



Seeing the Forest for the Trees: Text Mining Strategies to analyze the Ris med Network of Discourses

'Ju Mi pham rnam rgyal rgya mtsho's Collected Works as a Case Study

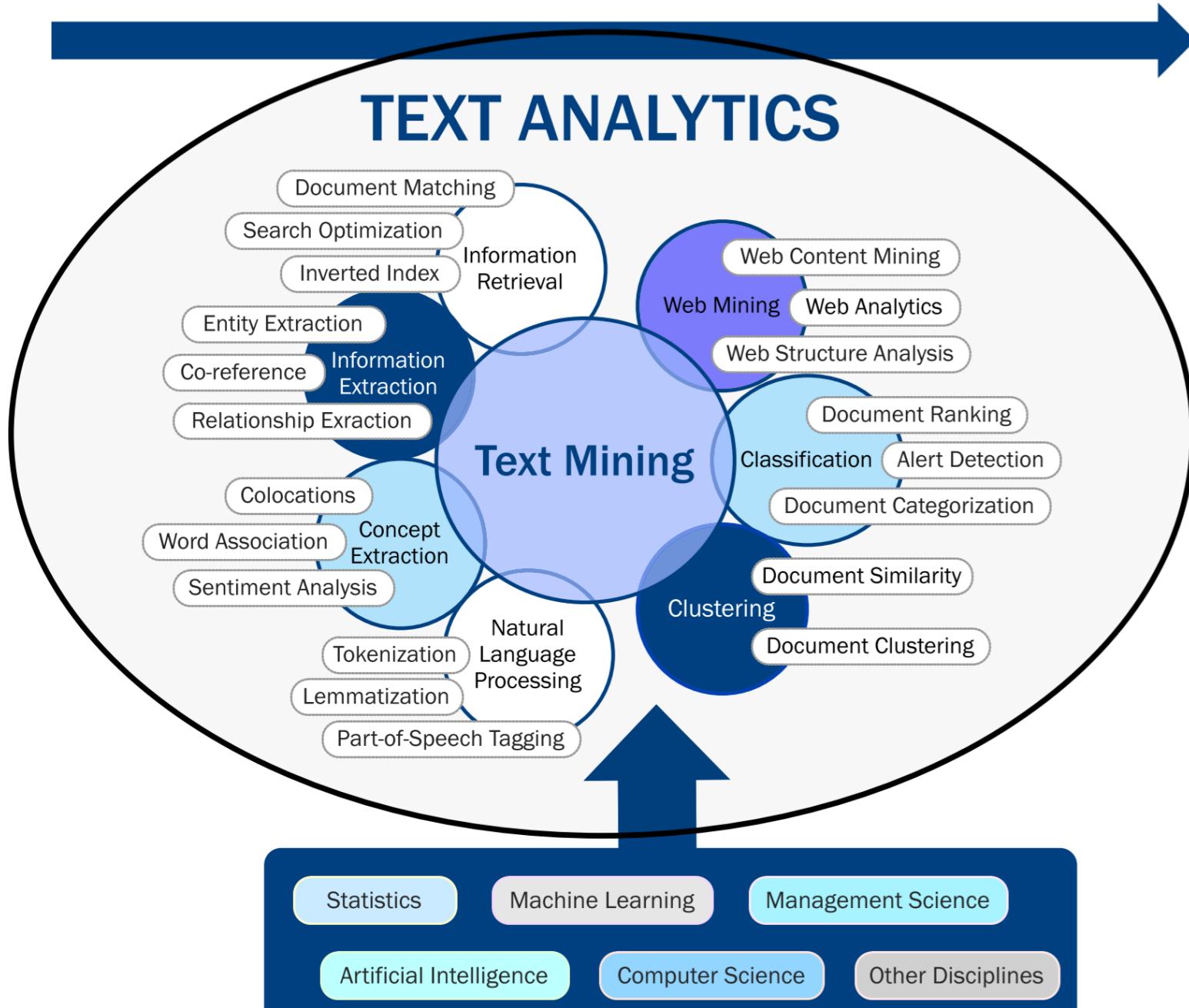
Gregory Forgues (University of Leiden)

IATS 2019 – Panel “ Mapping intellectual networks of Tibetan scholasticism”

Analyzing semi-structured and unstructured text data

TEXT MINING / TEXT ANALYTICS

Major tasks of Text Mining (Miner et al. 2012)



Investigating Mipham's *gsung 'bum*

A CASE STUDY



About Mipham

'Ju Mi pham rnam rgyal rgya mtsho (1846–1912):

- lived in Eastern Tibet;
- was one of the greatest scholars of the rNying ma school;
- revived Yogācāra-Madhyamaka ideas in Tibet;
- was strongly influenced by Śāntarakṣita's (8th c.) Yogācāra-Madhyamaka and Klong chen pa's (1300–1364) presentation of rDzogs chen
- his root guru was 'Jam dbyangs mkhyen brtse'i dbang po (1820–1892), a major figure of the Ris med tradition.

A text analytical case study

ANALYZING MIPHAM'S DISCOURSE ON REALITY



Text analytics... Does it always work? Hmm...



Research process - A few steps

- DEFINE A CORPUS (W23468 – 27 Volumes – Source: Adarsha)
 - PRE-PROCESS DATASET
-
- DEFINE AND MAP MIPHAM'S SPACE OF DISCOURSE ON REALITY
 - COMPARE AUTHORS' DISCOURSES
-
- BUILD A SUB-CORPUS OF RELEVANT TEXTS
 - EXTRACT CENTRAL TOPICS IN SUB-CORPUS
 - CONNECT AND MAP TEXTS, AUTHORS, AND TOPICS

=> SELECT AND READ CENTRAL TEXTS



FORMULATING A WORKING HYPOTHESIS: MIPHAM'S DISCOURSE ON REALITY

Main terms:

- ལྷ རྒ ཤ ས ། ཤ ས
- ང ཉ ཏ ཉ ཏ
- ད བ ག ཕ ཕ ཕ



Identify clusters of words for each key term



Example: ལྷ རྒ ཤ ས ། ཤ ས



Freq.	Range	Term
79	25	ལ ྷ ར ྒ ཤ ས ། ཤ ས ། ཤ ས
45	26	ལ ྷ ར ྒ ཤ ས ། ཤ ས
24	16	ལ ྷ ར ྒ ཤ ས ། ཤ ས
20	11	ལ ྷ ར ྒ ཤ ས ། ཤ ས
17	9	ལ ྷ ར ྒ ཤ ས ། ཤ ས
15	11	ལ ྷ ར ྒ ཤ ས ། ཤ ས
12	9	ལ ྷ ར ྒ ཤ ས ། ཤ ས
11	7	ལ ྷ ར ྒ ཤ ས ། ཤ ས
9	5	ལ ྷ ར ྒ ཤ ས ། ཤ ས
9	7	ལ ྷ ར ྒ ཤ ས ། ཤ ས
8	7	ལ ྷ ར ྒ ཤ ས ། ཤ ས
8	5	ལ ྷ ར ྒ ཤ ས ། ཤ ས
8	6	ལ ྷ ར ྒ ཤ ས ། ཤ ས
7	5	ལ ྷ ར ྒ ཤ ས ། ཤ ས
7	6	ལ ྷ ར ྒ ཤ ས ། ཤ ས
6	5	ལ ྷ ར ྒ ཤ ས ། ཤ ས
6	6	ལ ྷ ར ྒ ཤ ས ། ཤ ས
5	4	ལ ྷ ར ྒ ཤ ས ། ཤ ས
5	3	ལ ྷ ར ྒ ཤ ས ། ཤ ས
5	3	ལ ྷ ར ྒ ཤ ས ། ཤ ས
5	4	ལ ྷ ར ྒ ཤ ས ། ཤ ས
5	4	ལ ྷ ར ྒ ཤ ས ། ཤ ས
5	2	ལ ྷ ར ྒ ཤ ས ། ཤ ས



