:ARG0-cause
:ARG1-event)`

`(h / have-cause-91
:ARG1-event
:ARG2- cause)`

`(h / have-reason-91
:ARG1-event
:ARG2- reason)`



Mothra swam to Tokyo because her children were in danger.

AMR:

`(c / cause-01
:ARG0 (e / endanger-01
:ARG1 (p / person
:ARG0-of (h / have-rel-role-91
:ARG1 p2
:ARG2 (c / child))))
:ARG1 (s / swim-01
:ARG0 (p2 / person :name (n / name :op1 "Mothra"))
:ARG2 (c / city :name (n2 / name :op1 "Tokyo")))`

UMR:

`(h / have-reason-91
:ARG1 (e / endanger-01
:ARG1 (p / person
:ARG1-of (h / have-rel-role-91
:ARG2 p2
:ARG3 (c / child)))
:Aspect State
:MODSTR FullAff)
:ARG2 (s / swim-01
:ARG0 (p2 / person :name (n / name :op1 "Mothra"))
:ARG2 (c / city :name (n2 / name :op1 "Tokyo"))
:Aspect Performance
:MODSTR FullAff)`

UMR Annotation of MULTIWORD EXPRESSIONS

DMR 2023 Workshop , held with IWCS 2023, Nancy, France



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Nianwen Xue



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Jan Hajič

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SETTING THE STAGE for Today's Talk:

Focus: Presenting a unifying approach to MWE annotation in UMR

Outline:

1. **UMR**
2. **The Problem of MWEs**
3. **MWE types**
4. **Examples**

Multiword Expression: when multiple words map to a single graph-concept in UMR.

1. UNIFORM MEANING REPRESENTATION

- Nested predicate-argument structures
- Abstracts away from syntax
- Crosslingually-uniform
- More expressive than AMR



'The thing that slumped out of the lagoon was a little green around the gills.'

```
(h / have-mod-91
 :ARG1 (t / thing
 :ARG1-of (s / slump-01
 :start (l / lagoon)
 :aspect Activity
 :modstr FullAff))
 :ARG2 (g / green-around-gills
 :degree Downtoner))
```

- Language-specific rolesets
- UMR roles
- UMR Abstract rolesets
- UMR Abstract concepts
- Token concepts

2. A TOUGH NUT TO CRACK for Annotators:

Challenge:

- Syntactic structure ≠ Semantic structure

Consequence → Annotators may not know

- what to include in a graph predicate
- which arguments to include
- How to handle modification of the MWE



LITERAL:

(k / kick-00

:actor (j / John)

:undergoer (b / bucket))

'John kicked the bucket'

FIGURATIVE:

(k / kick-bucket-00

:undergoer (j / john)

4. The Goals IN A NUTSHELL:

Goal #1

Uniform annotation for
semantically parallel sentences

Goal #2

Inter-annotator agreement
for the same sentence

3 • Multiword Expression Types: FROM SOUP TO NUTS

LESS FIGURATIVE:



- Light Verb Constructions (LVCs)
take a walk, do a dance, give a care
- Fixed MWEs
by and large, all right
- Verb Particle Constructions (VPCs) & Verb Compounds
clean up, pipe down
- Non-consecutive Constructions
The [X]-er the [Y]-er
- Semi-fixed MWEs
get [one]'s {hot little} hands on

3 • Multiword Expression Types: FROM SOUP TO NUTS

MORE FIGURATIVE:



- Idioms
get caught with [one]’s hand in the cookie jar
- Proverbs
A watched pot never boils.
- 2-part Allegorical Sayings
Life is like a box of chocolates; you never know what you’re going to get.

5. NUTS AND BOLTS: Fixed MWEs

Strategy:

Concatenate tokens



*'One drawing goes along **all right** and another has no resemblance to its subject.'*

(a / and
:op1 (g / go-06
:Arg1 (t / thing
:quant 1
:Arg1-of (d / draw-01))
:Arg2 (a2 / all-right)
:manner
:aspect Activity
:modstr FullAff)
:o2p ...)

6. NUTS AND BOLTS: VPCs & Verb Compounds

Strategy: Concatenate tokens

*'The little sheep **ate** the flower **up**.'*

小 羊 把 花 吃 掉 了
little sheep BA flower {eat up} ASP



English Verb Particle

Construction:
(e / eat-up-02)

:Arg0 (s / sheep
:mod (l / little)
:Arg1 (f / flower)
:aspect Performance
:modstr FullAff)

eat-up-02: *eat completely*
Arg0-PAG eater
Arg1-PPT meal

Chinese Verb Compound

(x5 / 吃掉-01

:Arg0 (x2 / 羊
:mod (x1 / 小))
:Arg1 (x4 / 花)
:aspect Performance
:modstr FullAff)

吃掉-01: *eat completely*
Arg0-PAG eater
Arg1-PPT meal

7. NUTS AND BOLTS: Light Verb Constructions

Strategy: 1. Drop verb 2. Roleset relates to nominal element

LEMMA ROLESSET: (English)

'The children made a break for the playground.'

