

Modelling word-formation paradigms: networks visually representing their multidimensionality, complexity and theoretical infiniteness

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ParadigMo2
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Networks (graphs) (Estrada & Knight 2019, Newman (2010)

- model and visually represent word-formation paradigms
- large scale
- small scale
- visual and conceptual evidence to the multidimensional relationships that shape paradigms (Štekauer 2014)

Derivational paradigms

- paradigm : set of items that are in an aligning relation (Bonami & Strnadová 2019: 170)
- axis of the paradigm (Rodrigues & Rodrigues 2018)
- features that sustain the aligning relation comprise every kind of feature that maintains the cohesion of the paradigm (Pounder 2000, van Marle 1985, Stekauer 2014)
- relationships that build paradigms are multidimensional (Stekauer 2014)
- paradigm (items, connections)

Paradigms and networks (graphs)

- paradigm consists of sets of items and sets of connections between the items
- networks or graphs (G) model systems whose entities are represented by vertices (V) – or nodes – and the connections between them, represented by edges (E)
- $G(V, E)$
- Gephi (Bastian, Heymann & Jacomy 2009)

Data and previous work

Rodrigues (2008)

8414 deverbal nouns:

- 4917 deverbal event and state nouns (ACTION, PROCESS, STATE, etc.)
- 3497 individual deverbal nouns (AGENT, INSTRUMENT, PLACE, etc.)
- 13708 meanings

Rodrigues (2008)

Event/state deverbal nouns

9 suffixes

-ão (*encontrar* ‘to find; to strike on’, *encontrão* ‘collision; violent and sudden push’)

-agem (*virar* ‘to turn’, *viragem* ‘turn’)

-ção (*absolver* ‘to absolve’, *absolvição* ‘absolution’)

-mento (*arrefecer* ‘to cool’, *arrefecimento* ‘cooling’)

-ncia (*equivaler* ‘to be equivalent to’, *equivalência* ‘equivalence’)

-dura (*morder* ‘to bite’, *mordedura* ‘bite’)

-nça (*vingar* ‘to revenge’, *vingança* ‘revenge’)

-nço (*surripiar* ‘to rob’, *surripianço* ‘robbery’)

-aria (*correr* ‘to run’, *correria* ‘scurry’)

Rodrigues (2008)

Individual deverbal nouns

13 suffixes

- al (*estender* ‘to hang’, *estendal* ‘clothesline’)
- ão (*resmungar* ‘to grumble’, *resmungão* ‘grumbler’)
- dor (*ralar* ‘to grate’, *ralador* ‘grater’)
- dora (*triturar* ‘to grind’, *trituradora* ‘grinder’)
- deiro (*cremar* ‘to cremate’, *cremadeiro* ‘cremator’)
- deira (*amolar* ‘to sharpen’, *amoladeira* ‘sharpener’)
- nte (*falar* ‘to speak’, *falante* ‘speaker’)
- doura (*aguçar* ‘to sharpen’, *aguçadoura* ‘sharpener’)
- douro (*mirar* ‘to observe’, *miradouro* ‘viewpoint’)
- tória (*escapar* ‘to escape’, *escapatória* ‘escape’)
- ório (*consultar* ‘to consult’, *consultório* ‘consulting room’)
- tório (*falar* ‘to speak’, *falatório* ‘gossip’)
- vel (*dirigir* ‘to drive’, *dirigível* ‘airship’)

Rodrigues (2008)

- morphological structures of the verbs per morphological structures of the nouns
- syntactic-semantic structures of the verbs per morphological structures of the nouns
- syntactic-semantic structures of the verbs and meanings of the nouns
- selectional restrictions situated on the different layers of language structures

	-al	-ão1	-ão2	-aria	-ção	-deira	-deiro	-dor	-dora	-doura	-douro	-dura	-agem	-mento	-nça	-ncia	-nço	-nte	-(t)ória	-ório	-tório	-vel
opaca	60,00%	53,70%	73,68%	62,86%	16,98%	53,15%	66,00%	29,99%	27,27%	88,89%	56,88%	48,90%	28,23%	22,50%	48,42%	22,36%	51,85%	37,06%	31,25%	38,46%	32,91%	40,00%
transpar	0,00%	9,26%	1,75%		22,35%	4,33%	4,00%	17,81%	12,12%	0,00%	2,50%	3,57%	0,68%	11,59%	10,53%	45,93%	7,41%	34,77%	68,75%	46,15%	51,28%	60,00%
conv	20,00%	3,70%	11,40%	14,29%	15,96%	13,78%	12,00%	16,49%	21,21%	0,00%	15,63%	12,91%	53,74%	10,01%	11,58%	2,44%	25,93%	13,20%	0,00%	7,69%	7,26%	0,00%
	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
a-	0,00%	9,26%	0,00%	2,86%	3,28%	8,66%	10,00%	6,77%	3,03%	0,00%	5,00%	6,87%	4,42%	13,79%	2,11%			1,78%	0,00%	0,00%	0,85%	0,00%
ante-	0,00%		0,00%		0,04%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,07%			0,25%	0,00%	0,00%	0,00%	0,00%
circun-	0,00%		0,00%		0,09%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
con-	0,00%		0,00%		1,15%	0,00%	2,00%	0,64%	0,00%	0,00%	0,00%				0,21%		2,03%	1,78%	0,00%	0,00%	0,00%	0,00%
contra-	0,00%		0,00%		0,26%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,25%	0,00%	0,00%	0,00%	0,00%
de-	0,00%		0,00%		1,37%	0,39%	0,00%	0,95%	0,00%	0,00%	1,88%	0,82%	1,36%	0,96%	2,11%			0,25%	0,00%	0,00%	0,85%	0,00%
des-	0,00%	3,70%	0,88%		6,61%	3,54%	6,00%	5,00%	3,03%	0,00%	3,75%	3,30%	2,72%	11,39%	9,47%	1,22%		1,52%	0,00%	7,69%	1,28%	0,00%
dis-	0,00%		0,00%		0,13%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%					1,05%		0,00%	0,00%	0,00%	0,43%	0,00%
en-	0,00%	5,56%	0,00%		2,26%	7,87%	0,00%	3,09%	12,12%	0,00%	4,38%	10,71%	2,04%	11,45%	1,05%		11,11%	0,25%	0,00%	0,00%	0,00%	0,00%
entre-	0,00%		0,00%			0,00%	0,00%	0,09%	0,00%	0,00%	0,00%	0,55%						0,00%	0,00%	0,00%	0,00%	0,00%
es-	20,00%	5,56%	0,88%		0,60%	2,36%	0,00%	1,73%	3,03%	5,56%	4,38%	2,20%					0,41%	3,70%	0,25%	0,00%	0,00%	0,00%
ex-	0,00%		0,00%		0,34%	0,00%	0,00%	0,09%	0,00%	0,00%	0,00%							1,22%	0,00%	0,00%	0,00%	0,00%
extra-	0,00%		0,00%		0,04%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,07%			0,41%	0,00%	0,00%	0,00%	0,00%
in-	0,00%		0,00%		0,64%	0,00%	0,00%	0,23%	0,00%	0,00%	0,00%	0,27%			0,21%			0,00%	0,00%	0,00%	0,00%	0,00%
in-[neg]	0,00%		0,00%		0,04%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,14%	1,05%	0,81%	0,00%	0,00%	0,00%	0,00%	0,00%
inter-	0,00%		0,00%		0,17%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%						0,81%	0,00%	0,00%	0,00%	0,00%	0,00%
per-	0,00%		0,00%		0,13%	0,00%	0,00%	0,09%	3,03%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
pre-	0,00%		0,00%		0,47%	0,00%	0,00%	0,09%	0,00%	0,00%	0,00%				0,14%			0,81%	0,00%	0,00%	0,00%	0,00%
re-	0,00%	7,41%	6,14%	2,86%	3,75%	1,97%	0,00%	2,04%	0,00%	5,56%	1,25%	1,65%	2,38%	3,02%	5,26%	4,88%		1,27%	0,00%	0,00%	0,85%	0,00%
retro-	0,00%		0,00%			0,00%	0,00%	0,00%	3,03%	0,00%	0,00%		0,34%					0,00%	0,00%	0,00%	0,00%	0,00%
sob-	0,00%		0,00%		0,13%	0,39%	0,00%	0,18%	0,00%	0,00%	1,25%	0,27%			0,34%			0,00%	0,00%	0,00%	0,00%	0,00%
sub-	0,00%		0,00%		0,30%	0,00%	0,00%	0,09%	0,00%	0,00%	0,00%				0,55%	1,05%	0,41%	0,51%	0,00%	0,00%	0,43%	0,00%
sobre-	0,00%		0,00%		0,30%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,14%		0,41%	0,25%	0,00%	0,00%	0,00%	0,00%
super-	0,00%		0,00%		0,47%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,07%		0,81%	0,25%	0,00%	0,00%	0,00%	0,00%
trans-	0,00%		0,00%		0,55%	0,00%	0,00%	0,36%	0,00%	0,00%	0,00%	0,27%			0,34%		0,81%	0,00%	0,00%	0,00%	0,43%	0,00%
ultra-	0,00%		0,00%		0,09%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
-e-	0,00%		0,88%	17,14%	1,79%	1,97%	0,00%	3,77%	0,00%	0,00%	1,25%	3,85%	2,04%	3,43%				1,02%	0,00%	0,00%	0,00%	0,00%
-ec-	0,00%		0,00%			0,00%	0,00%	0,45%	0,00%	0,00%	0,00%				0,82%		0,81%	0,00%	0,00%	0,00%	0,00%	0,00%
-ej-	0,00%		1,75%			0,39%	0,00%	1,00%	0,00%	0,00%	0,00%	1,65%			1,44%		0,41%	0,00%	0,00%	0,00%	0,00%	0,00%
-esc-	0,00%		0,00%			0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,14%		8,54%	0,25%	0,00%	0,00%	0,00%	0,00%
-ific-	0,00%		0,00%		5,12%	0,00%	0,00%	2,23%	0,00%	0,00%	0,00%							1,78%	0,00%	0,00%	3,42%	0,00%
-iz-	0,00%		0,00%		12,50%	0,00%	0,00%	3,68%	0,00%	0,00%	0,00%		0,34%		0,07%			2,28%	0,00%	0,00%	0,00%	0,00%
-nt-	0,00%					0,00%	0,00%	0,09%	0,00%	0,00%	0,00%	0,27%			0,14%			0,00%	0,00%	0,00%	0,00%	0,00%
AVAL	0,00%		1,75%		0,21%	0,79%	0,00%	0,50%	0,00%	0,00%	0,63%	0,82%						0,00%	0,00%	0,00%	0,00%	0,00%
	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
a-...-alh-	0,00%		0,00%		0,04%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
a-...-e-	0,00%		0,00%		0,17%	0,00%	0,00%	0,23%	0,00%	0,00%	0,00%				0,55%			0,00%	0,00%	0,00%	0,00%	0,00%
a-...-ec-	0,00%		0,00%			0,00%	0,00%	0,18%	0,00%	0,00%	0,63%				0,55%			0,00%	0,00%	0,00%	0,00%	0,00%
a-...-ej-	0,00%		0,00%			0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
a-...-nh-	0,00%		0,00%		0,04%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%	0,27%						0,00%	0,00%	0,00%	0,00%	0,00%
a-...-nt-	0,00%		0,00%		0,13%	0,00%	0,00%	0,27%	0,00%	0,00%	0,00%				0,27%			0,00%	0,00%	0,00%	0,00%	0,00%
a-...-iz-	0,00%		0,00%		0,09%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
de-...-e-	0,00%		0,00%		0,04%	0,00%	0,00%	0,05%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
de-...-iz-	0,00%		0,00%		0,04%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
des-...-ec-	0,00%		0,00%			0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
des-...-iz-	0,00%		0,00%		0,09%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
en-...-e-	0,00%		0,00%			0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
en-...-ec-	0,00%		0,00%			0,00%	0,00%	0,55%	0,00%	0,00%	0,00%				2,67%		0,41%	0,00%	0,00%	0,00%	0,00%	0,00%
en-...-esc-	0,00%		0,00%			0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,07%		0,81%	0,00%	0,00%	0,00%	0,00%	0,00%
en-...-iz-	0,00%		0,00%		0,09%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
es-...-e-	0,00%		0,00%		0,04%	0,00%	0,00%	0,23%	0,00%	0,00%	0,00%				0,21%			0,00%	0,00%	0,00%	0,00%	0,00%
es-...-ec-	0,00%		0,88%			0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,21%			0,00%	0,00%	0,00%	0,00%	0,00%
es-...-ej-	0,00%		0,00%			0,00%	0,00%	0,00%	0,00%	0,00%	0,63%	0,27%			0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
es-...-inh-	0,00%		0,00%			0,00%	0,00%	0,09%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
es-...-iz-	0,00%		0,00%			0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
es-...-ific-	0,00%		0,00%		0,04%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%							0,00%	0,00%	0,00%	0,00%	0,00%
in-...-esc-	0,00%		0,00%			0,00%	0,00%	0,00%	0,00%	0,00%	0,00%				0,07%		1,22%	0,00%	0,00%	0,00%	0,00%	0,00%
re-...-e-	0,00%		0,00%			0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,07%			0,00%	0,00%	0,00%	0,00%	0,00%
re-...-esc-	0,00%		0,00%			0,00%	0,00%	0,05%	0,00%	0,00%	0,00%				0,07%		0,81%	0,00%	0,00%	0,00%	0,00%	0,00%
comp	0,00%		0,00%																			
cruz	0,00%	1,85%	0,00%		1,07%	0,39%	0,00%	0,45%	12,12%	0,00%	0,00%	0,55%	1,70%	0,21%	6,32%	1,22%		0,51%	0,00%	0,00%	0,00%	0,00%
total	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
	0,06%	0,64%	1,35%	0,42%	27,86%	3,02%	0,59%	26,16%	0,39%	0,21%	1,90%	4,33%	3,49%									