Concordance tables

7	‘ປ’ གැඛද’ ຖා දේ ພා ස්ථ ද ගෙද’ එ තිද’ ගුරු	අත්‍යාච්‍රිතය	පාඨ ද මුණ ඩීංජ දු ඇ පැහැද ද කුරු	MP_14-01.txt
8	‘බ් තු’ ගැඛ දේ ພා ස්ථ ද ගෙද’ එ තිද’ ගුරු	අත්‍යාච්‍රිතය	පාඨ ද මුණ ඩීංජ දු ඇ පැහැද ද තෙව	MP_14-03.txt
9	‘පසස’ පා දැක්කාවේද’ පාගා එ වි ගෙද දෙප ගුරු	අත්‍යාච්‍රිතය	ප්‍ර ඩීංජ මුණ ඩීංජ දු ඇ පැහැද ද පැන	MP_14-03.txt
10	‘ඩ’ ඩීංජ මුණ ඩ දේ දැක්කා දැක්කා ගුරු	අත්‍යාච්‍රිතය	දේ ඩීංජ ඩීංජ දු ඇ පැහැද ද පැන	MP_17-04.txt
11	‘මි’ ඩීංජ මුණ ඩ දේ තුක වි ගෙද ගැඛද’ ຖා ගුරු	අත්‍යාච්‍රිතය	මි ඩීංජ මුණ ඩ තුක වි ගෙද ගැඛද’ ගැඛද’ ගුරු	MP_24-04.txt
12	‘පා’ පැව්ස’ පදා ඩීංජ මුණ ඩ ඇ දු ඩීංජ ගුරු	අත්‍යාච්‍රිතය	පා ඩීංජ මුණ ඩ පැව්ස’ පදා ඩීංජ ඩීංජ ගුරු	MP_24-03.txt
13	‘ප’ ඩ ගැඛද’ ඩීංජ’ තුක දැක්කා ඩීංජ මුණ ඩ ගැඛද’ ගුරු	අත්‍යාච්‍රිතය	ප ඩ ගැඛද’ ඩීංජ’ තුක දැක්කා ඩීංජ මුණ ඩ ගැඛද’ ගුරු	MP_24-04.txt
14	‘දුෂ්‍රා’ ඩීංජ’ පා පස්ස’ මුණ ඩීංජ දු ඩීංජ ගුරු	අත්‍යාච්‍රිතය	දුෂ්‍රා ඩීංජ’ පා පස්ස’ මුණ ඩීංජ දු ඩීංජ ගුරු	MP_04-01.txt
15	‘දුෂ්‍රා’ ඩීංජ’ පා පස්ස’ මුණ ඩීංජ දු ඩීංජ ගුරු	අත්‍යාච්‍රිතය	දුෂ්‍රා ඩීංජ’ පා පස්ස’ මුණ ඩීංජ දු ඩීංජ ගුරු	MP_24-01.txt
16	‘දු’ දැක්කා ඩීංජ ඩීංජ ඩීංජ ගුරු	අත්‍යාච්‍රිතය	දු ඩීංජ දීංජ ඩීංජ ඩීංජ ඩීංජ ගුරු	MP_01-04.txt
17	‘දු’ දැක්කා ඩීංජ ඩීංජ ඩීංජ ගුරු	අත්‍යාච්‍රිතය	දු ඩීංජ දීංජ ඩීංජ ඩීංජ ඩීංජ ගුරු	MP_22-04.txt
18	‘ගතුව’ ඩ ඩීංජ ඩීංජ ඩීංජ ගුරු	අත්‍යාච්‍රිතය	ගතුව ඩ ඩීංජ ඩීංජ ඩීංජ ඩීංජ ගුරු	MP_27-14.txt
19	‘ඩ’ ඩ ඩීංජ ඩීංජ පැව්ස’ ඩීංජ ඩීංජ ගුරු	අත්‍යාච්‍රිතය	ඩ ඩ ඩීංජ ඩීංජ ඩීංජ ඩීංජ ඩීංජ ගුරු	MP_14-01.txt
20	‘ක්‍රිජාව්’ ඩ ගුරු ක්‍රිජාව් ඩ ඩීංජ ඩීංජ ගුරු	අත්‍යාච්‍රිතය	ක්‍රිජාව් ඩ ගුරු ක්‍රිජාව් ඩ ඩීංජ ඩීංජ ගුරු	MP_27-05.txt
21	‘ඩැ’ දා පැව්ස’ ඩීංජ ඩීංජ ඩීංජ ගුරු	අත්‍යාච්‍රිතය	ඩැ දා පැව්ස’ ඩීංජ ඩීංජ ඩීංජ ගුරු	MP_14-03.txt



FORMULATING A WORKING HYPOTHESIS: MIPHAM'S DISCOURSE ON REALITY (Antconc)

Main collocations for མ་ན་འདུགས་, ཁ୍ୱାଦ୍ୱିତୀୟ, བ୍ୟବିକ୍ରିତ

- Synonyms: for example ཁ୍ୱାଦ୍ୱିତୀୟ, བ୍ୟବିକ୍ରିତ, བ୍ୟବିକ୍ରିତ ଫୋର ພାନାୟନା
- Qualifiers expressing different characteristics of reality:
 - Nonduality: ཁ୍ୱାଦ୍ୱିତୀୟ ༃ ໂପିଷ ໂପିଷ ຢାତିଷ, ພାନାୟନା ༃ ໂପିଷ ໂପିଷ ຢାତିଷ
 - Inseparability/undifferentiation: ພାନାୟନା ༃ ສୁନଃ ປନ୍ଦ ປନ୍ଦ ຢାତିଷ, ພାନାୟନା ༃ ປନ୍ଦ ປନ୍ଦ ຢାତିଷ, ພାନାୟନା ༃ ພାନାୟନା ༃ ໂପିଷ ໂପିଷ, ཁ୍ୱାଦ୍ୱିତୀୟ ༃ ໂପିଷ ໂପିଷ
 - Nonconceptuality/Inexpressibility: ພାନାୟନା ༃ ໂପିଷ ໂପିଷ, ພାନାୟନା ༃ ໂପିଷ ໂପିଷ, ພାନାୟନା ༃ ປନ୍ଦ ປନ୍ଦ



DEFINING A SPACE OF DISCOURSE (Antconc)

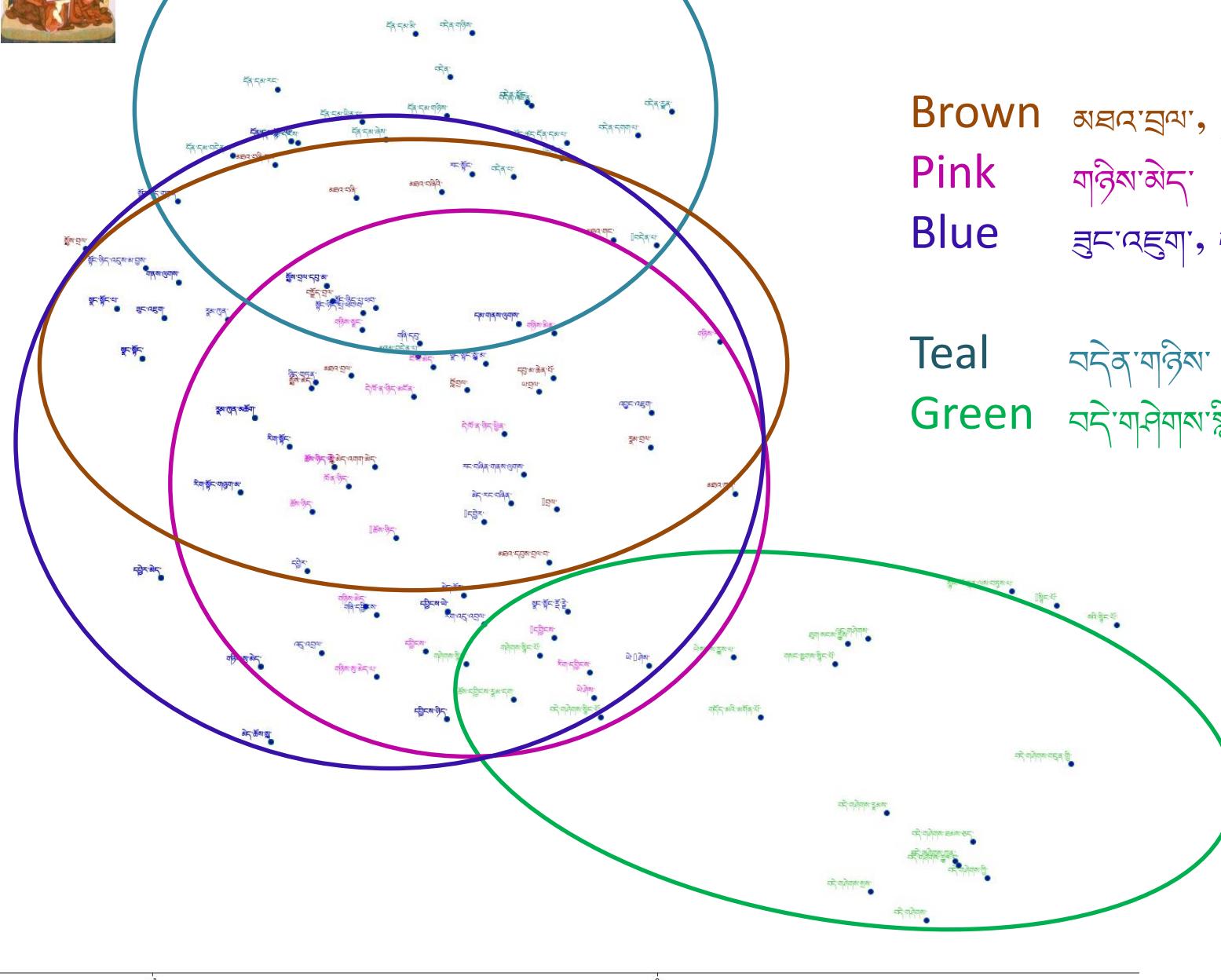
=> Through clusters of technical terms and common contexts, key terms are isolated.

