Semantic Networks

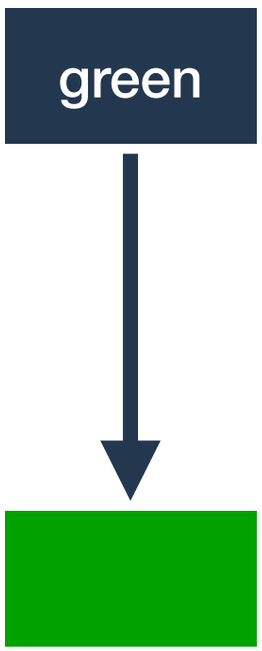
Semantic networks

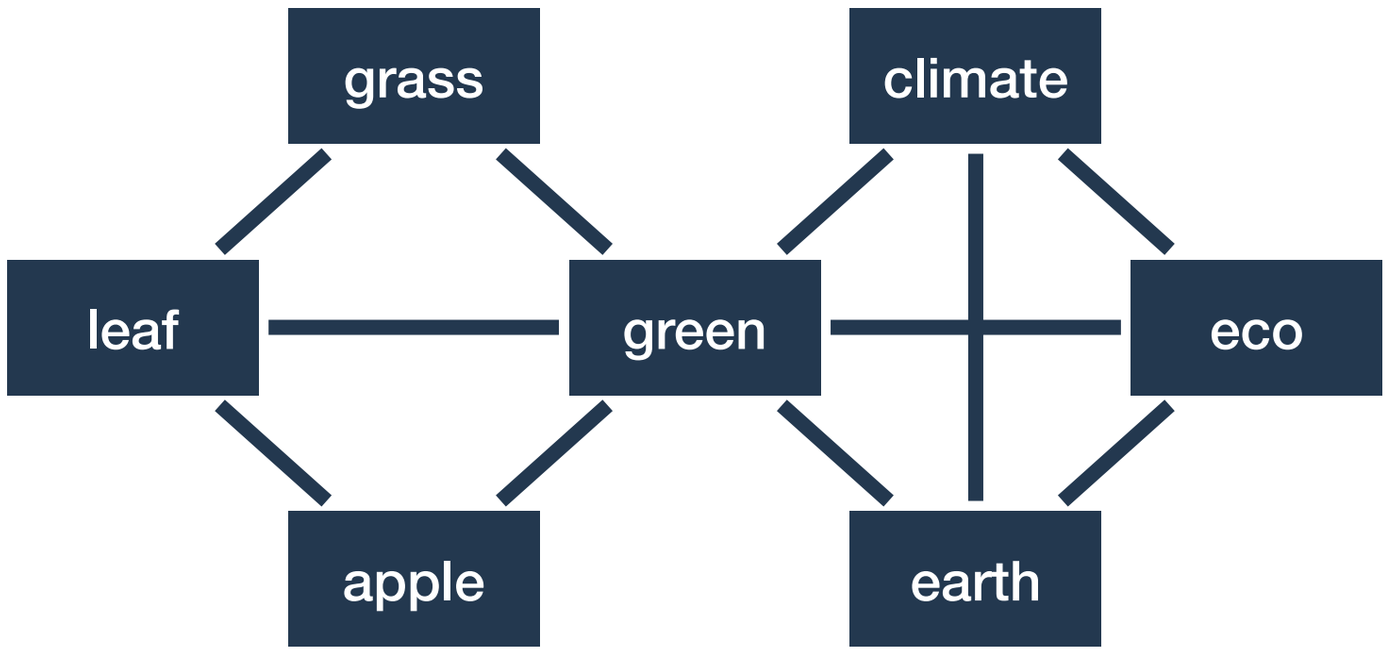
Semantics:

- The study of *meaning* in language

***Lexical* semantics:**

- The study of meaning in language as constituted by its *use* (syntax)





Semantic networks

Forms of semantic networks:

Vertices:

- Words (*is*, *be*, *puppies*, *puppy,* …)
- Lexemes (*be*, *puppy*,…)
- Works (books, plays, …)
- …

Edges:

- Syntactic dependency
- Annotated links (i.e. hyperlinks)
- ***Co-occurence*** (i.e. in the same sentence)
- …

A puppy is a juvenile dog. All healthy puppies grow quickly after birth. A puppy's coat color may change as the puppy grows older, as is commonly seen in breeds such as the Yorkshire Terrier. Puppy refers specifically to young dogs, while pup may be used for other animals such as wolves, seals, giraffes, guinea pigs, rats or sharks.