Model derivational paradigms with networks

- pictorial representations of relational data
- exhibition of the organisation of a domain built on the relationships between objects in a way that is holistically captured by vision
- in the mind there are no lists nor tables nor excel sheets with absolute or relative numbers measuring relationships
- panorama of the paradigm and zoomed-in/ zoomed-out view

Model derivational paradigms with networks

- different axes (Rodrigues & Rodrigues 2018) or features underlying different paradigms, whether they are organised around semantic features or formal features
- morphological competition among paradigmatic series
- constraints between the morphological structures of the verbs and the morphological structures of the nouns
- constraints between the syntactic-semantic structures of the verbs and the morphological structures of the nouns
- constraints between the syntactic-semantic structures of the verbs, the morphological structures of the nouns and the semantic structures of the nouns

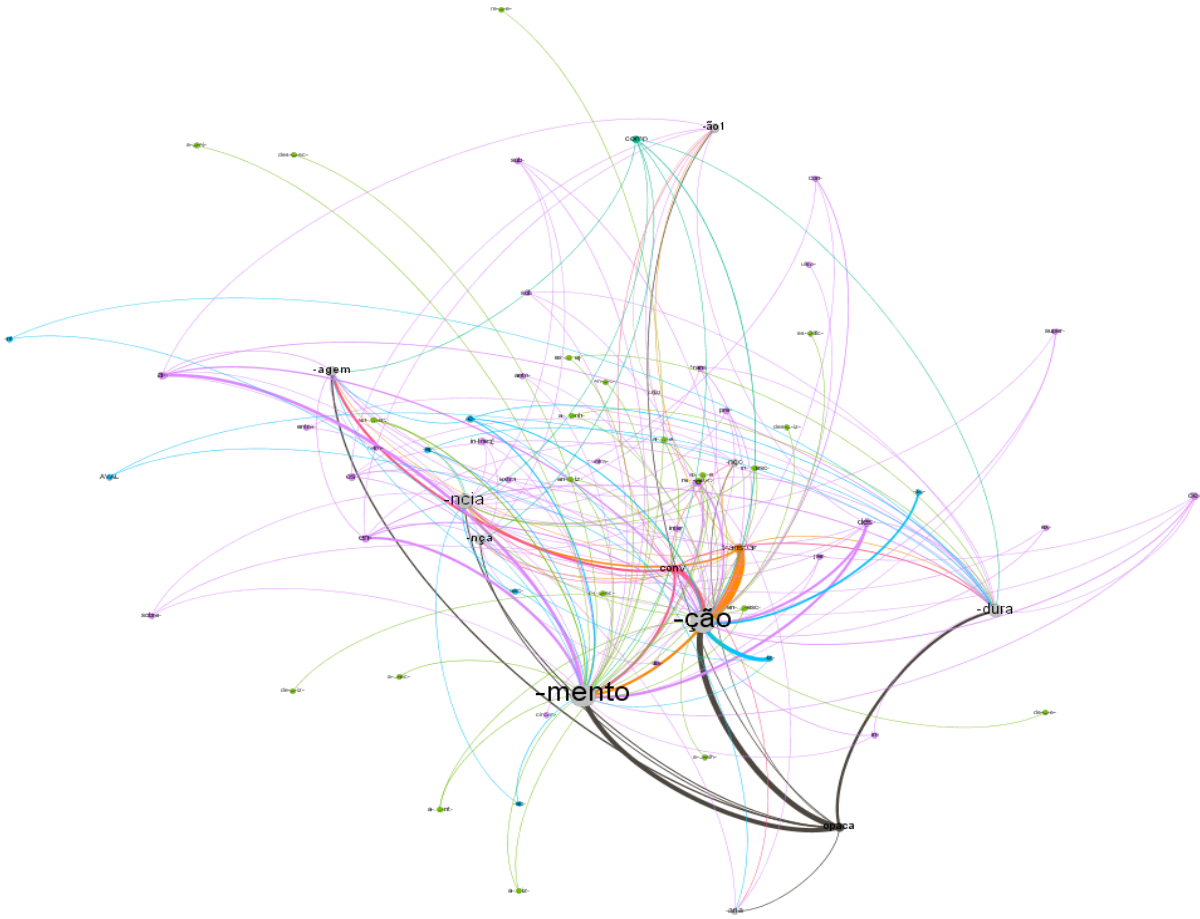
Model derivational paradigms with networks

- multi-suffixation
- series and families
- niches (Lindsay & Aronoff 2013) inside lexical paradigms,
based on the semantic specialisations of paradigms
- complexity of the paradigm
- cross-paradigms (Rodrigues & Rodrigues 2018)

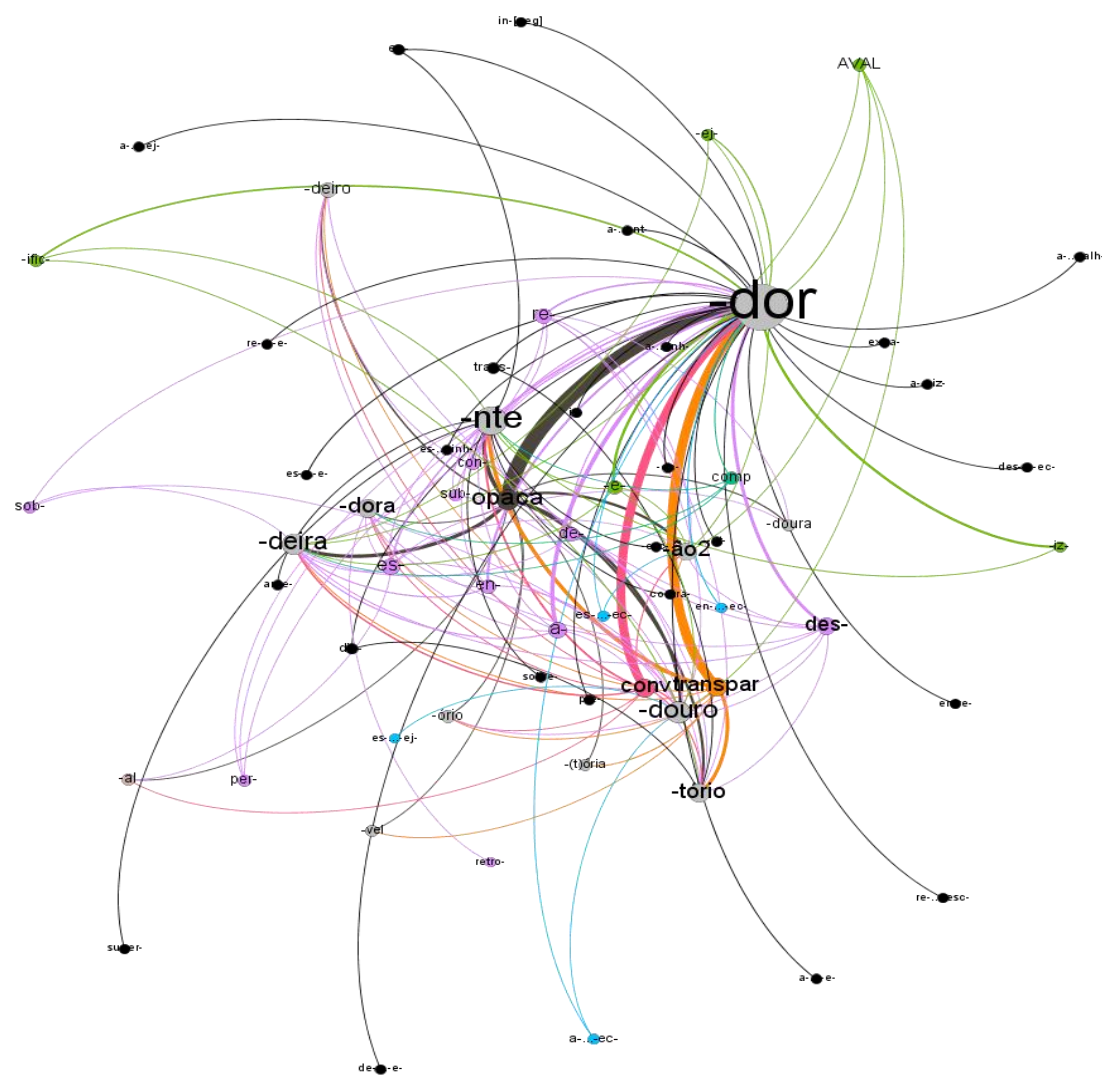
Morphological structures of verbs per morphological structures of nouns