Three types of terms:

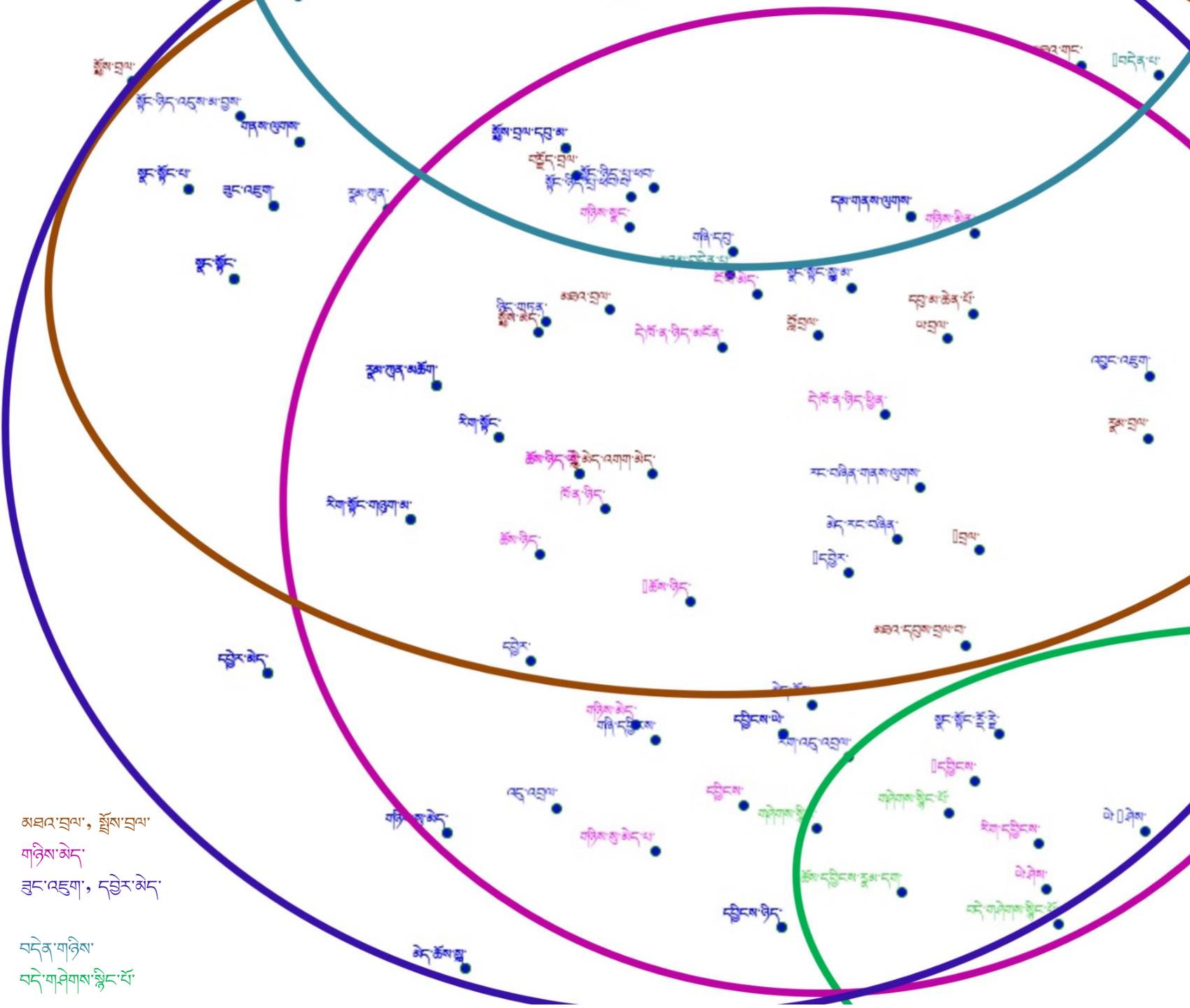
- Nonduality: ພත්‍රිසාසුජේද්‍ය, ພත්‍රිසාජේද්(ය)
- Inseparability/undifferentiation: ຖුද්ධත්වය, ද්‍රුෂ්තීජේද්, ພත්‍රිසාසා
- Nonconceptuality/inexpressibility: ພත්‍රිසාස්වය, ພත්‍රිසාස්වය, ພත්‍රිසාස්වය



MAPPING MP's SPACE OF DISCOURSE (Fasttext)



- Brown ཤ්වත්ත්වා, ශ්නාත්වා
Pink ග්‍රිෂ්ණේද්
Blue හුංත්ත්වා, දුෂ්ඨ්චේද්
Teal එද්‍ර්‍යාග්‍රිෂ්ඨ
Green එද්‍ර්‍යාශ්‍රීෂ්ඨ



Brown
Pink

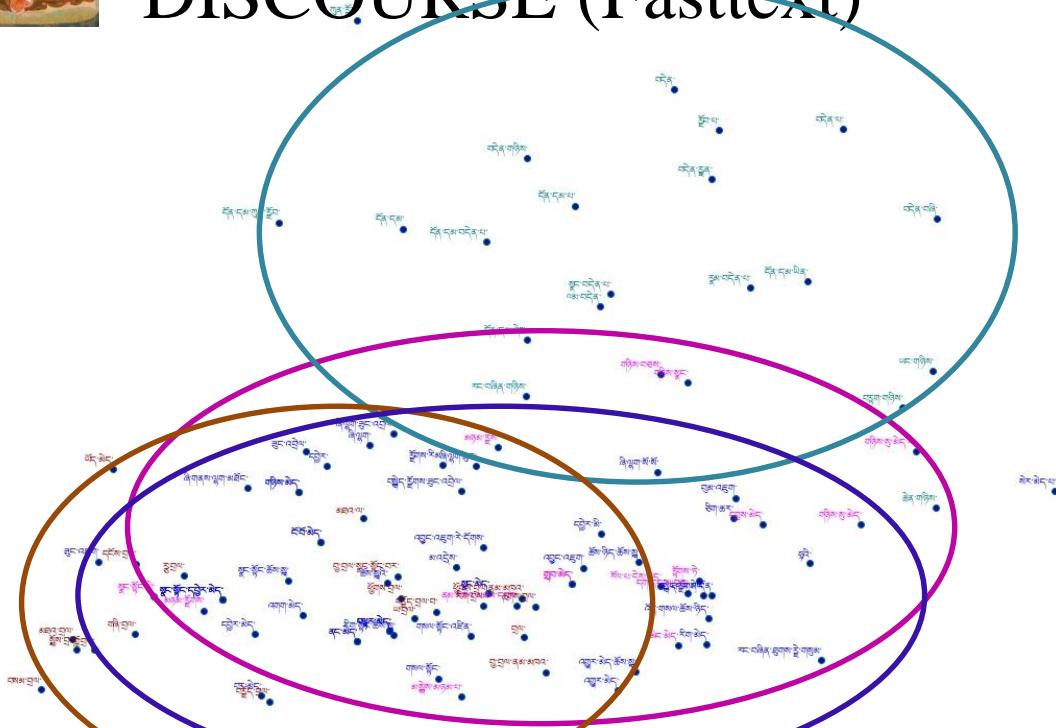
ସମ୍ବନ୍ଧ ପରିଚୟ, କୁର୍ବା ପରିଚୟ
ସତ୍ରିଶ ମେଦ୍
କୁର୍ବା ହଙ୍ଗ, ମୁହେଶ ମେଦ୍

Teal
Green

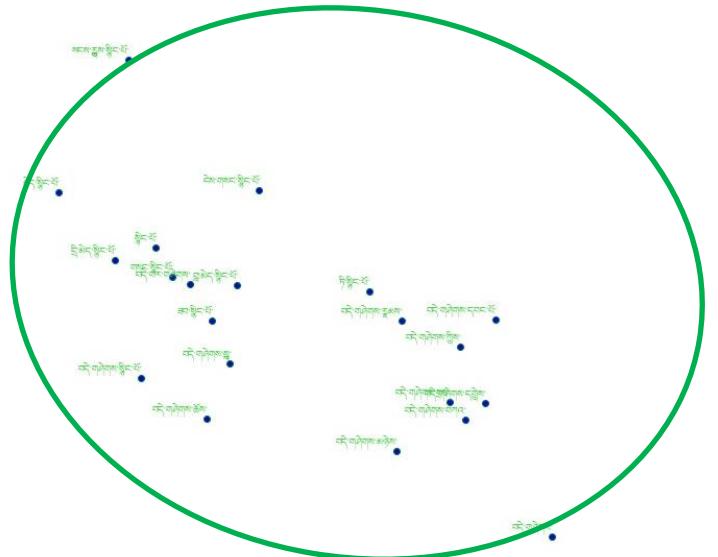
ସମ୍ବନ୍ଧ ପରିଚୟ
ସଦ୍ୟ ମେଶା ମୈଦ୍ଯ ମେଦ୍



MAPPING KLONG CHEN PA'S SPACE OF DISCOURSE (Fasttext)