Semantic networks

Worked example: Term co-occurence in *9 to 5*

1: Raw text

> Working 9 to 5, what a way to make a living
> Barely gettin' by, it's all taking and no giving
> They just use your mind and they never give you credit
> It's enough to drive you crazy if you let it

2: Tokenize

```
working 9 to 5, what a way to make a
living barely gettin’ by, it 's all taking
and no giving they just use your mind and
they never give you credit it ’s enough to
drive you crazy if you let it
```

Worked example: Term co-occurence in *9 to 5*

2: Tokenize

> working 9 to 5, what a way to make a living barely gettin’ by, it 's all taking and no giving they just use your mind and they never give you credit it ’s enough to drive you crazy if you let it

3: Lemmatize

> work 9 to 5, what a way to make a living barely get by, it is all take and no give they just use your mind and they never give you credit it is enough to drive you crazy if you let it

Worked example: Term co-occurence in *9 to 5*

2: Tokenize

```
work    9 to 5  what a way to make a
living barely get    by, it is all take
and no give   they just use your mind and
they never give you credit it is enough to
drive you crazy if you let it
```

3: Remove 'stopwords'

```
work    9   5          way
living barely get                  take
       give              use     mind
           give     credit
drive     crazy        let
```

Semantic networks

Worked example: Term co-occurence in *9 to 5*

4: Rolling window

> `work 9 5` `way living barely get take give use mind give credit drive crazy let`

work	9	1
work	5	1
5	9	1

Semantic networks

Worked example: Term co-occurence in *9 to 5*

4: Rolling window

> work 9 5 way living barely get
> take give use mind give credit
> drive crazy let

work	9	1
work	5	1
5	9	2
way	9	1
way	5	1

Semantic networks

Worked example: Term co-occurence in *9 to 5*

4: Rolling window

> work 9 5 way living barely get
> take give use mind give credit
> drive crazy let

work	9	1
work	5	1
5	9	2
way	9	1
way	5	2
living	way	1
living	5	1

Semantic networks

Worked example: Term co-occurence in *9 to 5*

4: Rolling window

> work 9 5 way living barely get
> take give use mind give credit
> drive crazy let

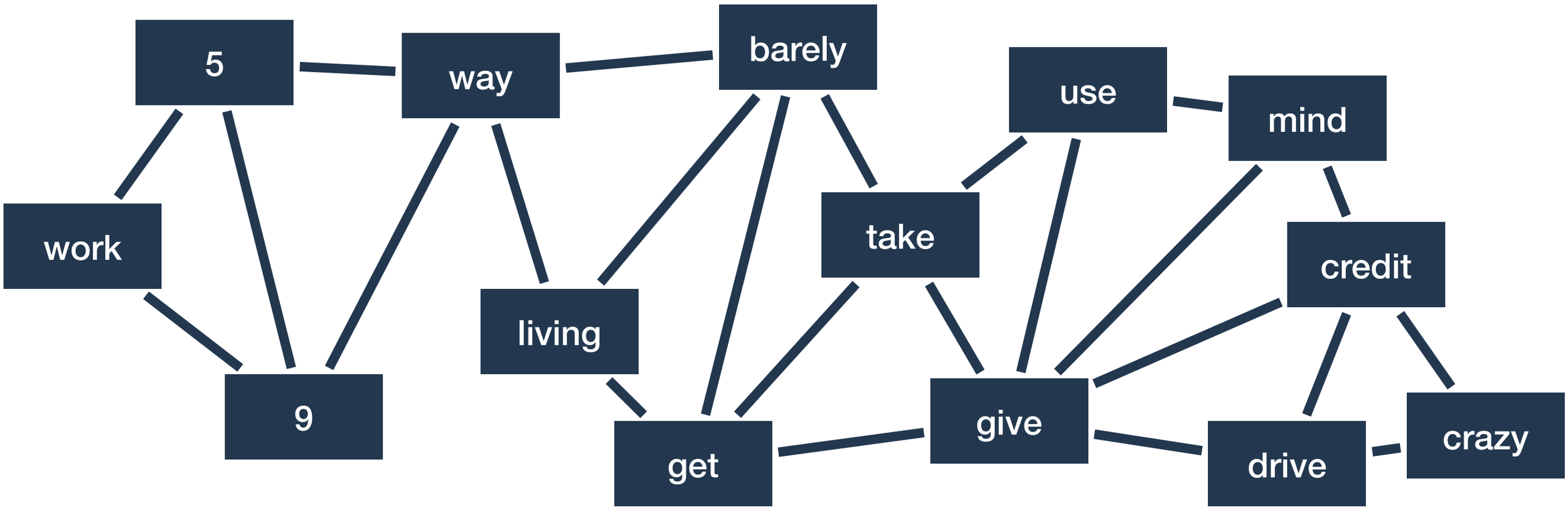
work	9	1
work	5	1
5	9	2
way	9	1
way	5	2
living	way	2
living	5	1
barely	living	1
barely	way	1