- opaque
- transparent
- conversion
- suffixed {-e-, -ec-, -ej-, -esc-, -ific-, -iz-, -nt-, evaluative suffixes}
- prefixed {a-, ante-, circun-, con-, contra-, de-, des-, dis-, en-, entre-, es-, ex-, extra-, in-, in-[neg], inter-, per- pre-, re-, retro-, sob-, sub-, sobre-, super-, trans-, ultra-}
- circumfixed {a-...-alh-, a-...-e-, a-...-ec-, a-...-ej-, a-...-nh-, a-...-nt-, a-...-iz-, de-...-e-, de-...-iz-, des-...-ec-, des-...-iz-, en-...-e-, en-...-ec-, en-...-esc-, en-...-iz-, es-...-e-, es-...-ec-, es-...-ej-, es-...-inh-, es-...-iz-, es-...-ific-, in-...-esc-, re-...-e-, and re-...-esc-}
- compounded
- blended

Paradigm G4(V(morphological structures of verbs, morphological structures of event deverbal nouns), E)



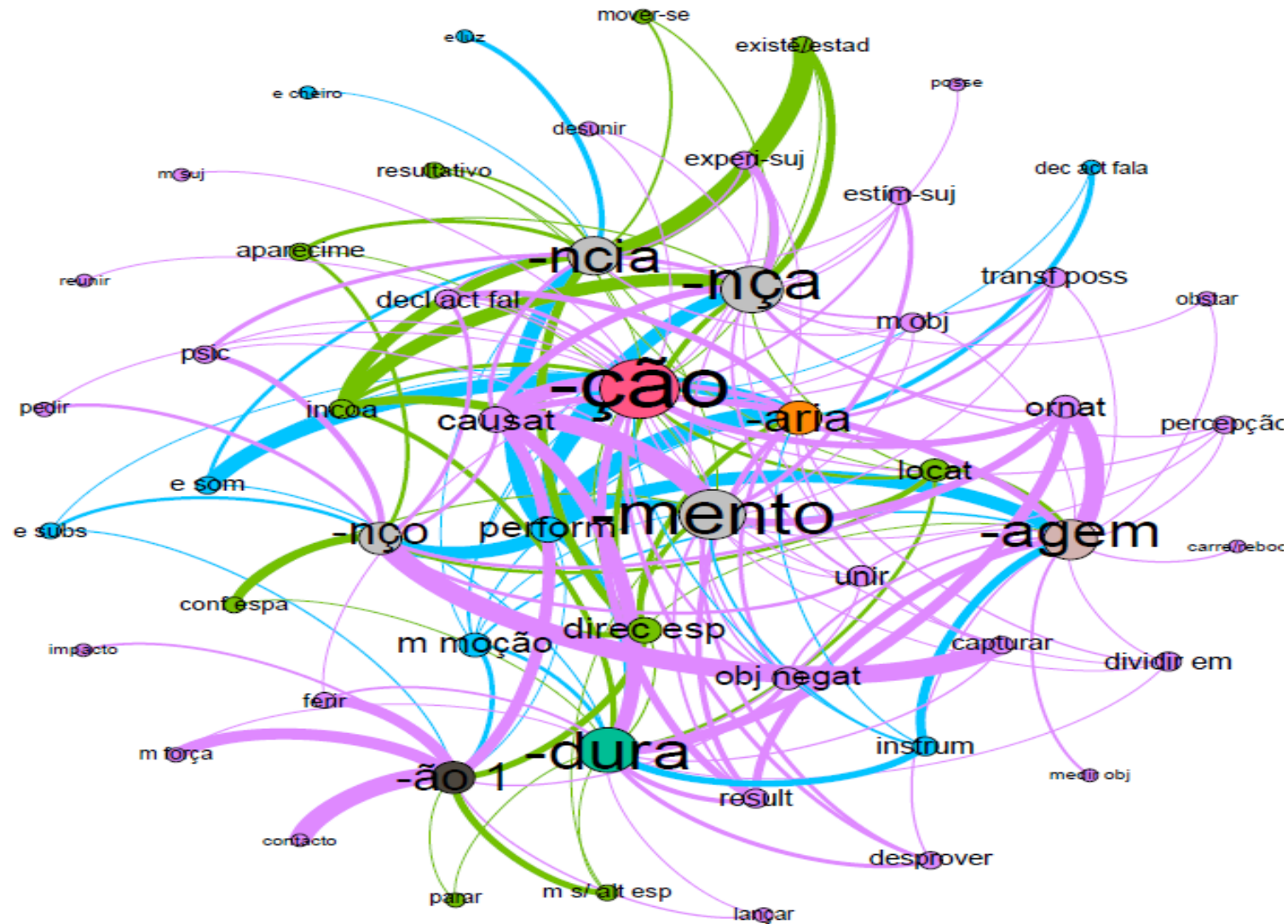
Paradigm G5(V(morphological structures of verbs, morphological structures of individual deverbal nouns), E)



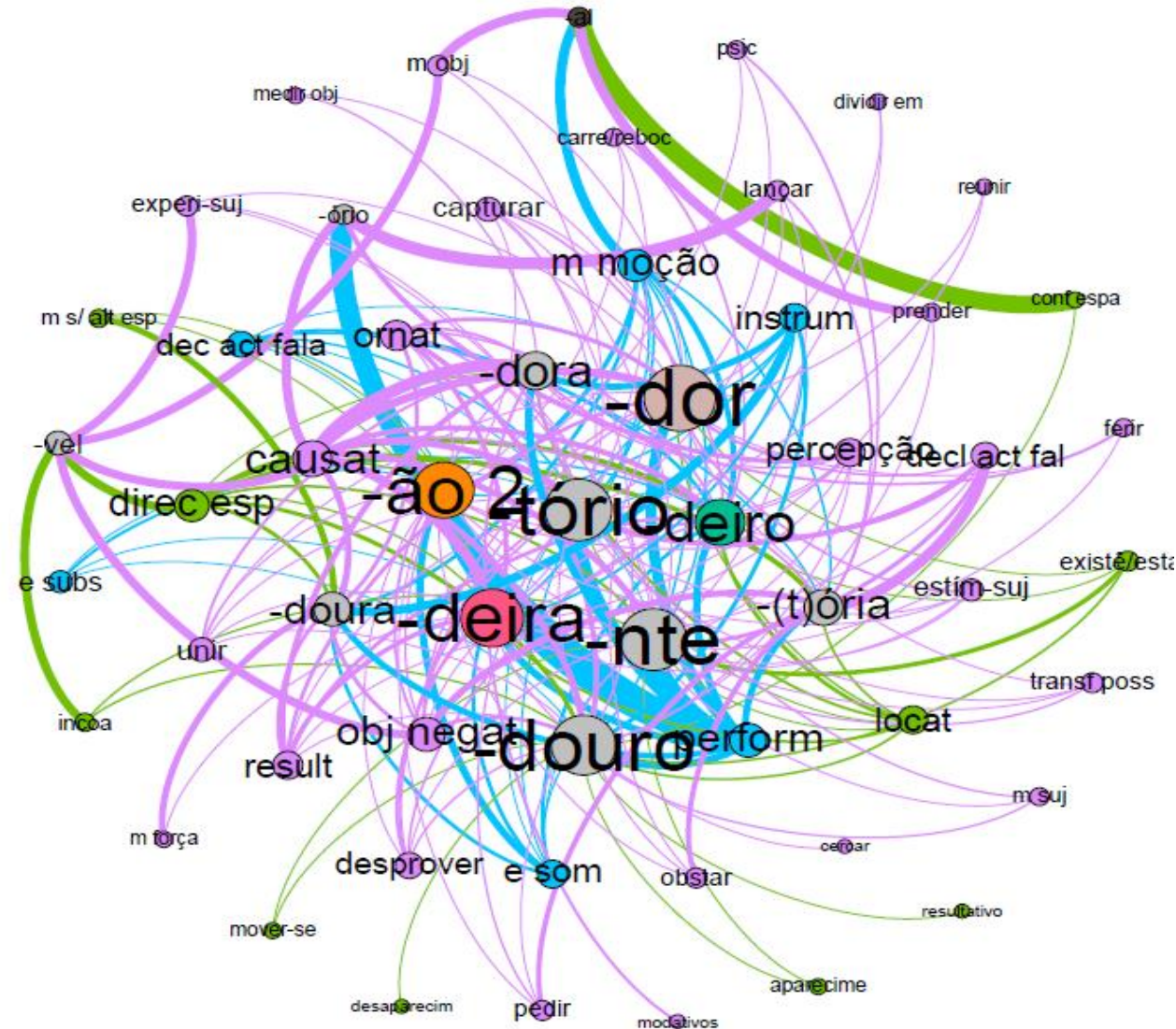
Syntactic-semantic structures of verbs per morphological structures of nouns

- Unergative {emission of sound, emission of light, emission of substance, emission of smell, mode of motion, resultative, performative, act of speech, instrumental, psychological}
- Unaccusative verbs {locative, specific direction, spatial configuration, move itself, move without spatial change, stop, appear, disappear, occurrence, existence/state, inchoative, resultative}
- Transitive verbs {locative, specific direction, spatial configuration, move the subject, throw, move with force, send, surround, load, move object, move without specific direction, impact, stop, causative, resultative, negative object, hurt, measure object, distribute, divide into, perception, ornative, deprive, performative, speech act, instrumental, transfer ownership, contact, modative, unite, disunite, gather, hinder, capture, bind, psychological, stimulus-subject, experiencer-subject}

Paradigm G6(V (syntactic-semantic verb classes, suffixed event deverbal nouns), E)