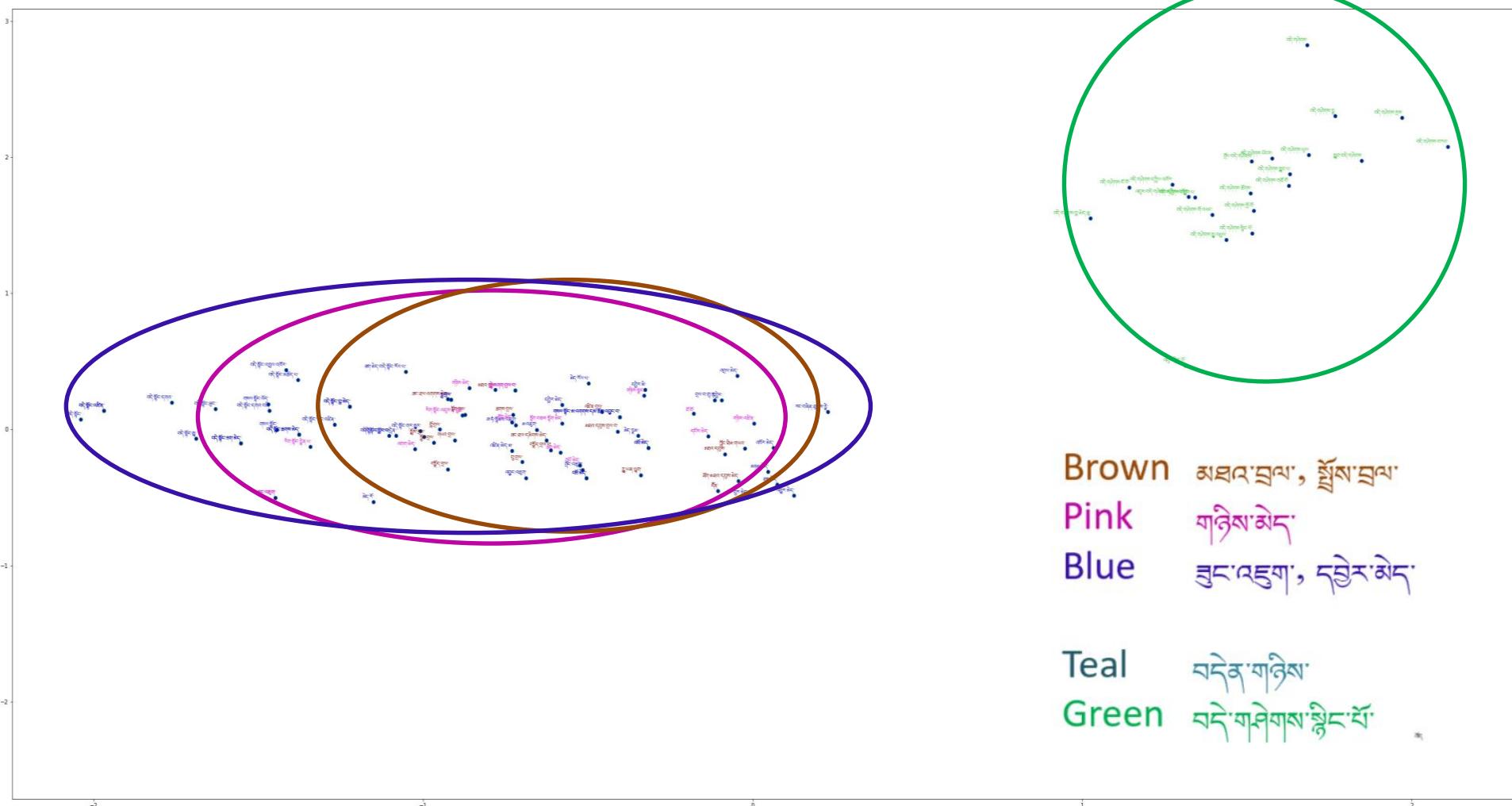


- Brown ཤ්වත්තුණා, རූන්තුණා
- Pink ග්‍රිෂ්ණේද්
- Blue හුන්තුණා, දහුන්තුණා
- Teal එදුක්ෂ්ඩීසා
- Green එදුෂ්ඩීෂන්ඩීංච්



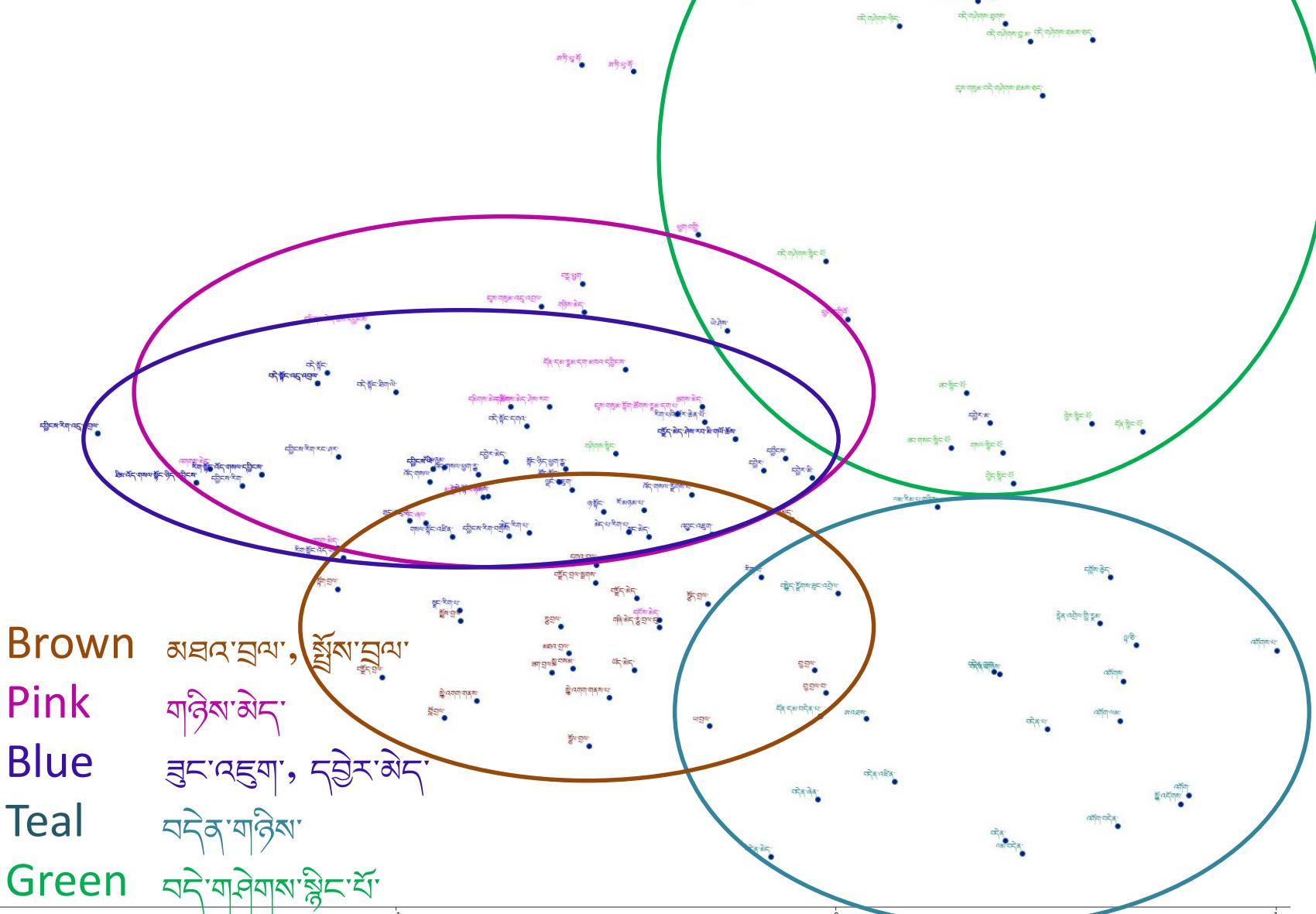


MAPPING RTSA GSUM LING PA'S SPACE OF DISCOURSE (Fasttext)





MAPPING MKHYEN BRTSE'I DBANG PO'S SPACE OF DISCOURSE (Fasttext)





MAPPING DOL PO PA'S SPACE OF DISCOURSE (Fasttext)