Semantic networks

Worked example: Term co-occurence in *9 to 5*

4: Rolling window

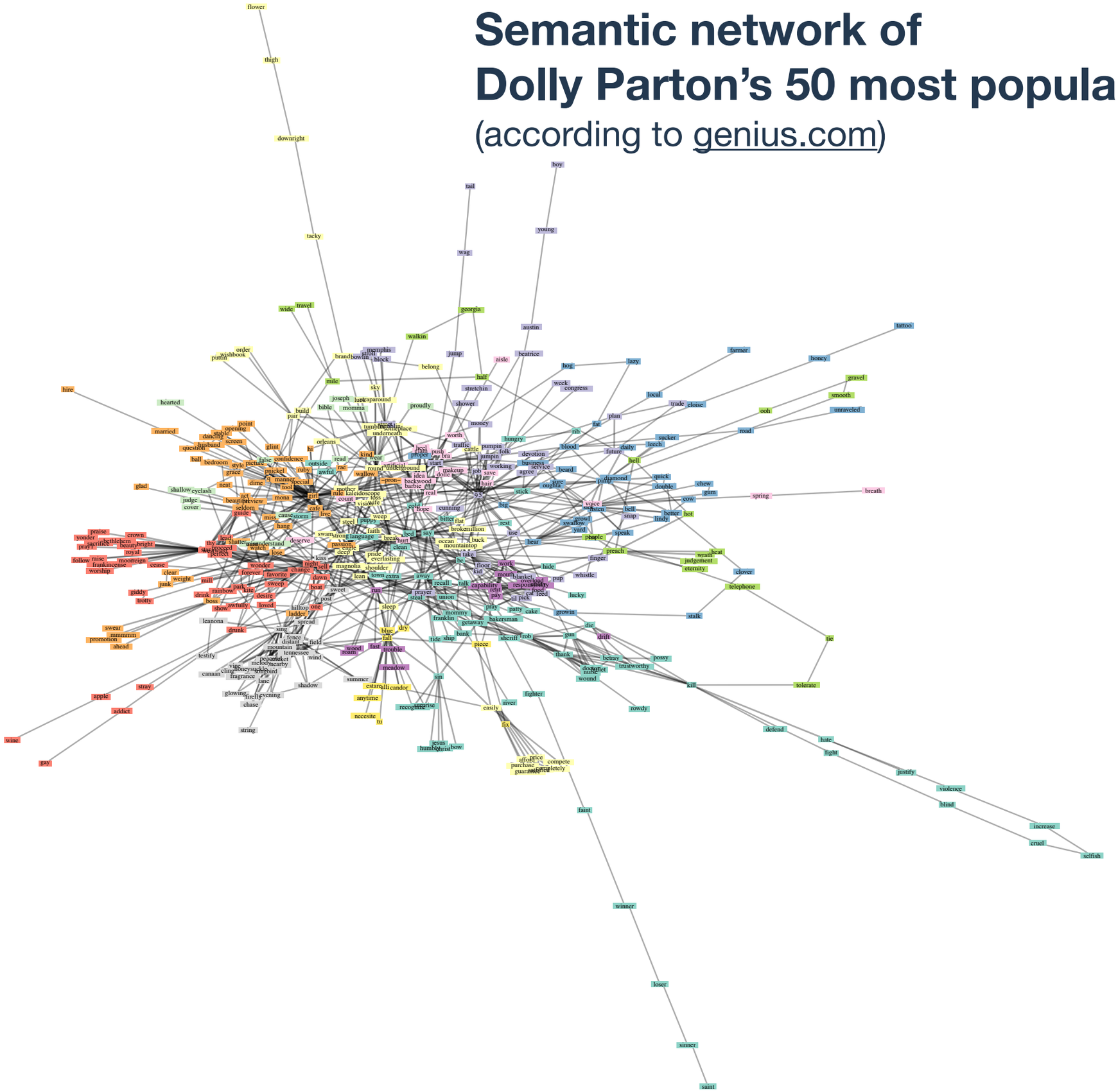
```
work 9 5 way living barely get
take give use mind give credit
drive crazy let
```