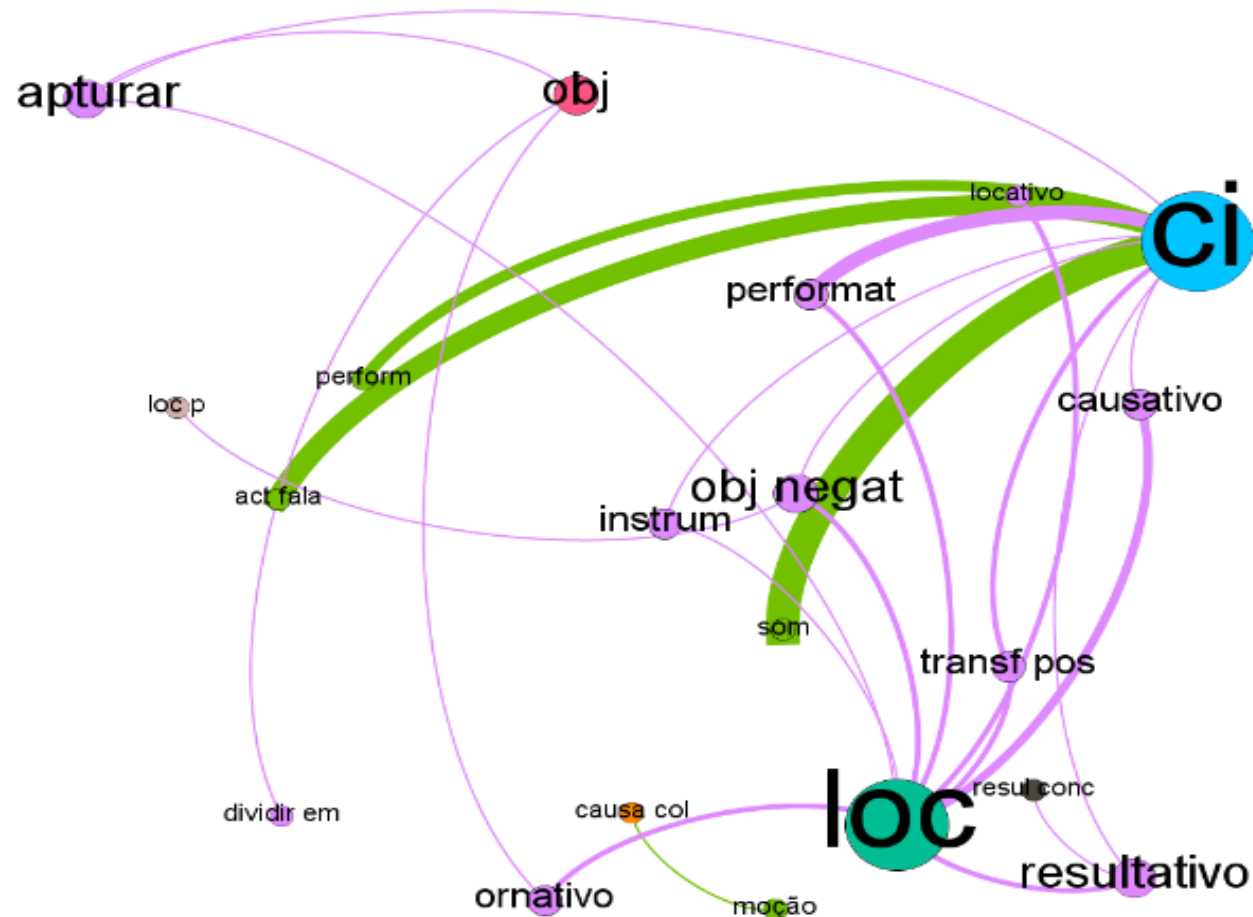
Paradigm G7 (V (syntactic-semantic verb classes, suffixed individual deverbal nouns), E)



Syntactic-semantic structures of verbs, morphological structures of nouns and semantic structures of nouns

zoomed-in view of the macro-paradigm G6(V(syntactic semantic verb classes, event deverbal nouns), E)

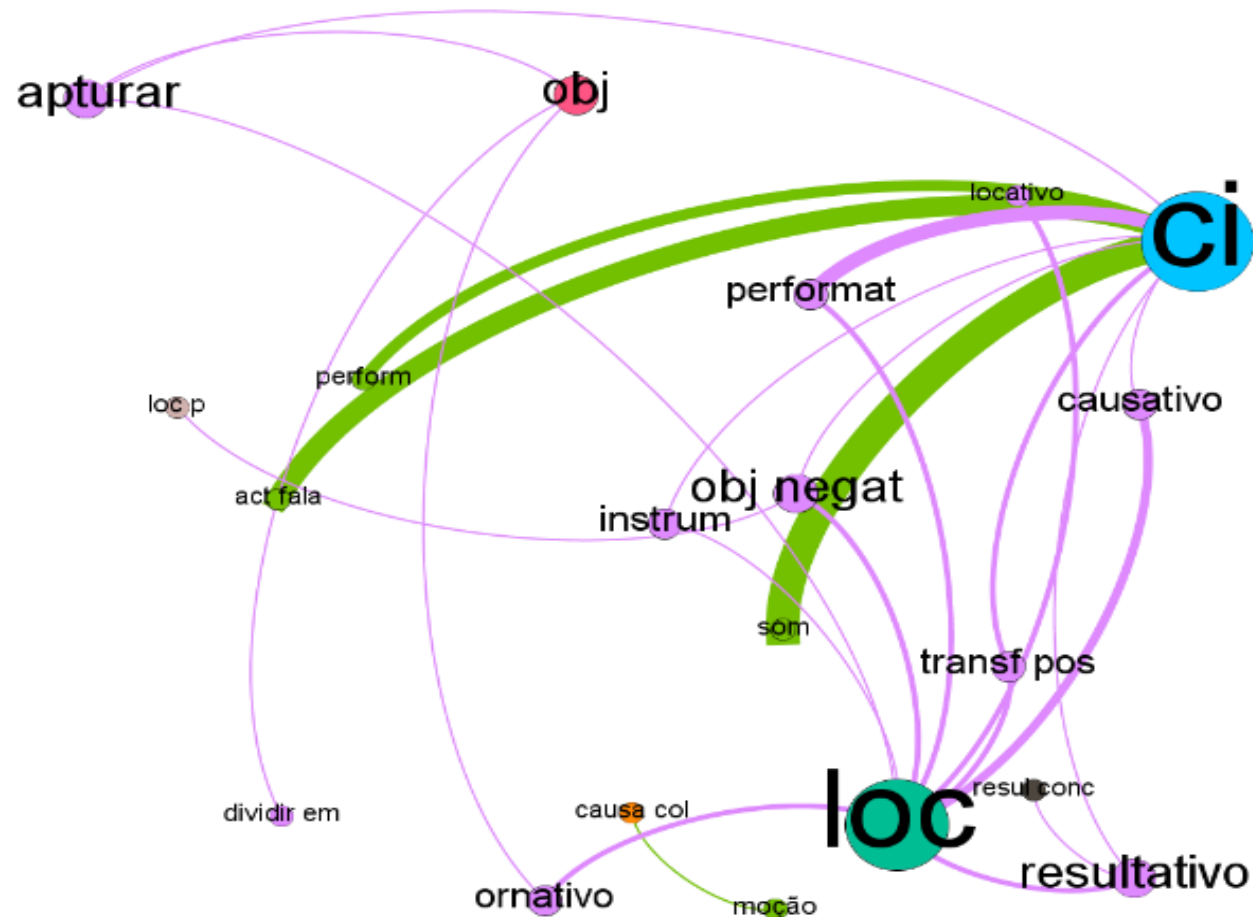
G8(V(syntactic-semantic verb classes, meanings of *-aria* nouns), E)



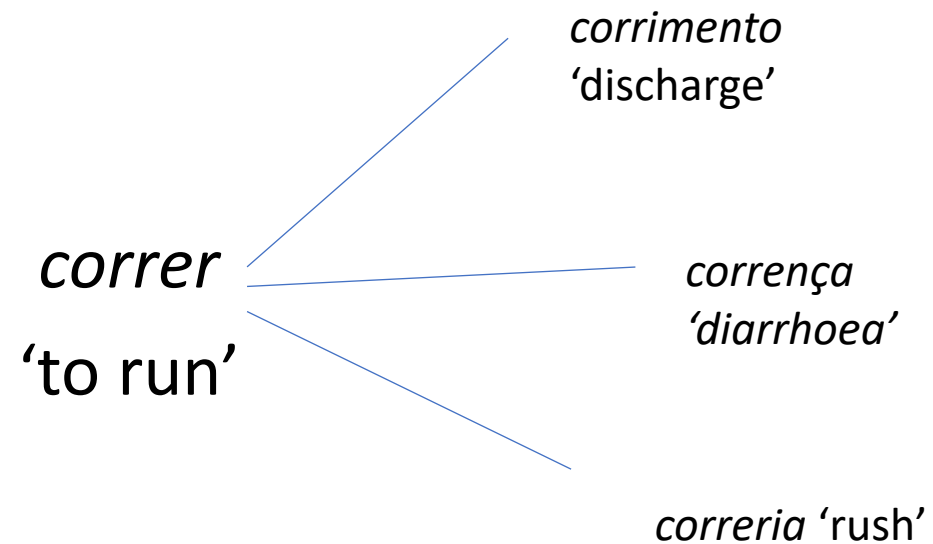
nouns with the suffix *-aria*

{*concrete result* (result conc), *locative* (loc), *collective cause* (causa col), *object* (obj), *composed by the same individual operations* (ci)}

G8(V(syntactic-semantic verb classes, meanings of *-aria* nouns), E)