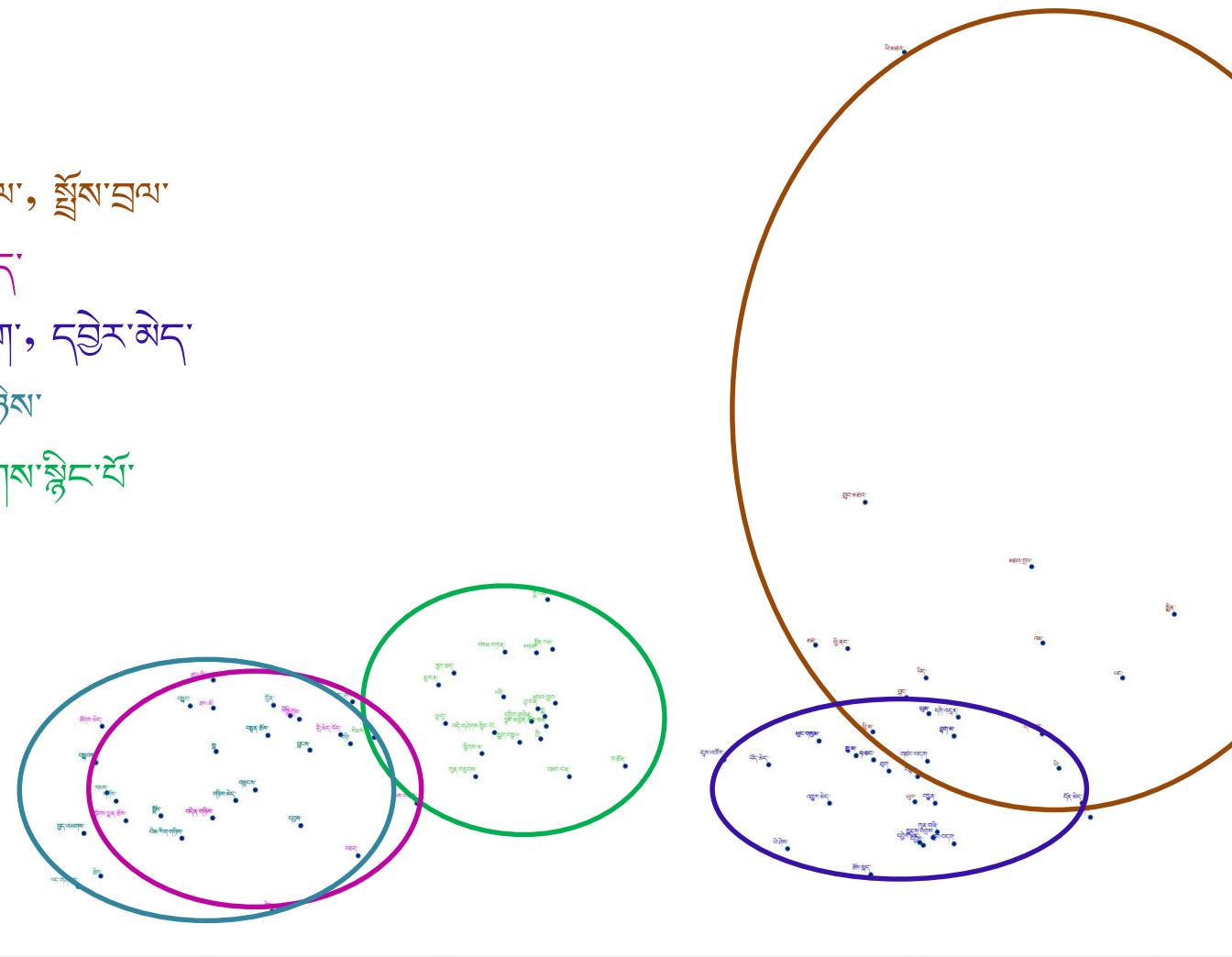
Brown ବ୍ରୋନ୍ ଅମ୍ବାର୍କାର୍, ଲୀଜାର୍ଡାର୍

Pink ལྷ རିଂଶୁ ༜େଦ

Blue ཤྒୁରୁ རକ୍ଷଣା, ମୁଖ୍ୟମନ୍ଦ

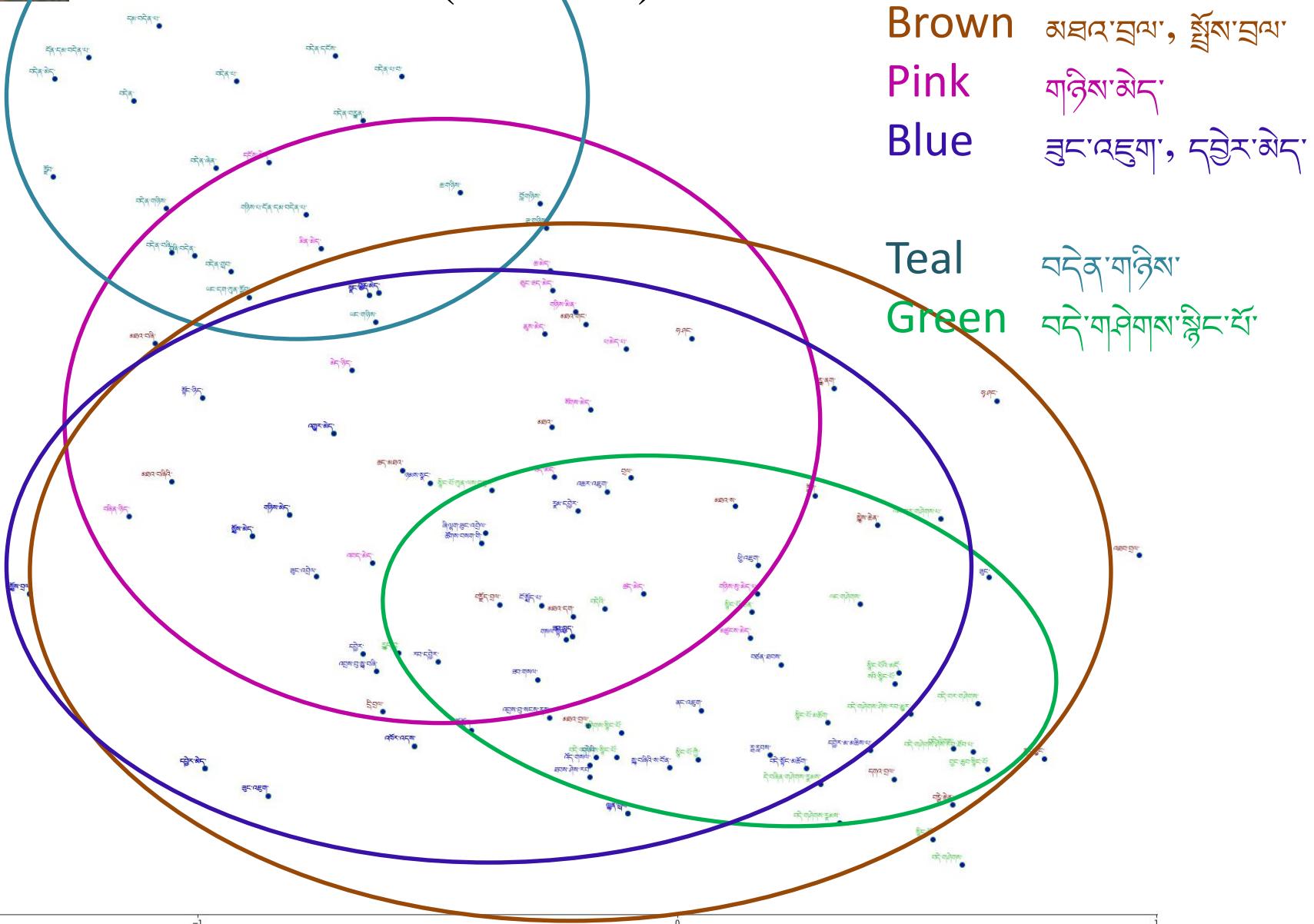
Teal ଏନ୍ଦ୍ରାଶତିଷ୍ଠ

Green ପଦ୍ମଶିଳସାଙ୍କ୍ଷେତ୍ର





MAPPING GO RAMS PA's SPACE OF DISCOURSE (Fasttext)





BUILD A SUB-CORPUS (Feature extraction: TF/IDF, Dunning G-test)

Extraction of five topics in a sub-corpus of texts with high terminological content:

- Nonduality: ພ්‍රතිෂ්‍ඨාස්‍රුමේද්‍රා, ප්‍රතිෂ්‍ඨාමේද්‍රා(භ.)
- Inseparability/undifferentiation: ක්‍රුත්‍යුණා, ද්‍රුෂ්‍තමේද්‍රා, ප්‍රතිෂ්‍ඨාස්‍රා
- Nonconceptuality/Inexpressibility: ගෙත්‍යුණා, ප්‍රත්ජ්‍යුණා, ස්ව්‍යුණා



**Selection of works with high terminological content
=> Definition of a sub-corpus**



EXTRACT CENTRAL TOPICS IN SUB-CORPUS (Topic Modeling: Mallet)

List of five topics

TOPIC : ମେଦ୍ୟା ପର୍ଦ୍ଦା ମେଷାଯା ଶୁଣ ଶୁଣ କ୍ଷେତ୍ର କ୍ଷେତ୍ର ମୁଖ୍ୟ ଦ୍ୱାରା ହୃଦୟ ହୃଦୟ ଦେଖାଯା ହୃଦୟ ଦେଖାଯା ହୃଦୟ ମର୍ମଦୟ ଅନ୍ତର୍ଗତି

top-ranked docs in this topic (#words in doc assigned to this topic)

1. (83603) [MP20-01.txt](#)
2. (52746) [GRP11-0000.txt](#)
3. (28071) [MP17-03.txt](#)
4. (27873) [MP18-03.txt](#)
5. (27386) [MP17-04.txt](#)
6. (24769) [GRP10-0000.txt](#)
7. (18866) [GRP69-0000.txt](#)
8. (18062) [MP18-01.txt](#)
9. (12801) [MP1-04.txt](#)
10. (12206) [MP1-03.txt](#)
11. (10085) [MP24-01.txt](#)
12. (9764) [MP18-02.txt](#)
13. (9621) [MP13-01.txt](#)
14. (8715) [MP4-02.txt](#)
15. (6140) [MP8-09.txt](#)
16. (5770) [MP4-01.txt](#)
17. (2727) [MP22-04.txt](#)
18. (2143) [MP22-01.txt](#)
19. (1865) [MP21-03.txt](#)
20. (1504) [GRP16-0000.txt](#)
21. (1159) [MP14-01.txt](#)
22. (856) [MP14-02.txt](#)
23. (765) [MP21-05.txt](#)
24. (752) [GRP15-0000.txt](#)
25. (679) [MP25-02.txt](#)
26. (649) [MP27-18.txt](#)
27. (623) [MP14-03.txt](#)
28. (618) [MP24-04.txt](#)



CONNECT TEXTS AND AUTHORS TO TOPICS

(Topic Modeling: Mallet)