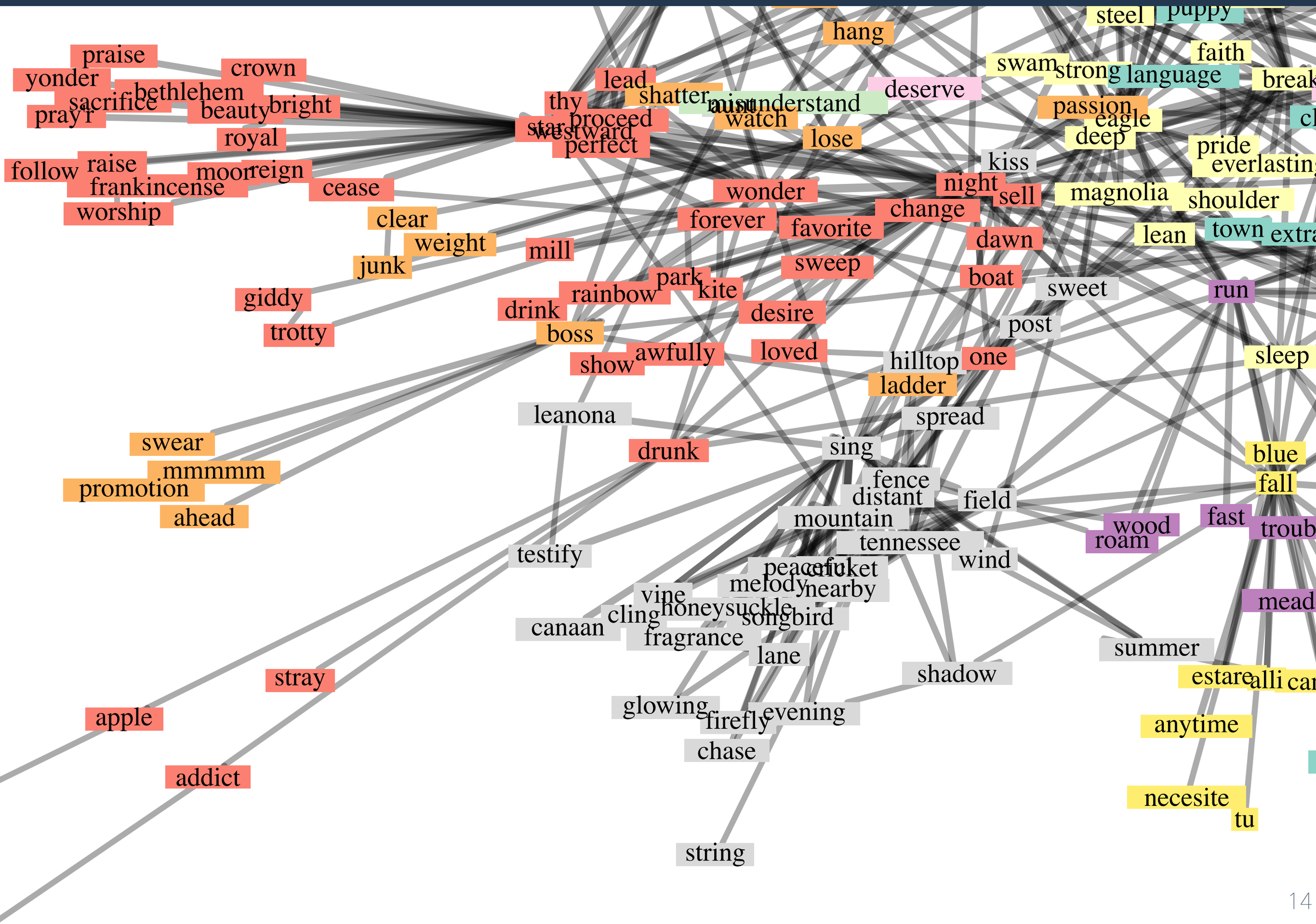
Semantic networks

Semantic network of Dolly Parton's 50 most popular songs

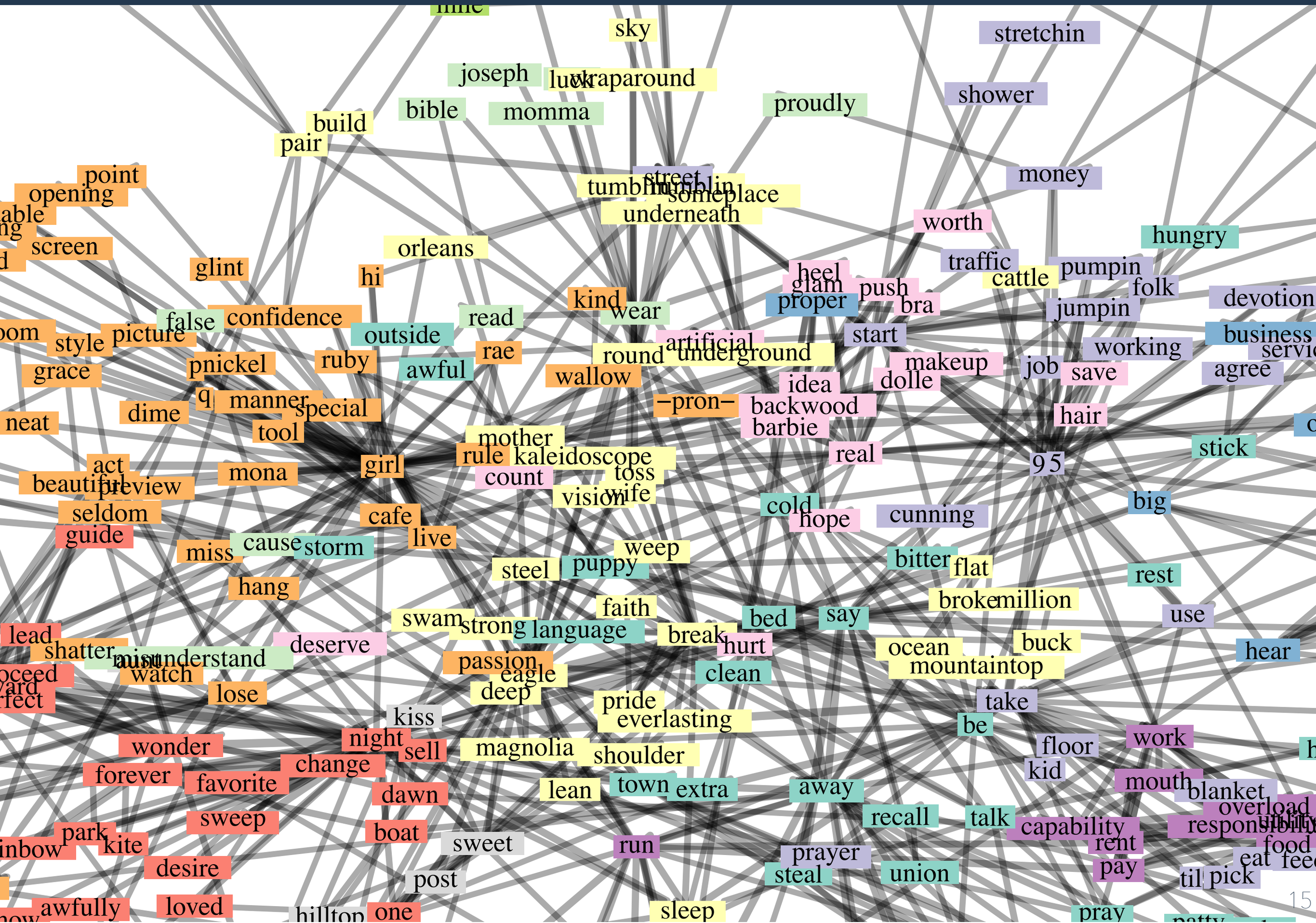
(according to genius.com)



Semantic networks



Semantic networks



Semantic networks

Semantic network of Dolly Parton's 50 most popular songs

(according to genius.com)

Most central terms (eigenvector)

- mountain
- tennessee
- star

Most central terms (betweenness)

- girl
- away
- say