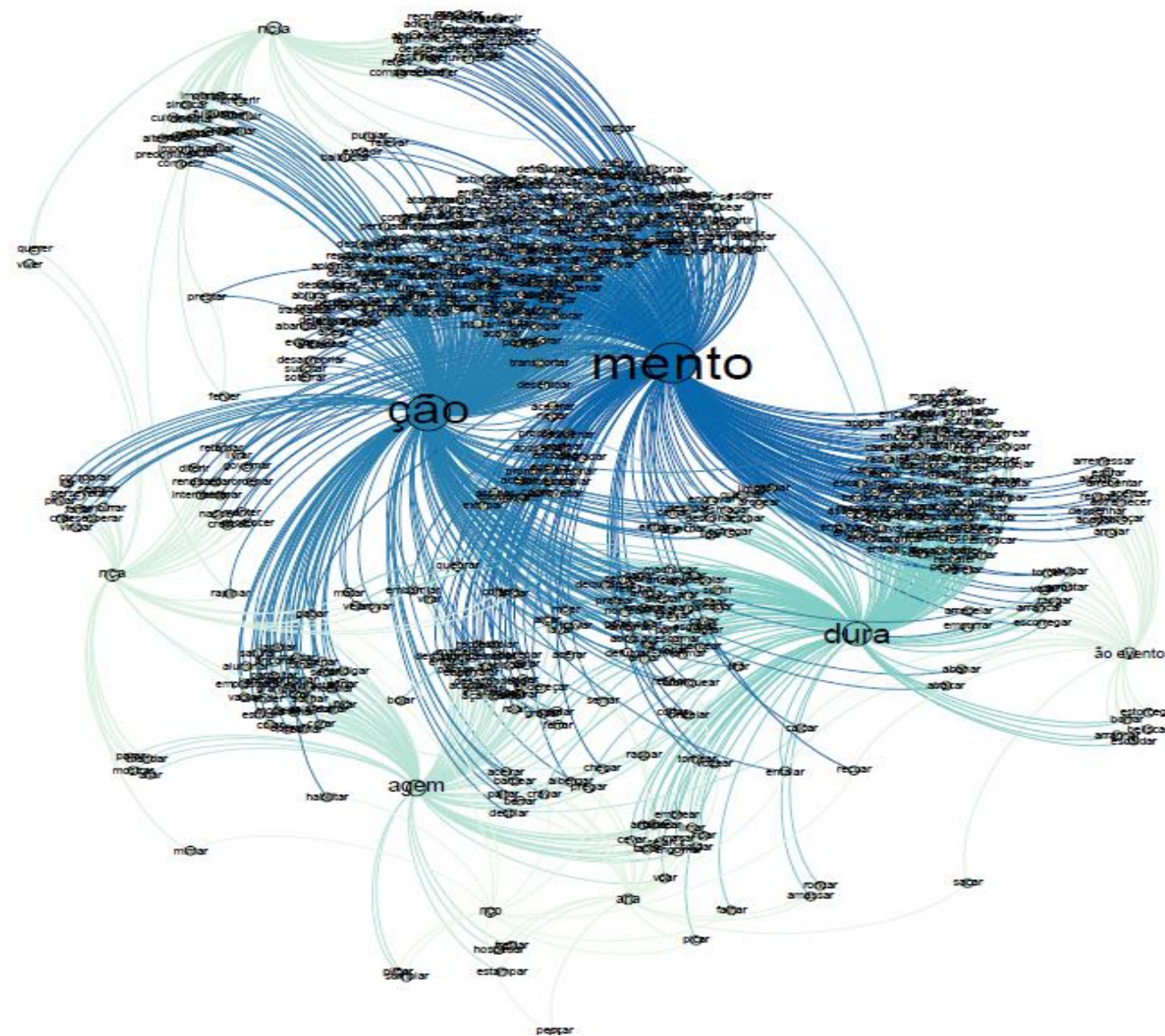


Multi-suffixation in series



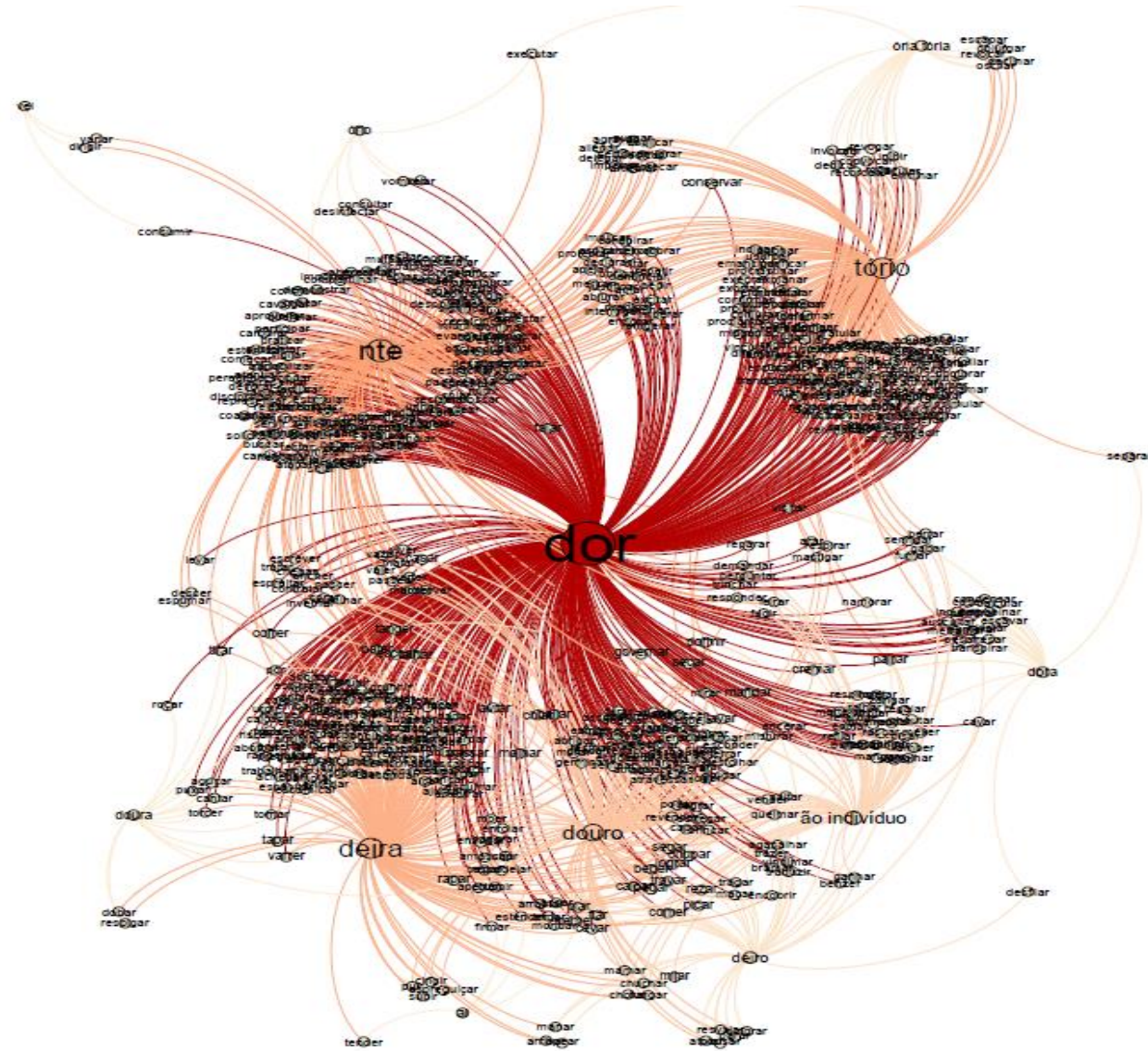
Multi-suffixation

Multi-suffixation in paradigmatic series G9(V(verbs, event deverbal nouns), E)



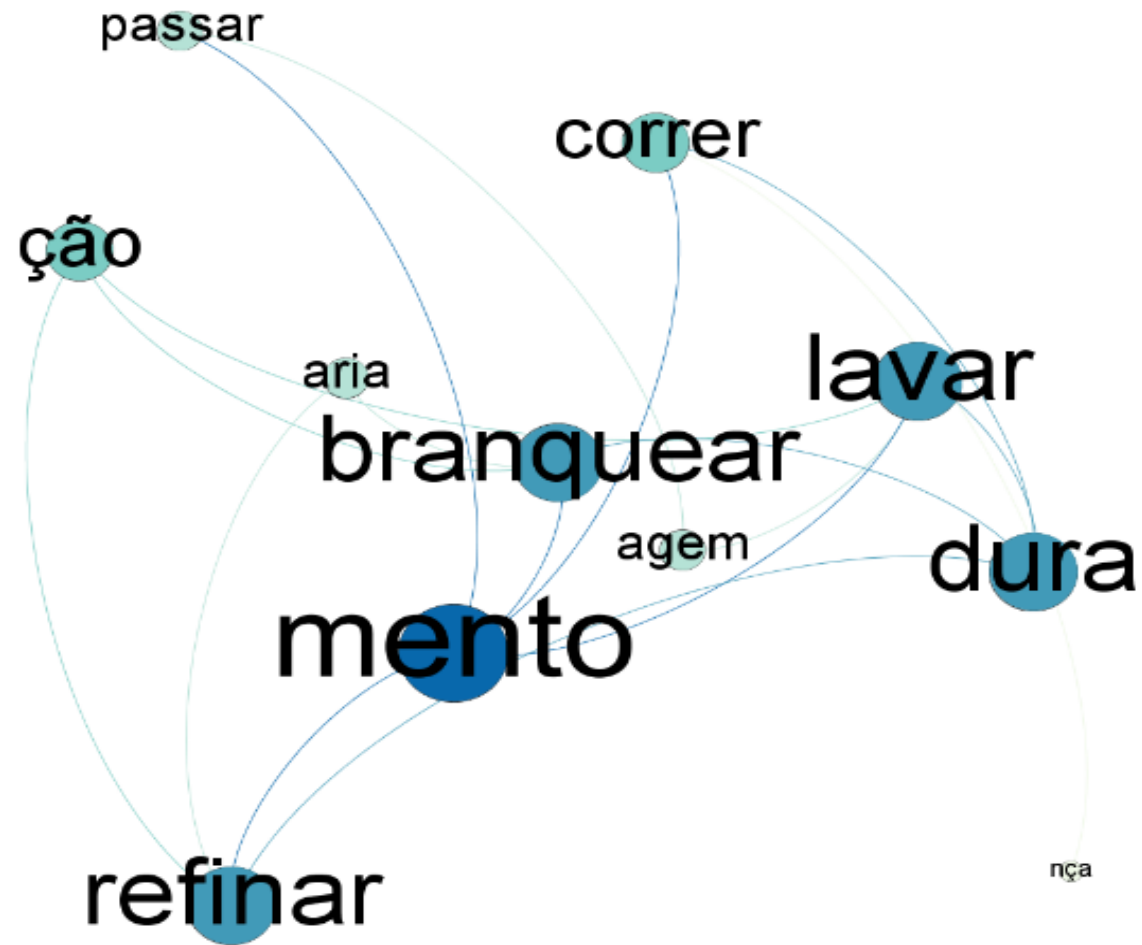
Multi-suffixation in paradigmatic series

G10(V(verbs, individual deverbal nouns), E)