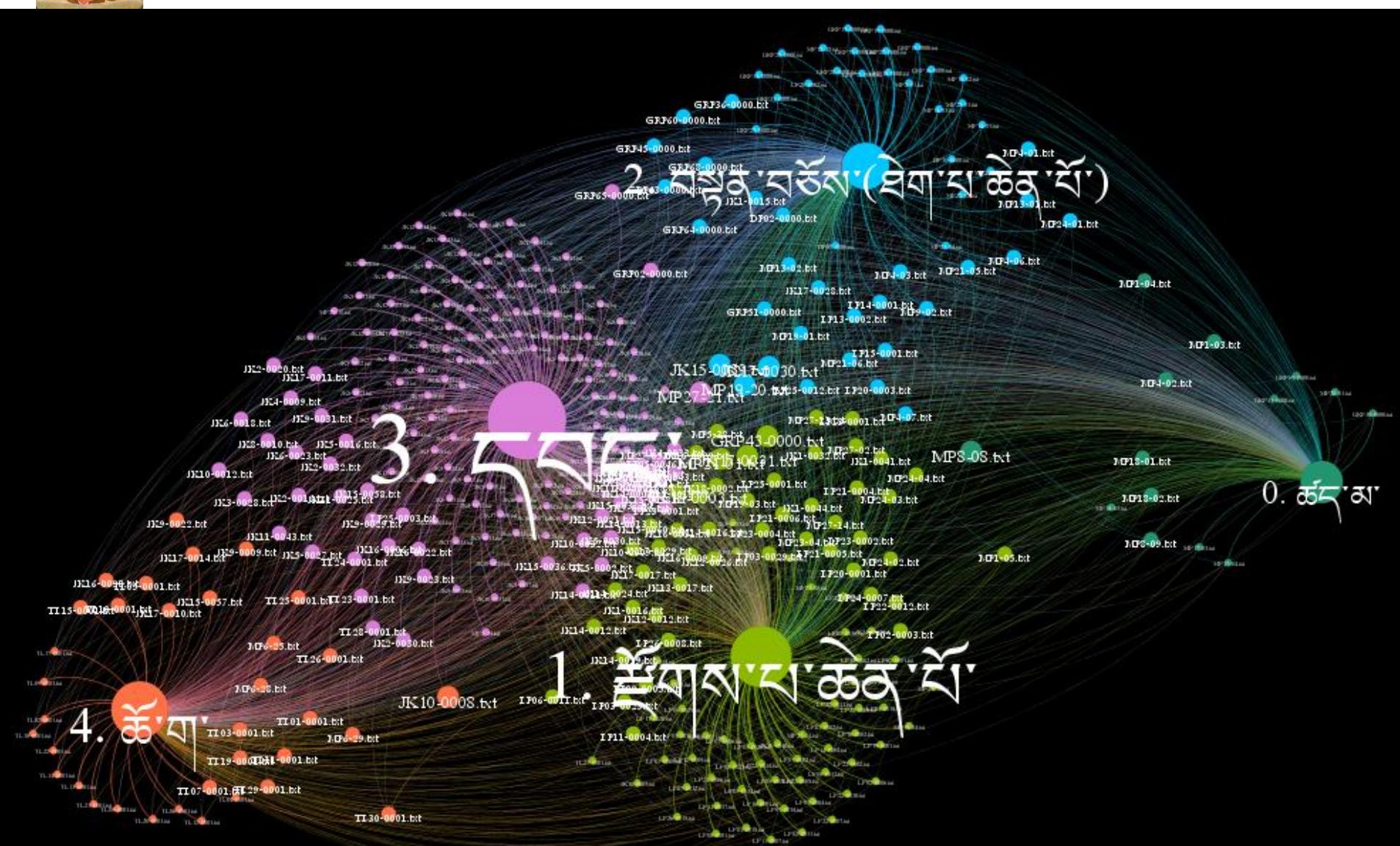
DOC :MP13-01.txt

Top topics in this doc (% words in doc assigned to this topic)



MAP TEXTS, AUTHORS, AND TOPICS (Gephi)

N.B: Big nodes represent topics





MAP TEXTS, AUTHORS, AND TOPICS (Gephi)

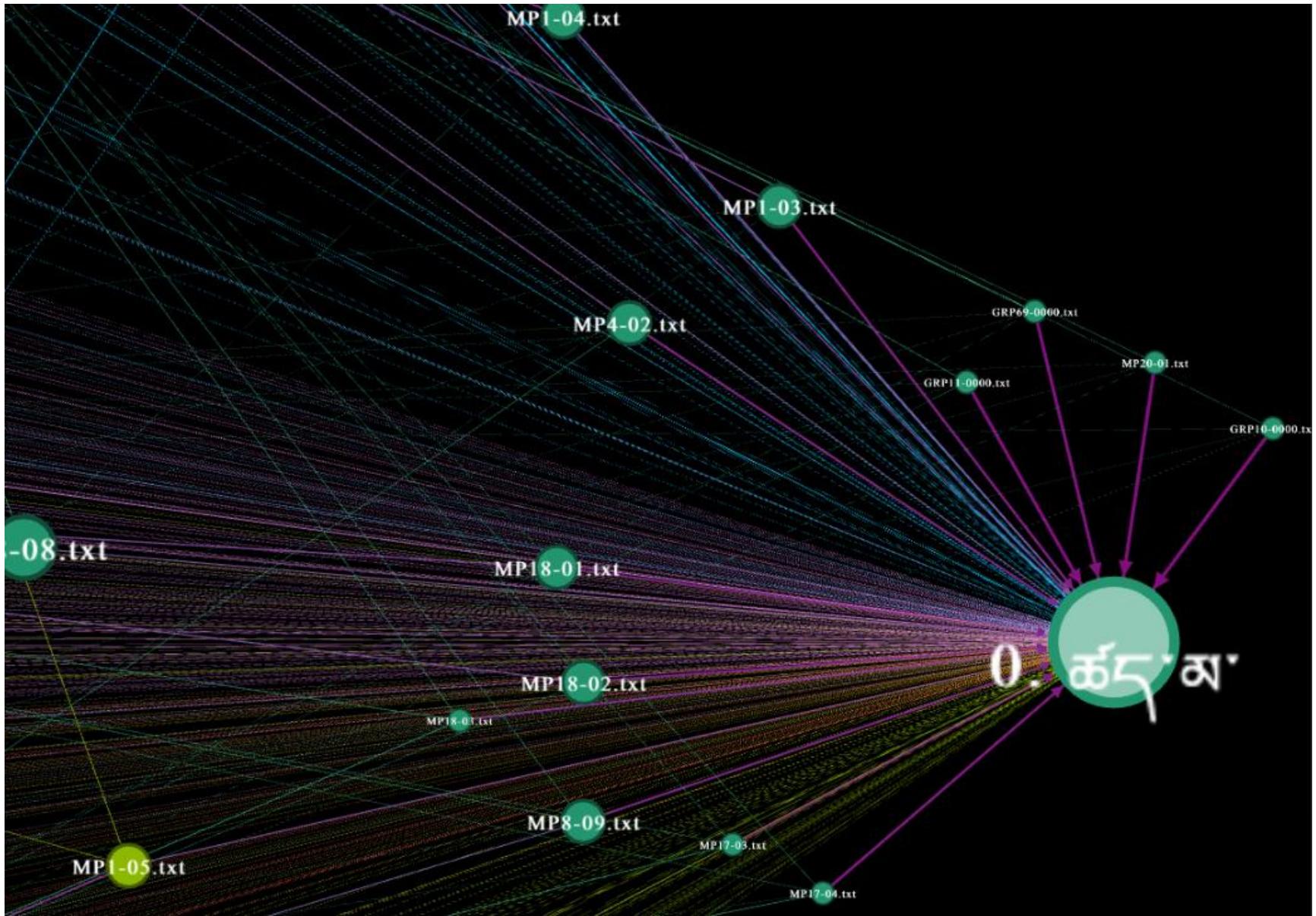
N.B: Smaller nodes represent works and their author





MAP TEXTS, AUTHORS, AND TOPICS (Gephi)

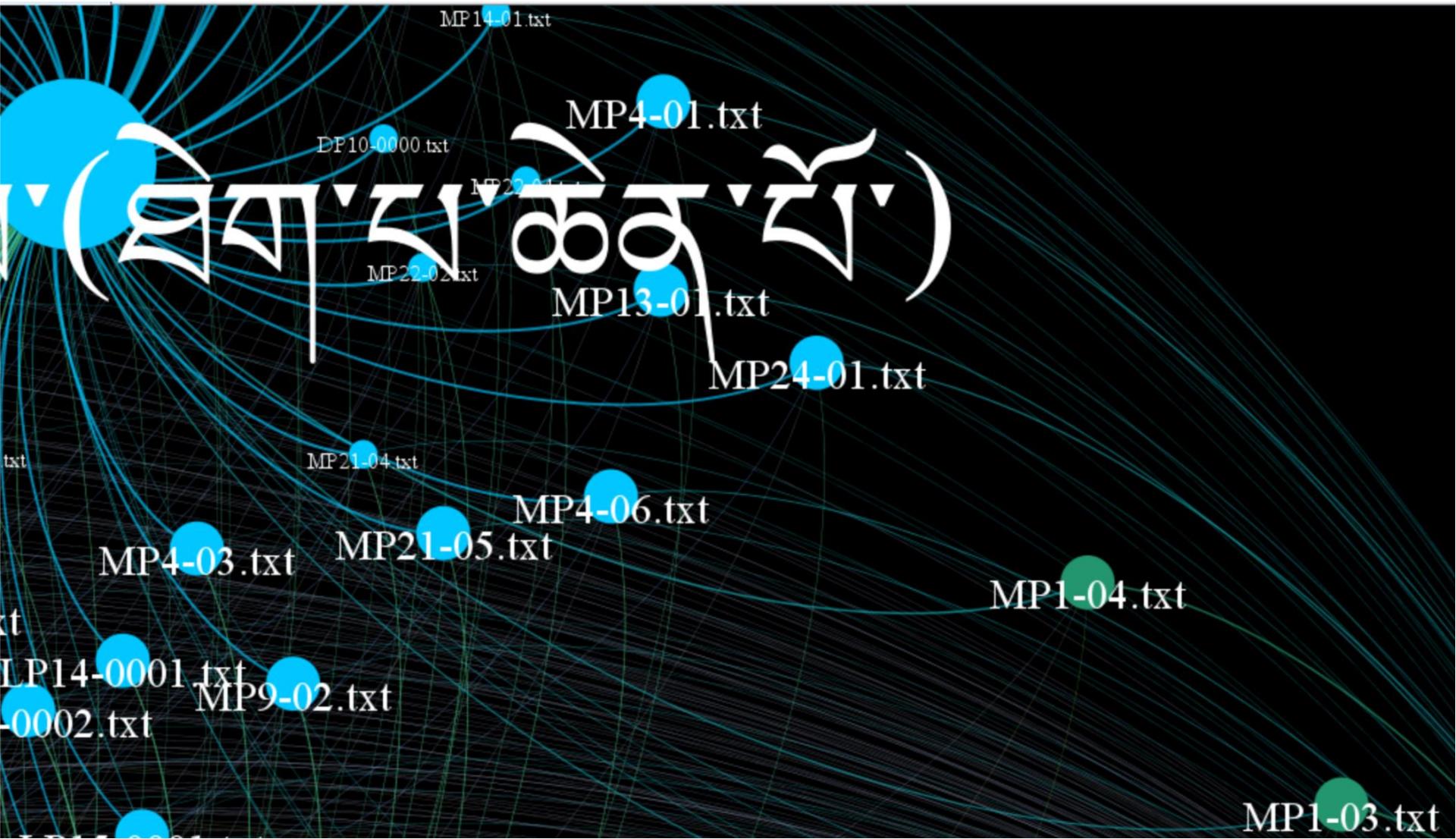
N.B: Edges (lines w/arrow) represent degrees of topic content in text