(b / break-20

- :Arg0 (c / child
 - :refer-number Plural)
- :Arg2 (p / playground)
- :aspect Performance
- :modstr FullAff)

break-20: begin motion, suddenly

- Arg0-PAG actor
- Arg1-SRC start location
- Arg2-GOL destination

SYNONYMOUS ROLESSET: (Spanish)

him I.gave fear
'I scared him.'

(a / asustar-01

- :Arg0 (p / person
 - 'I'
- :refer-person 1st
- :refer-number Singular)
- :Arg1 (p / person
 - 'him'
- :refer-person 3rd
- :refer-number Singular)

asustar-01: scare

- Arg0-PAG actor
- Arg1-PPT experiencer

COMPLEX NOMINAL ROLESSET: (Czech)

Prošel zkouškou ohněm.
go.through exam by.fire
'He went through trial by fire.'

(z / zkouškou-ohněm-01 'undergo trial by fire'

- :Arg1 (p / person
 - 'he'
- :ref-person 3rd
- :ref-number Singular)
- :aspect Performance
- :modstr FullAff)

zkoušet-ohněm-01: go through trial by fire

- Arg1-PAG undergoer
- Arg2-TOP the trial

8. NUTS AND BOLTS: Non-consecutive Constructions

Strategy:

Abstract UMR rolesets

THE [X]-ER, THE [Y]-ER:



'The closer the time comes, the happier I will be.'

时间 越 临近 , 我 就 越 感到 幸福
time more {get close} , I then more feel happy

(c / correlate-91)

:Arg1 (h / have-degree-91)

:ARG1 (c / come-01)

:ARG1 (t / time)

:aspect Activity

:modstr FullAff)

:ARG2 (m / more)

:Arg2 (h2 / have-degree-91)

:ARG1 (h3 / happy-01)

:ARG1 (p / person

:refer-person 1st

:refer-number Singular)

:aspect State

:modstr FullAff)

:Arg2 (m2 / more))

(c / correlate-91)

:Arg1 (h / have-degree-91)

:ARG1 (x1 / 临近-01)

:Arg0 (x2 / 时间)

:aspect Activity

:modstr FullAff)

:ARG2

(x3 / 越))

(h2 / have-degree-91)

:Arg2

:ARG1 (x4 / 感到-01)

:Arg0 (p / person

:ref-person 1st

:ref-number Singular)

:Aspect State

:modstr FullAff)

:Arg2

(x6 / 越))

'get close'
'time'

'feel'
'I'

'happy'
'more'

9. NUTS AND BOLTS: Idiom Rolesets

Strategy:

MWE Roleset:

- Arguments
- Token/slot syntactic description
- Metaphorical mapping

'He jumped on the Bitcoin bandwagon.'

(j / jump-on-bandwagon-09

- :Arg0 (p / person 'he'
:refer-person 3rd
:refer-number Singular)
- :Arg1 (b / bitcoin)
:aspect Performance
:modstr FullAff)

Jump-on-bandwagon-09

:ARG0 fad-participant

:ARG1 the fad

Definition: *join with others in participating in a fad*

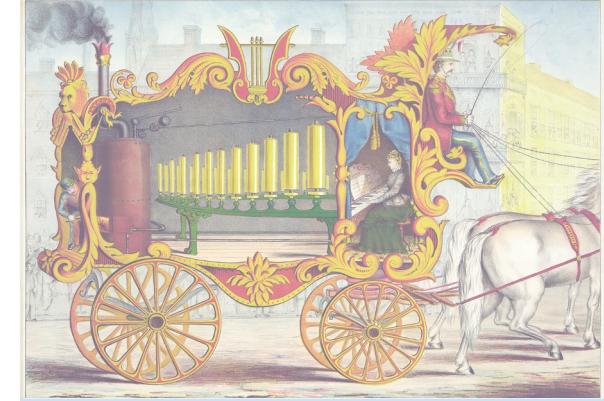
Syntactic Description:

TOKENS: jump on the bandwagon

SLOTS: A B C D

POS: VB PP DET NN

HEAD: - A D B



Metaphorical Mapping:

LITERAL:

- (A / jump-03
:Arg0 (n / N-ARG0)
:destination (D / bandwagon))

FIGURATIVE:

- (A / join-in-05
:arg0 (n / N-ARG0)
:arg1 (D / people
:arg0-of (participate-01
:arg1 (f2 / fad
:topic (n1 / N-ARG1))

Jump-03 physically leap

:ARG0 jumper

Join-in-05 join a group

:ARG0 joiner
:ARG1 group

participate-01 take part in

:ARG0 participant
:ARG1 activity

9. Idioms: Arapaho

Arapaho:

- Polysynthetic & agglutinating
- 1:many token-to-concept ratio
- Not MWE, but still idiomatic

nih3iikoncebeit

nih- **3iikon-** **ceb** -eit

PAST- **ghost-** **shoot** -4/3

Lit. 'a ghost shot him [with an arrow].'

'Someone gave him a disease.'

(x / **3iikonceb-01**

'ghost-shoot'

:**Arg0** (p / person

'someone'

:refer-person 3rd

:refer-number Singular)

:**Arg1** (p2 / person

'him'

:refer-person 3rd

:refer-number Singular)

:**Arg2** [implicit-for-coref]

'arrow'

:aspect Performance

:modstr FullAff)

ceb-01 *shoot with an arrow*

:**ARG0** archer

:**ARG1** victim

:**ARG2** arrow

3iikonceb-02 *give a disease*

:**ARG0** disease-giver

:**ARG1** disease-getter

:**ARG2** disease

Morphosyntactic Description:

TOKENS: **3iikon ceb**

A B

SLOTS: B

-

Metaphorical Mapping:

LITERAL:

(**B1** / **ceb-01**

:**Arg0** (**A** / **3iikon-**)

:**Arg1** (**n** / **N-ARG1**)

:**Arg2** [**implicit: B2** / **arrow**])

FIGURATIVE:

(**B1** / **infect-01**

:**Arg0** (**A** / **N-ARG0**)

:**Arg1** (**B2** / **N-ARG2**)

:**Arg2** (**n1** / **N-ARG1**))

10. NUTS AND BOLTS: Proverbs

Strategy: new abstract roleset for proverbs

PROVERB-91

'The mountain is high and the emperor is far away.'

(When there's little global oversight, there's more local autonomy, and this is a good thing.)

(p / proverb-91

:Arg1 (a / and

:op1 (h / high-02

:Arg1 (m / mountain)

:aspect State

:modstr FullAFF)

:op2 (have-place-91

:Arg1 (e / emperor)

:Arg2 (a / away

:extent (f / far))

:aspect State

:modstr FullAFF)))

山 高 皇帝 远
mountain high emperor {far away}

(p / proverb-91

:Arg1 (a / and

:op1 (x2 / 高-01

'high'

:Arg0 (x1 / 山)

'mountain'

:aspect State

:modstr FullAFF)

:op2 (x4 / 远-01

'far away'

:Arg0 (x3 / 皇帝)

'emperor'

:aspect State

:modstr FullAFF)))

6. NUTS AND BOLTS: Proverbs & 2-Part Allegorical Sayings

Chinese Xiehouyu (and similar):

1. antecedent lays out a metaphor
2. consequent gives a focused interpretation for the metaphor

Strategy:
proverb-91
Both roles

你 这 是 大炮 打 蚊子
you this be cannon shoot mosquito

小题大做

{solving small problem with big action}

'You are shooting cannon at mosquitoes -- making too much out of something small.'

(p / proverb-91

:Arg1 (x5 / 打-02

'shoot'

:Arg0 (p / person

'you'

:ref-person 2nd

:ref-number Singular)

:Arg1 (x6 / 蚊子)

'mosquito'

:instrument (x4 / 大炮)

'cannon'

:aspect Habitual

:modstr FullAff)

:Arg2 (x8 / 小题大做-01

'make too much out of something small'

:aspect Habitual

:modstr FullAff))

6. NUTS AND BOLTS: Proverbs & 2-Part Allegorical Sayings

In English:

1. *antecedent* lays out a metaphor
2. *consequent* gives a focused interpretation for the metaphor

Strategy:
proverb-91
Both roles

*'Life is like a box of chocolates --
you never know what you're going to get.'*

(p / proverb-91

:Arg1 (r / resemble-91

:Arg1 (l / life)

:Arg2 (c / chocolate

:quant 1

:unit (b / box))

:aspect Habitual

:modstr FullAff)

:Arg2 (k / know-01 :polarity -

:ARG0 (p / person

:refer-person 2nd

:refer-number Singular)

:ARG1 (t / thing

:ARG1-of (g / get-01

:ARG0 p

:aspect Habitual

:modstr FullAff)

:mod (e / ever)

:aspect Habitual

:modstr FullNeg))