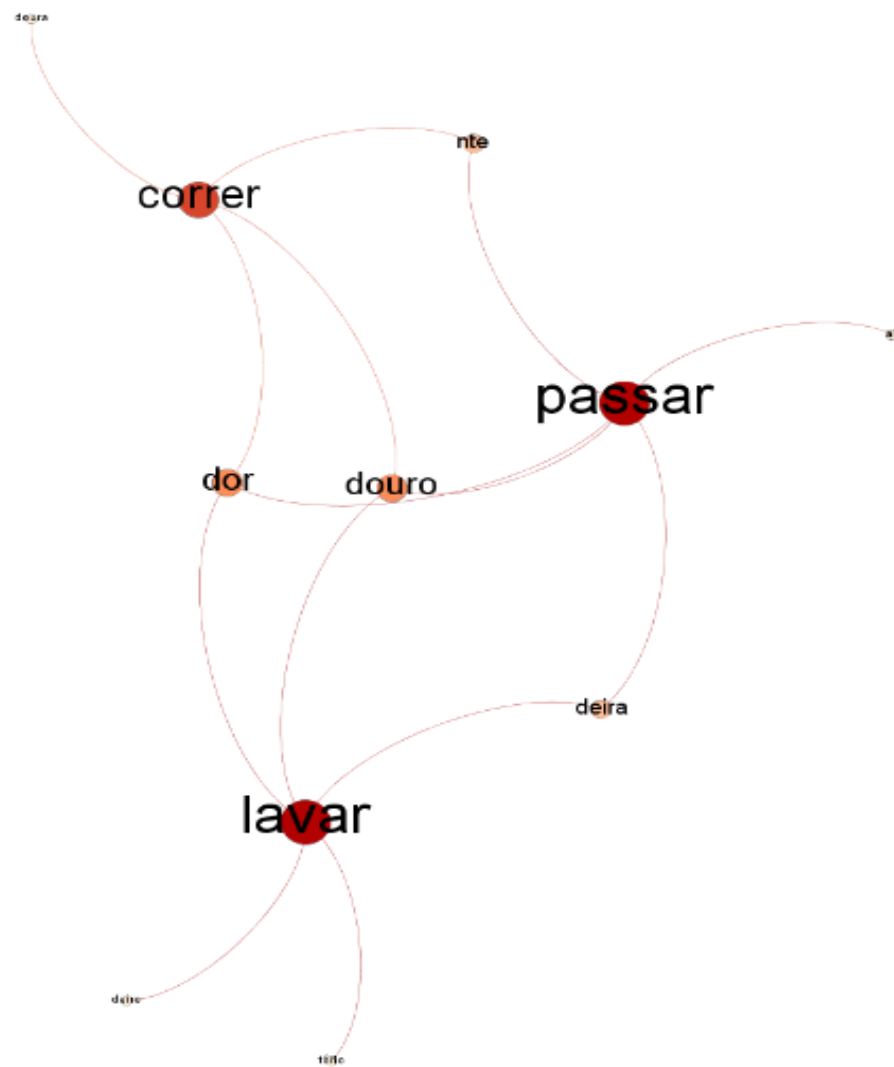
Multi-suffixation in paradigmatic series

$G(V(\{\textit{passar}$ ‘to pass’, $\textit{correr}$ ‘to run’, $\textit{lavar}$ ‘to wash’, $\textit{branquear}$ ‘to whiten’, $\textit{refinar}$ ‘to refine’}, $\{-n\grave{c}a$, $-mento$, $-aria$, $-agem$, $-\grave{c}\tilde{a}o$, $-dura\}$), E)

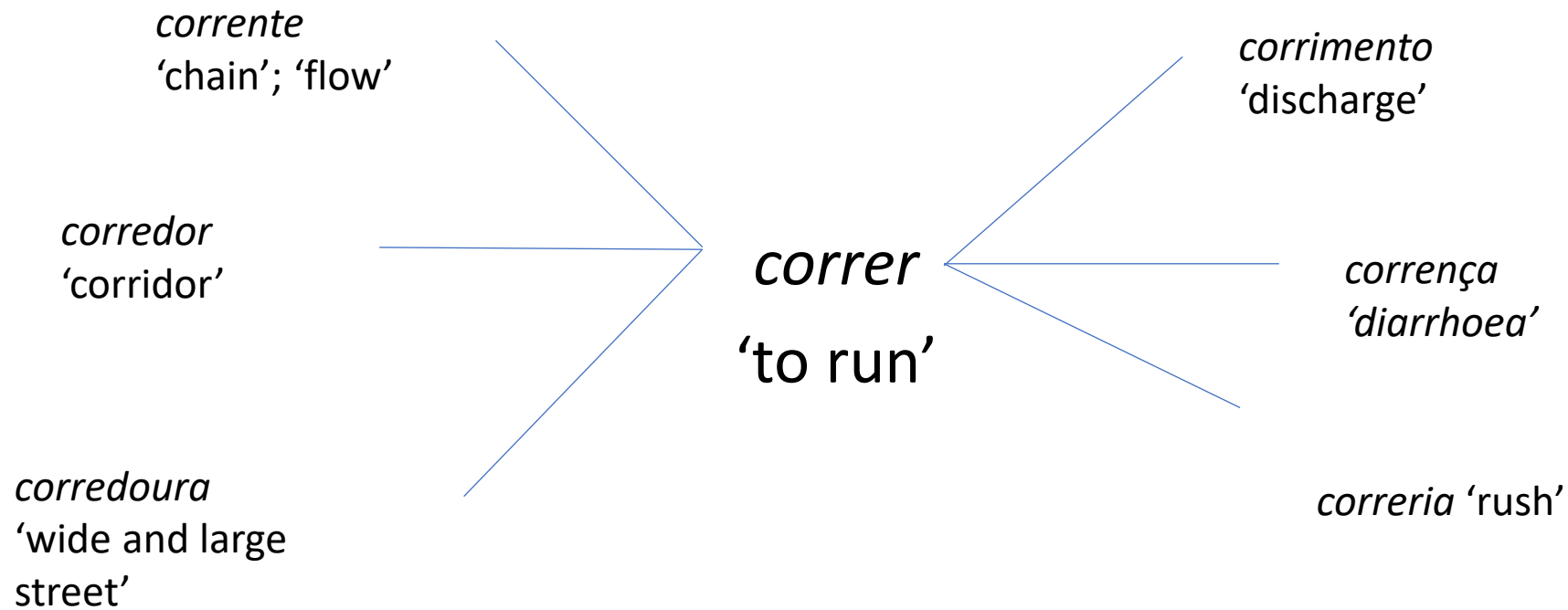


Multi-suffixation in paradigmatic series

$G(V(\{lavar, passar, correr\}, \{-al, -doura, -dor, -nte, -deiro, -deira, -tório\}), E)$

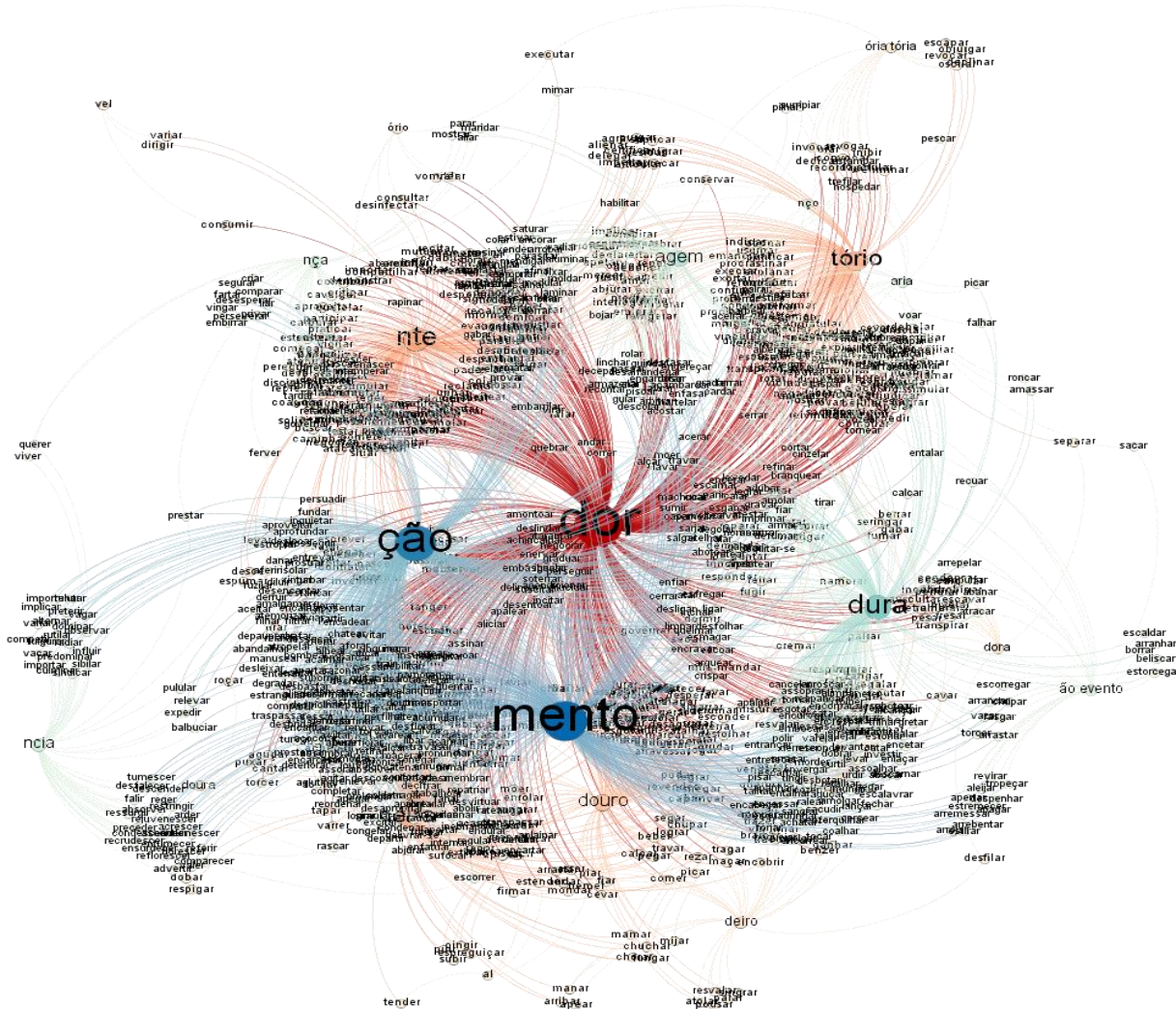


Multi-suffixation in families



Multi-suffixation in series and families

Multi-suffixation in paradigmatic families G13(V (verbs, individual deverbal nouns and event deverbal nouns), E)



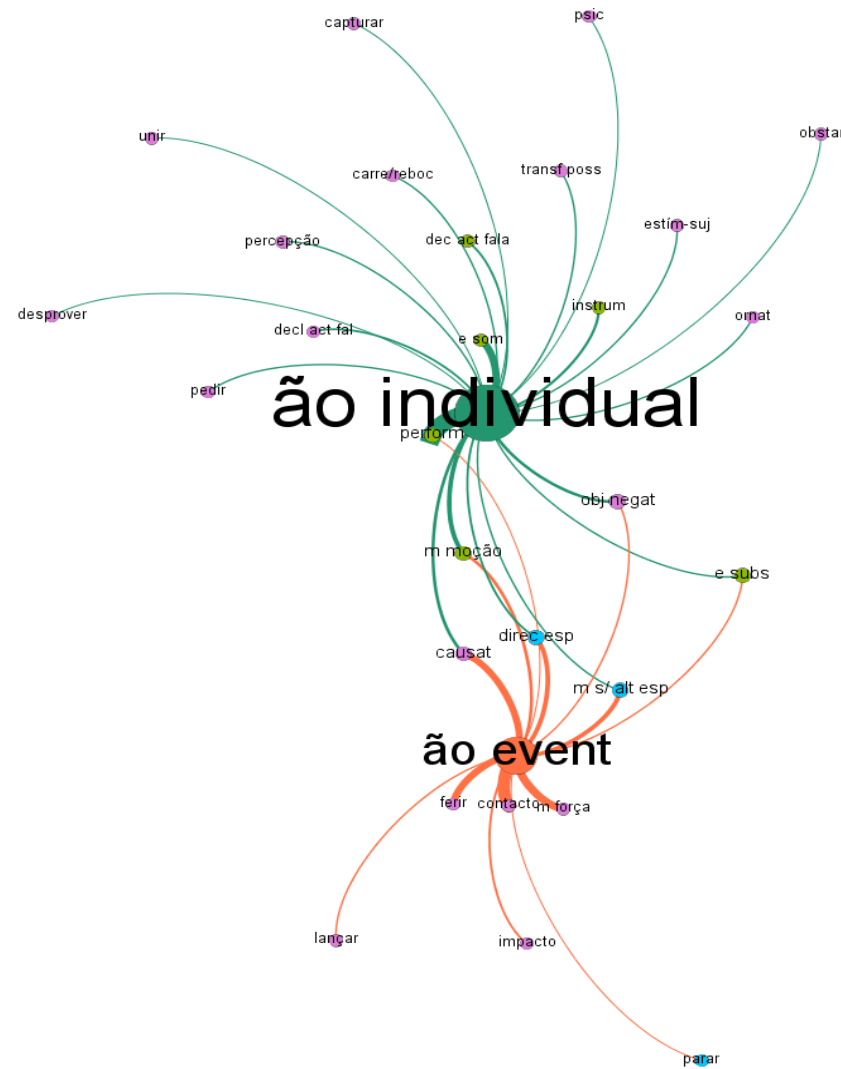
Multi-suffixation in series and families