MAP TEXTS, AUTHORS, AND TOPICS (Gephi)

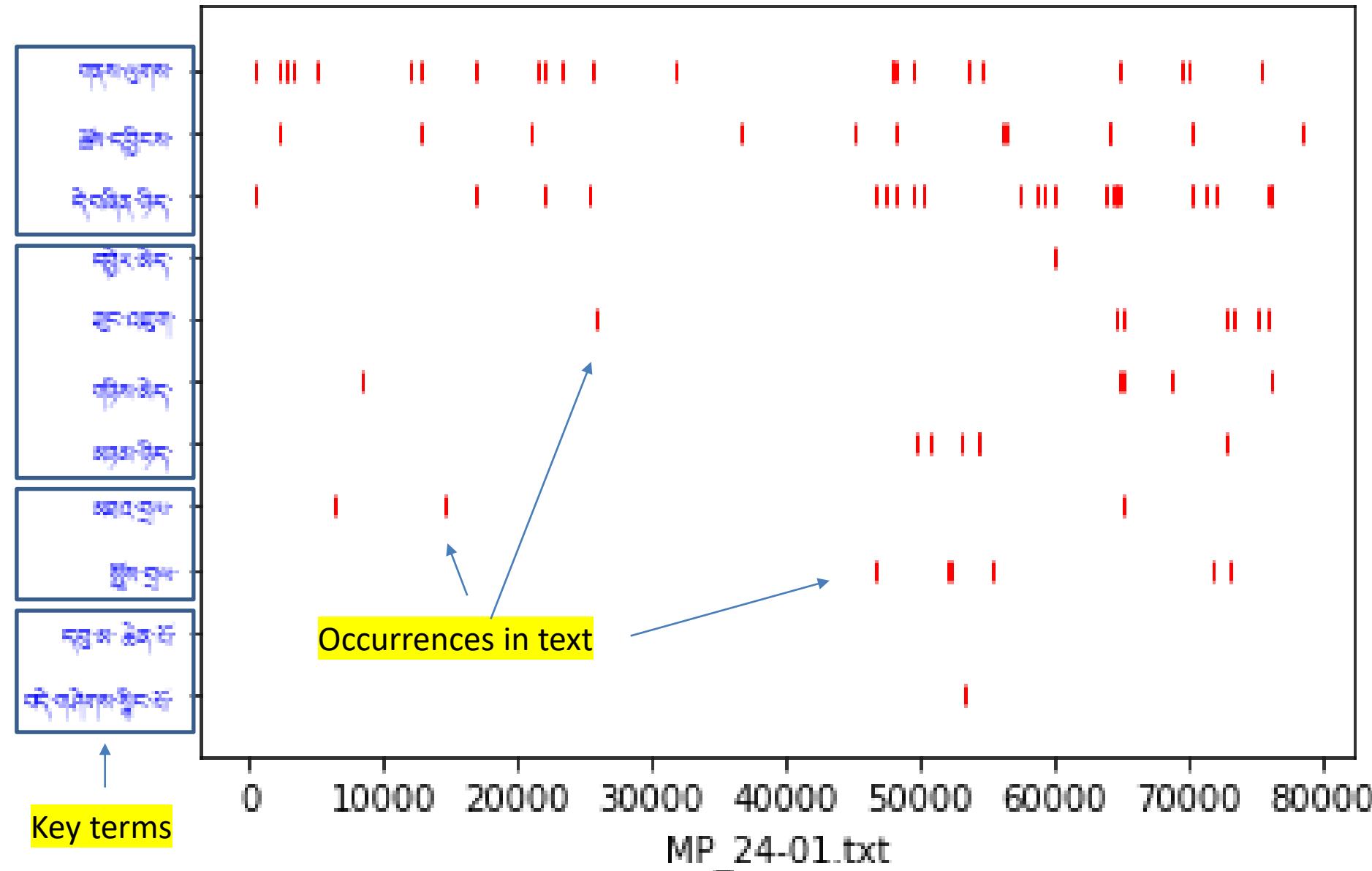
N.B: Edges (lines w/arrow) represent degrees of topic content in text