$G(V(\{presidir \text{ 'to preside', } correr \text{ 'to run', } passar \text{ 'to pass', } lavar \text{ 'to wash', } branquear \text{ 'to whiten', } refinar \text{ 'to refine', } aterrar \text{ 'to land'}\}, \{-deiro, -tório, -deira, -al, nte, -doura, -dor, -douro, -agem, -ção, -aria, -dura, -nça, -ncia, -mento\}), E)$



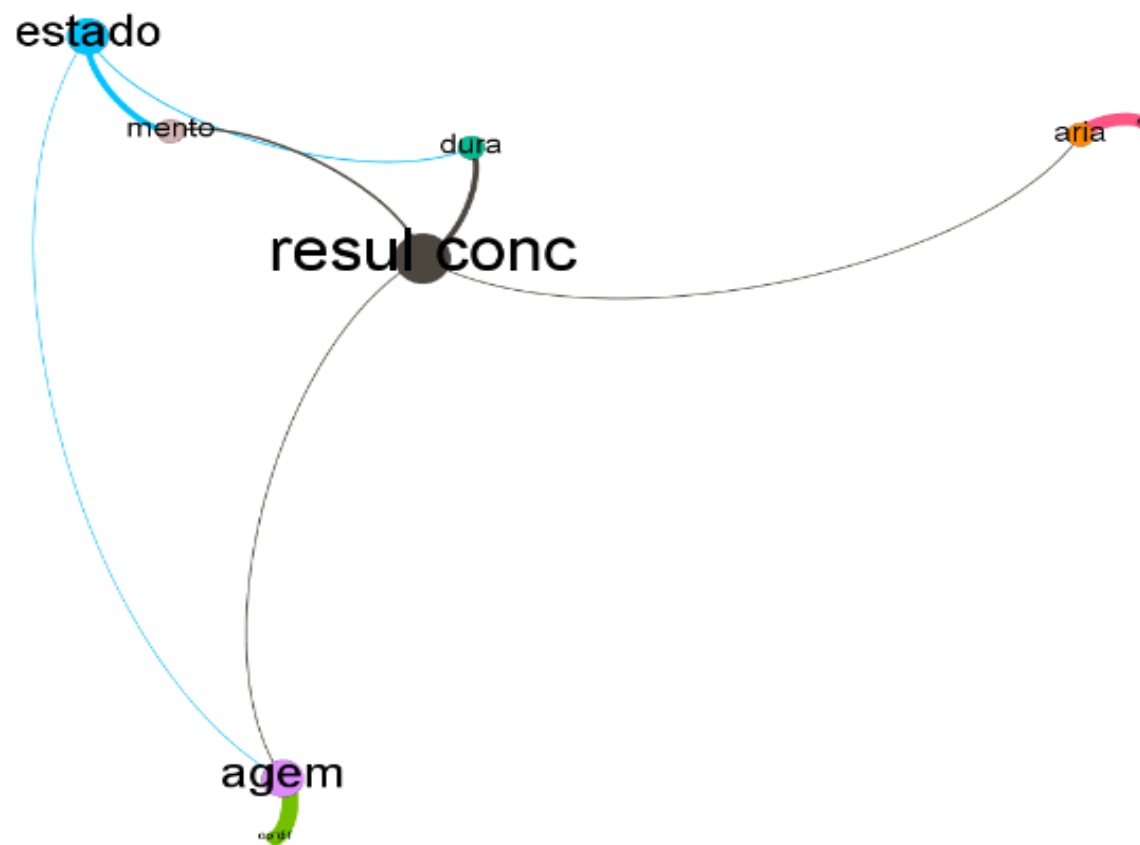
Niches

Micro-paradigm or niche G15(V({-ão agent, -ão individual}, syntactic-semantic verbs classes),E)



Niches

Micro-paradigm or niche $G16(V(\{\text{'state'}, \text{'concrete result'}, \text{'ci'}, \text{'op dif'}\}, \{-aria, -agem, -dura -mento\}), E)$

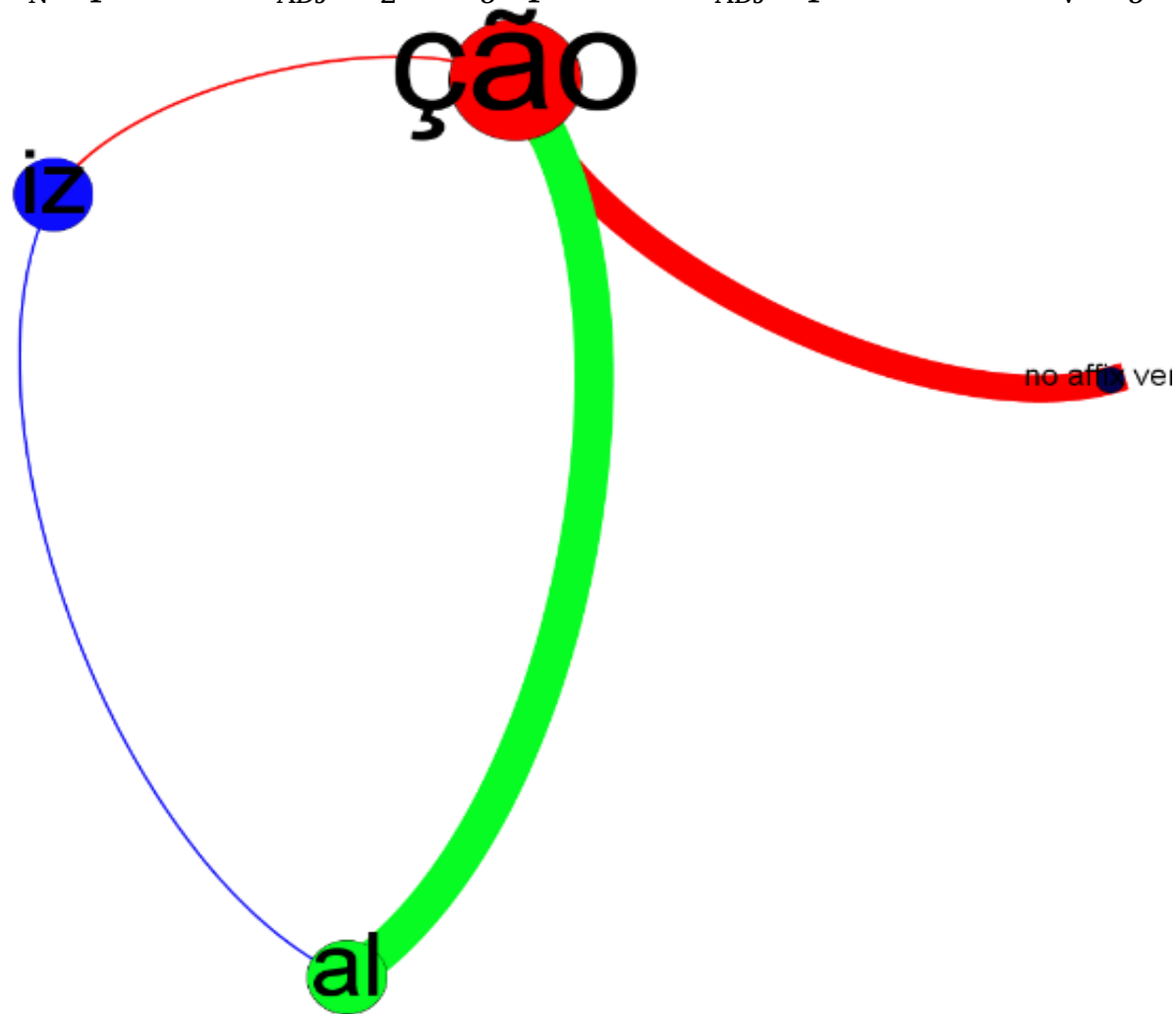


Complexity of the paradigm

operacionalização ‘operationalisation’

Complex paradigm G17(V (V₁(no affix verb_V, -*ção*_N),E₁), (V₂(-*ção*_N, -*al*_{ADJ}),E₂), (V₃(-*al*_{ADJ}, -*iz*-_V),E₃), (V₄(-*iz*-_V, -*ção*_N),E₄),E)

G(V(V₁(*operar*_V, *operação*_N),E₁), (V₂(*operação*_N, *operacional*_{ADJ}),E₂), (V₃(*operacional*_{ADJ}, *operacionalizar*_V),E₃), (V₄(*operacionalizar*_V, *operacionalização*_N),E₄),E)

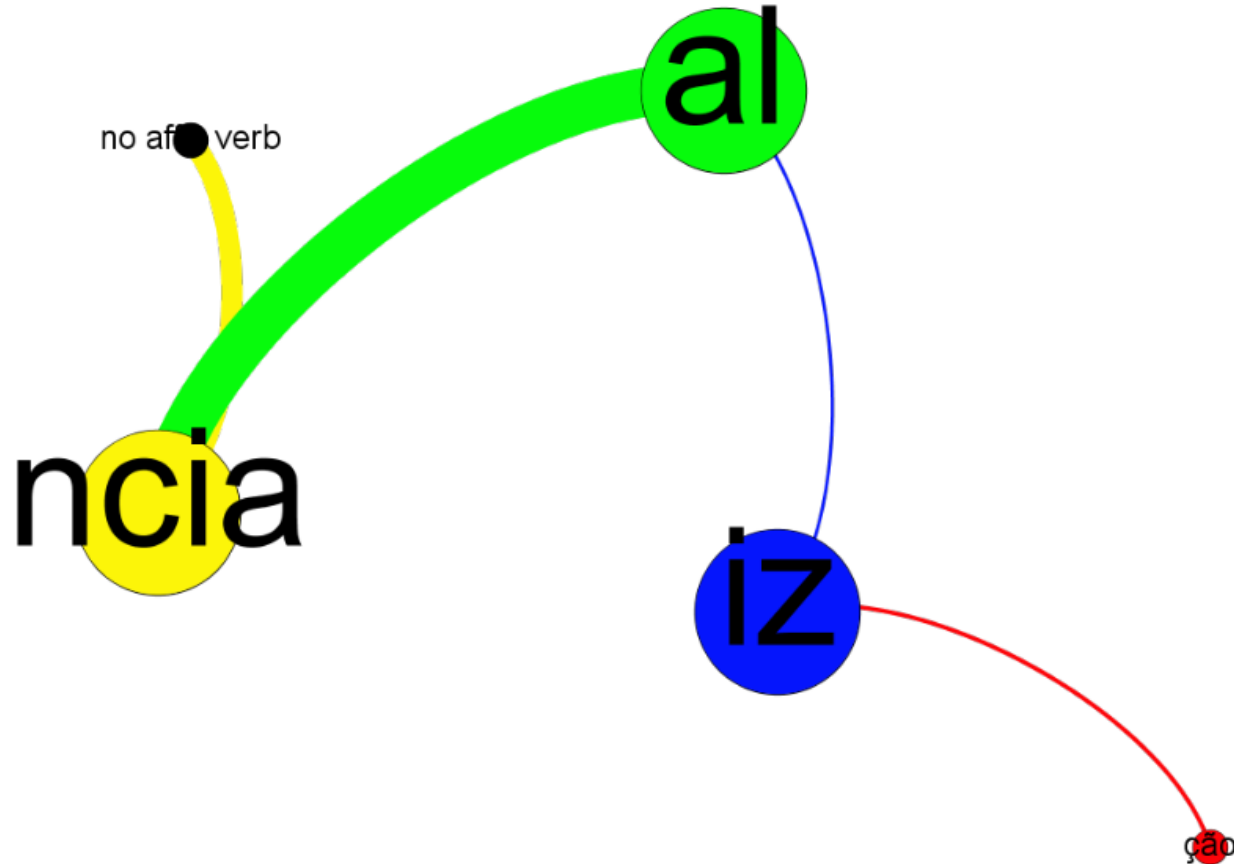


Complexity of the paradigm

presidencialização ‘presidentialisation’

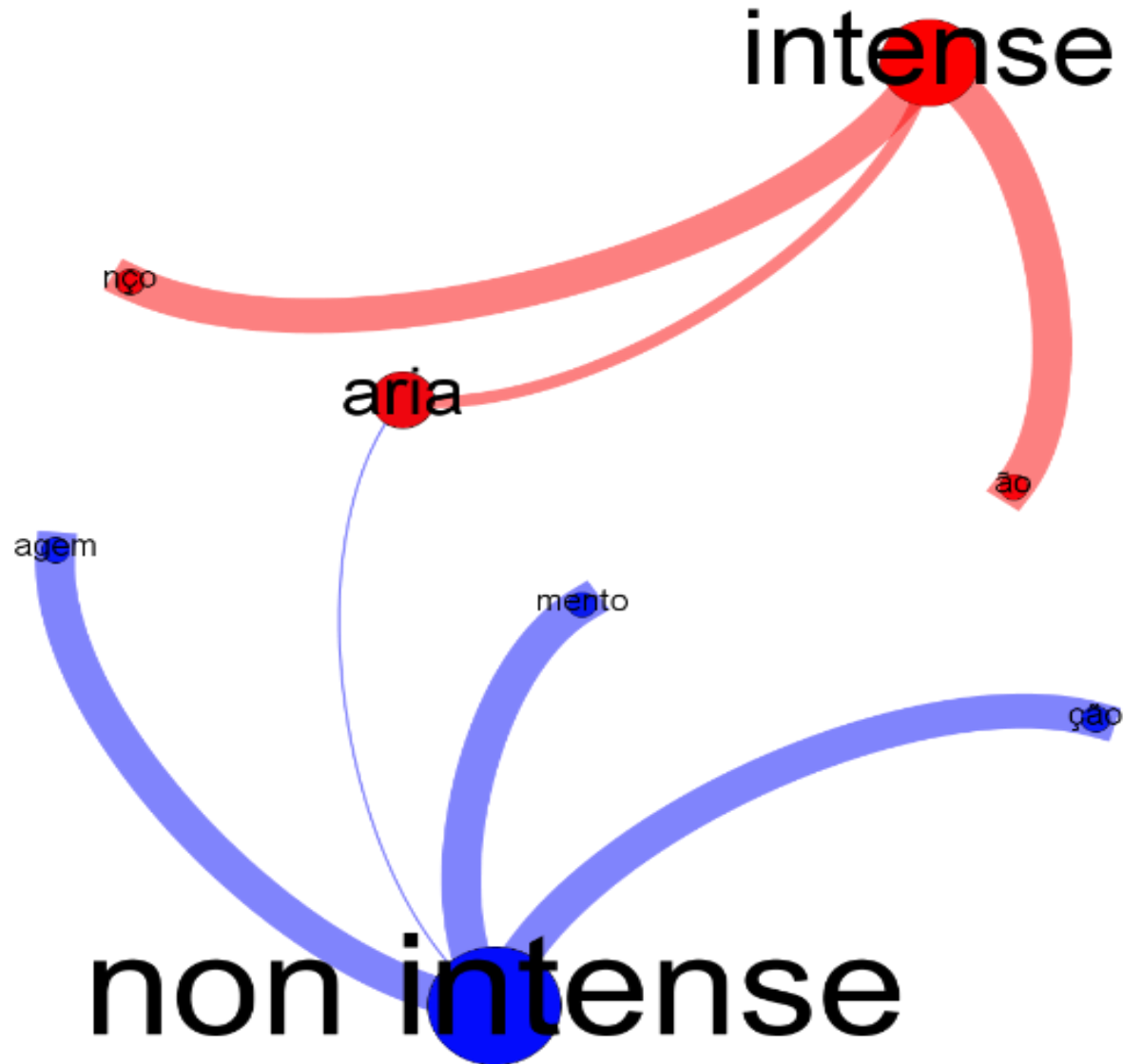
$G18(V(V_1(\text{no affix}_V, \text{-ncia}_N), E_1), (V_2(\text{-ncia}_N, \text{-al}_{ADJ}), E_2) (V_3(\text{-al}_{ADJ}, \text{-iz}_V), E_3), (V_4(\text{-iz}_V, \text{-ção}_N), E_4), E)$

$G(V(V_1(\text{presidir}, \text{presidência})E_1), (V_2(\text{presidência}, \text{presidencial}), E_2), (V_3(\text{presidencial}, \text{presidencializar}), E_3), (V_4(\text{presidencializar}, \text{presidencialização}), E_4), E)$



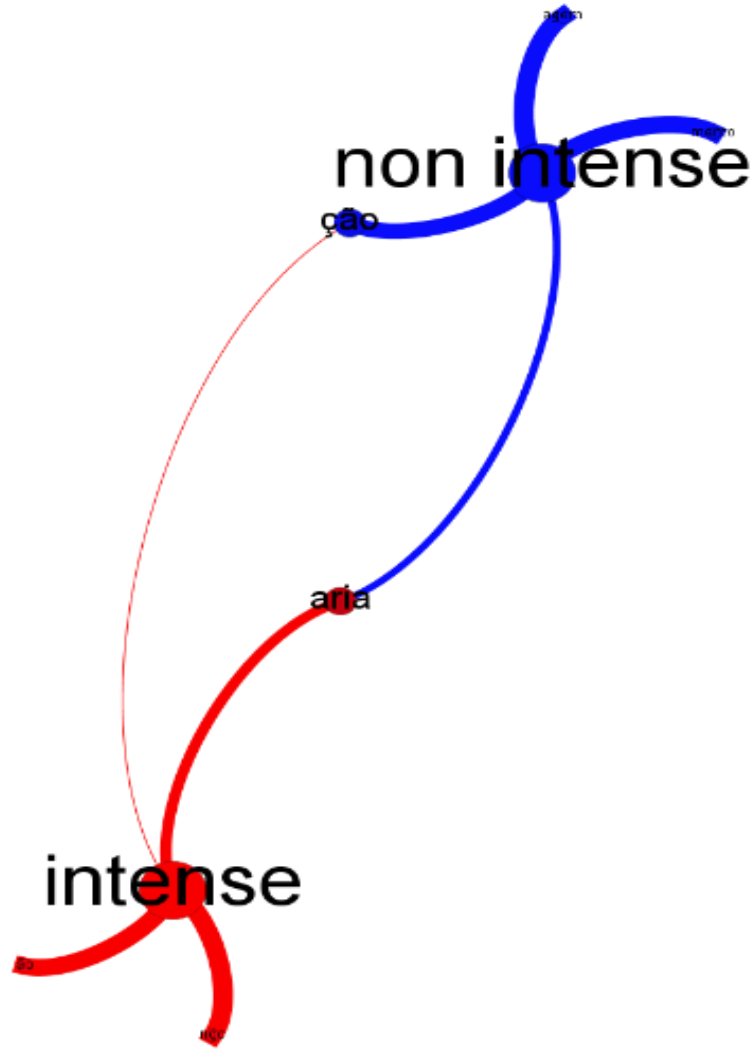
Cross-paradigms

G19(V(V₁(intense, deverbal nouns),E₁), (V₂(non-intense, deverbal nouns),E₂),E) in European Portuguese



Cross-paradigms

G20(V(V₁(intense, deverbal nouns),E₁), (V₂(non-intense, deverbal nouns),E₂),E) in Brazilian Portuguese



Conclusions

- The present paper aims to contribute to the modelling of derivational paradigms.
- It proposes that networks or graphs are efficacious instruments to model derivational paradigms. As a paradigm is a system of items that are connected by multidimensional features, a graph is a system of vertices connected by edges. Graphs permit an easy, intuitive and quick visual apprehension of several paradigm features of a paradigm. This article is an illustration of those features:
 - - the different axes or features cohering each paradigm;
 - - morphological competition among paradigmatic series, measuring the hubs, that is, the vertices with a higher degree, the weight of the edges, the size, the order and the density of the network;
 - - the constraints between the morphological structures of the verbs and the morphological structures of the nouns;
 - - the constraints between the syntactic-semantic structures of the verbs and the morphological structures of the nouns;
 - - the constraints between the syntactic-semantic structures of the verbs, the morphological structures of the nouns and the semantic structures of the nouns;
 - - multi-suffixation;
 - - series and families and the correlations that a base can establish within different series and within different families;
 - - niches inside lexical paradigms, based on the semantic specialisations of paradigms;
 - - the complexity of the paradigm;
 - - cross-paradigms.

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- Thank you!