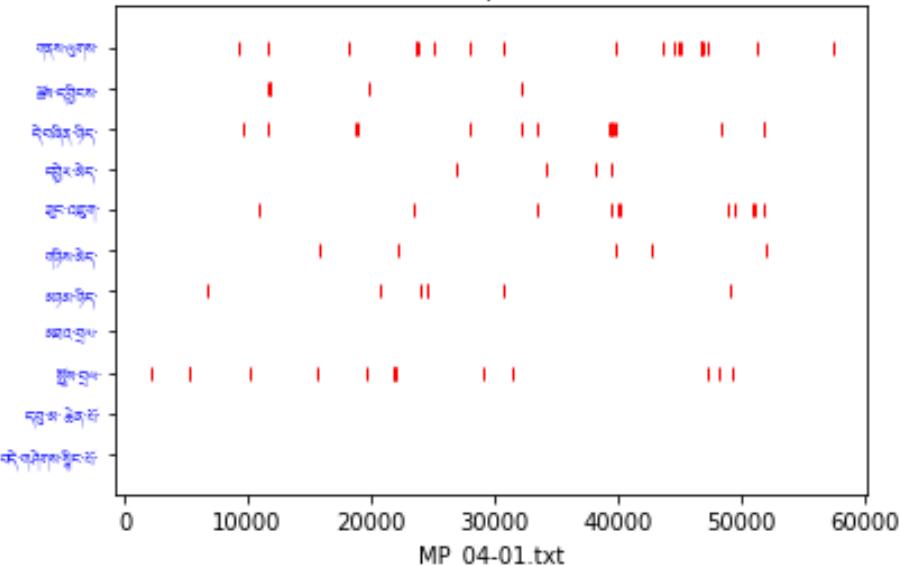


SELECT CENTRAL TEXTS

Lexical Dispersion Plot

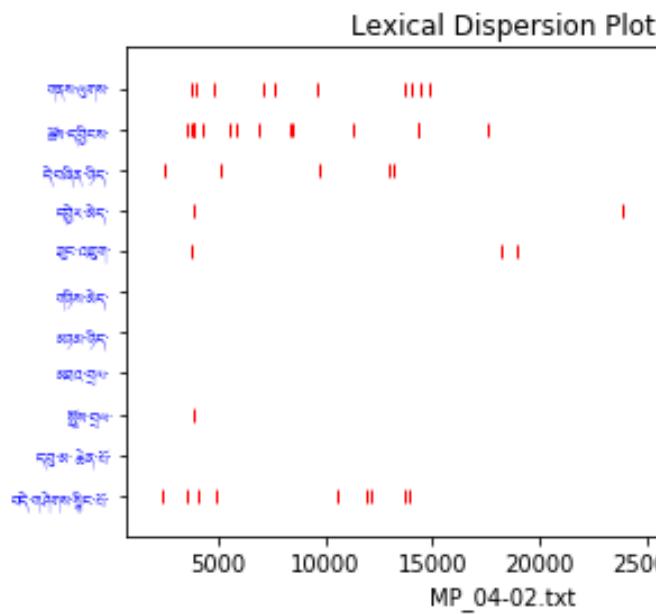


Lexical Dispersion Plot

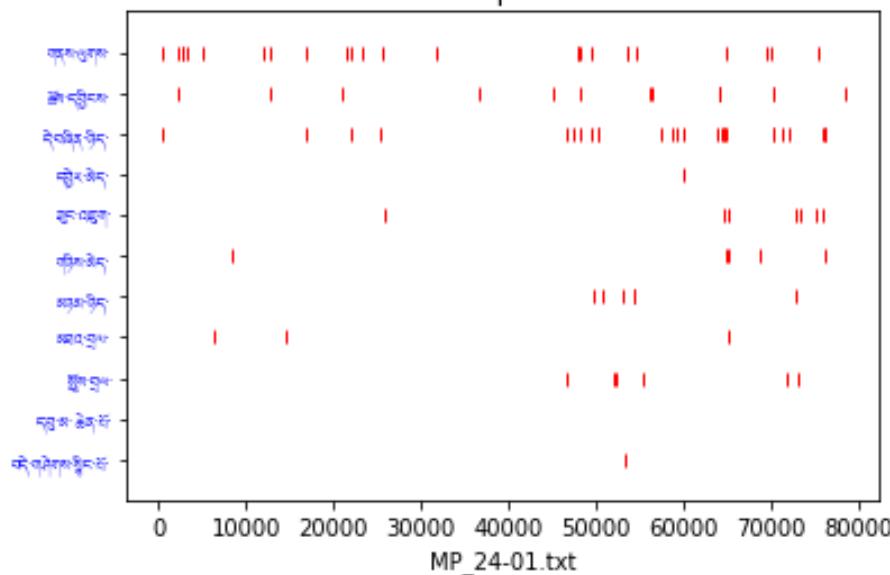
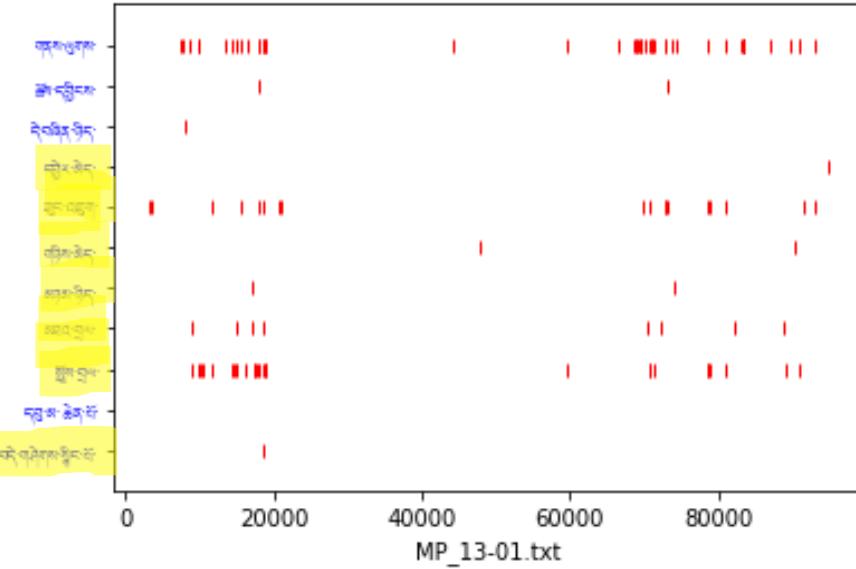


ମୁଖ୍ୟାକ୍ଷରୀ ଶ୍ରୀକୃଷ୍ଣାସମ୍ମନନ୍ଦନାଶ୍ରମାଦ୍ଗୁଣାପଦିବିଷ୍ୱାମ୍ବନ୍ଦ

Lexical Dispersion Plot

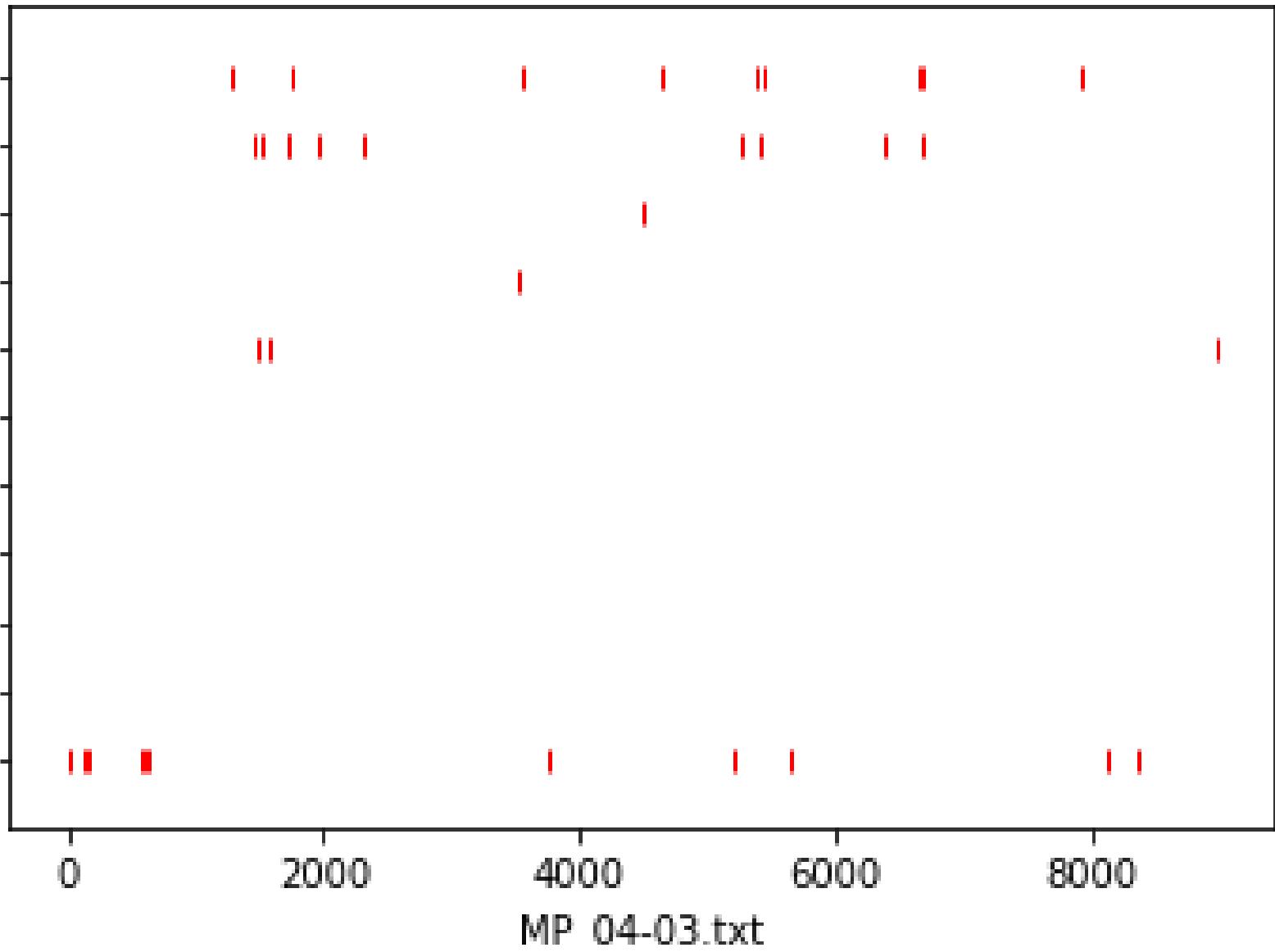


Lexical Dispersion Plot



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Lexical Dispersion Plot



A text analytical case study

CONCLUSION



Yuganaddha: a central concept in Mi pham's works

In the introduction I first give a detailed summary of previous research on Mi pham's life and work. With regard to his interpretation of Madhyamaka, the notion of *yuganaddha* (Tib. *zung 'jug*) plays a central role in his understanding of the relationship between the two truths (see Wangchuk 2012).

In the Indo-Tibetan Buddhist literature, the term *yuganaddha* is used in a variety of contexts to express the idea that two elements are yoked together (see Broido 1985bc & Ruegg 1989) in a relationship of co-occurrence, simultaneity, nondifferentiation, nonduality, inseparability, or coincidence. In this introduction, I discuss various possible translations for *yuganaddha* (e.g. 'unity,' 'coalescence,' etc.).

However, since *yuganaddha* is widely used in Buddhist literature, how do we make sense of Mi pham's interpretation of Madhyamaka?



Three key points regarding Mi pham's usage of *zung 'jug*

A corpus-based analysis of Mi pham's usage of *zung 'jug* reveals that this term refers to:

1. A nonconceptual nonduality: in Mi pham's works, the main synonyms for *zung 'jug* are *dbyer med* (*abheda*), *mnyam pa/mnyam nyid* (*samatva*, *samatā*), *gnyis med* (*advaya*), *spros bral* (*aprapañca*) as well as by extension *chos nyid* (*dharmatā*), *chos kyi dbyings* (*dharmadhātu*), *de kho na nyid* (*tattva*).
2. A primordial state: *zung 'jug* is qualified by terms such as *gdod ma*, *gnyug ma*, *ye nas*, *rang bzhin yin pas* indicating that the relationship between the two terms related through *zung 'jug* is not a synthesis or the result of a unification process but a primordial state.
3. A nonduality of appearance, luminosity, and emptiness by way of transitivity: the most frequent elements linked through *zung 'jug* are unsurprisingly *snang stong* (appearance and emptiness) as well as *bden gnyis* (the two truths). Other important pairs include: *dbyings ye*, *dbyings rig*, *rig stong*, *bde stong*, *gsal stong*, *stong rten 'byung*, *e waM*, *thabs shes*, *bskyed rdzogs*, *sku thugs*, *sku gnyis*.



Philological and historical methods

Genealogy of texts and flow of Mipham's thought on the two truths as found in some of his key texts on Madhyamaka :

- his commentary on the ninth chapter of the *Bodhicaryāvatāra* (BCA), *Sher le'u 'grel pa nor bu ke ta ka* (NK 4,1–9,5) composed in 1878 in which he refers to . . .
- his commentary on Śāntarakṣita's *Madhyamakālaṃkāra* (*dBu ma rgyan gyi rnam bshad*) composed in 1876 in which he refers to . . .
- his commentary on Klong chen pa's *Yid bzhin mdzod*.



Mi pham's radical nondualism: four hypotheses

In Mi pham's works, *zung 'jug* and its synonyms therefore refer to a radical form of nondualism in the sense of:

- ontological nondualism as emptiness and dependent arising, the unconditioned and the conditioned, are indivisible;
- cognitive nondualism since there is no conceptual separation between subject and object in the absence of ‘patterning objects of thought’ (Klein 1995: 21,136);
- soteriological nondualism because the ground (i.e., the starting point of the path) and the result of the path stand in a nondual relationship;
- Although the unity of the two truths in the context of the path is the apex of a system including various perspectives on the relationship between the two truths, this unity is not the result of a process of generation and reconciliation of opposites but a primordial and nonconceptual ‘state of affairs.’

Mi pham develops his discourse on ‘unity’ (*yuganaddha*, *zung 'jug*) according to the emic structure of the ground (*gzhi*), path (*lam*), and result (*'bras*).