# SOCI 424: Networks & Social Structures

## Nov. 11 | 1. Semantic networks

# Semantic Networks

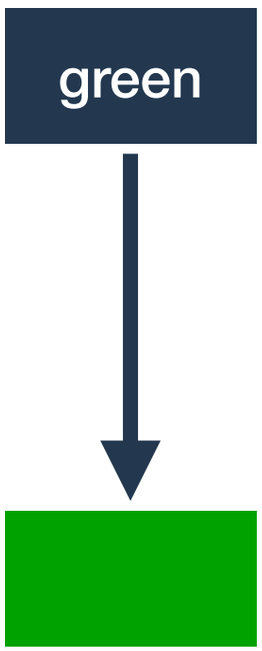
# Semantic networks

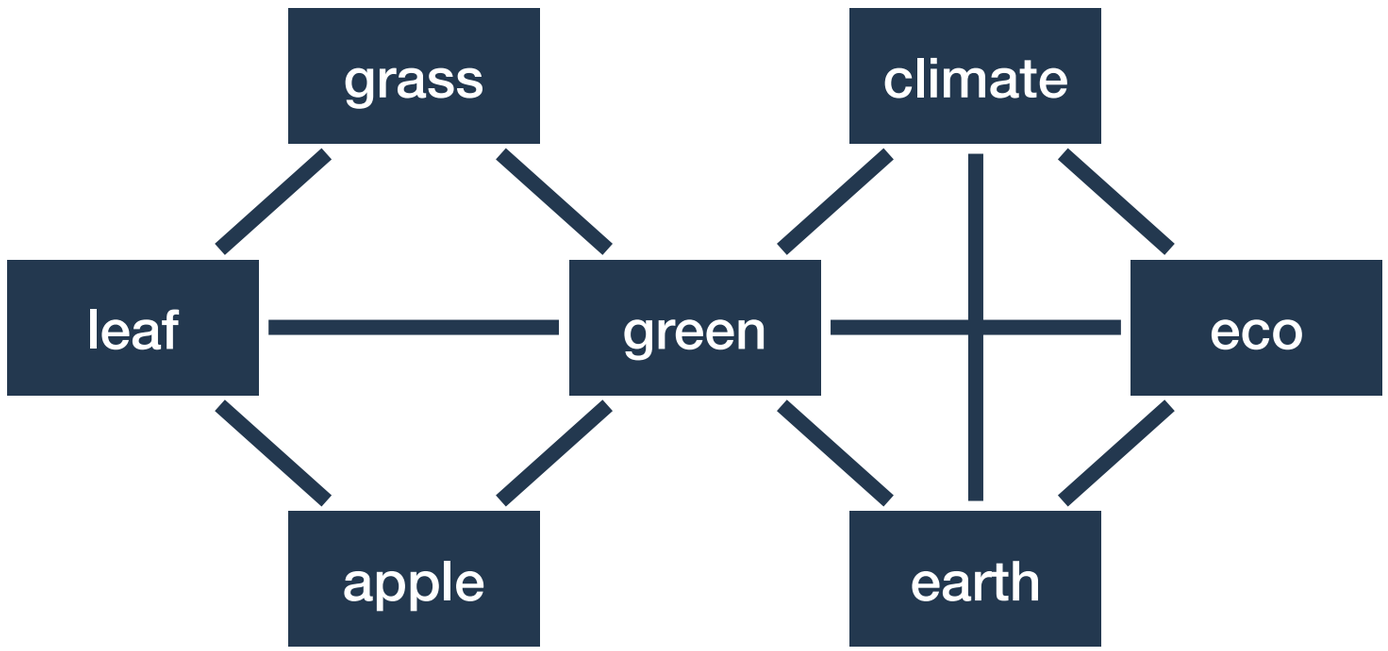
**Semantics:**

- 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:

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

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: *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
```

# Semantic networks

## Worked example: *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

# Semantic networks

## Worked example: *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: *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: *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: *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: *9 to 5*


### 4: Rolling window

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

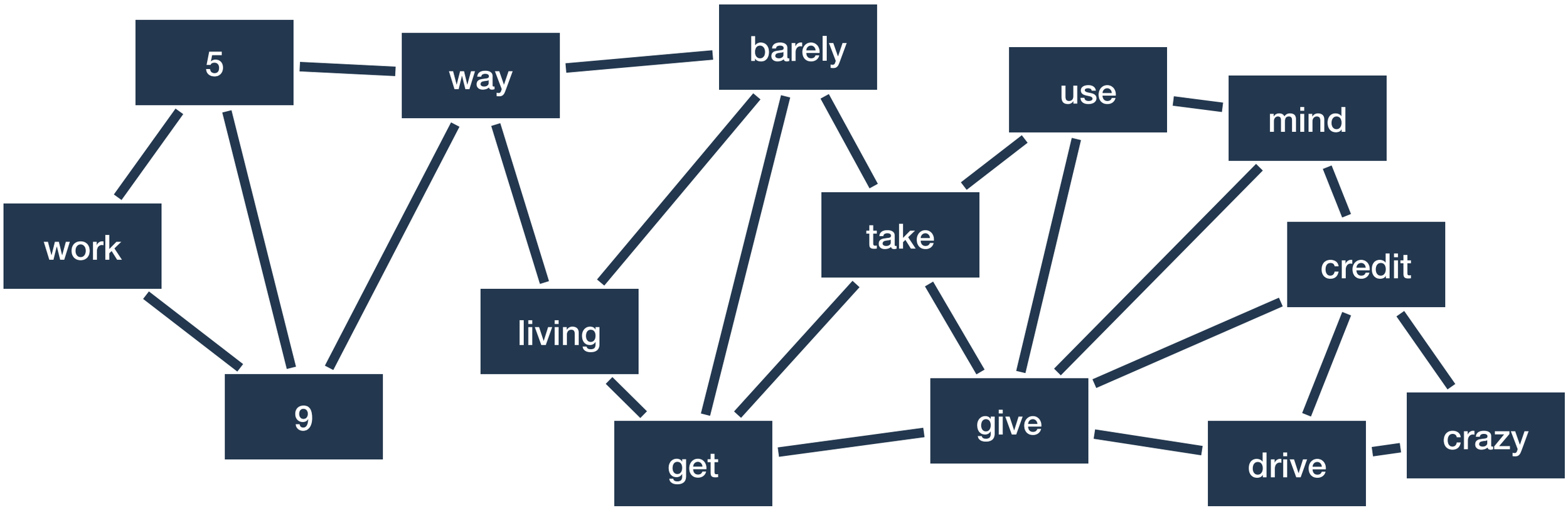
| | | |
|---|---|---|
| work | 9 | 1 |
| work | 5 | 1 |
| 5 | 9 | 2 |
| way | 9 | 1 |
| way | 5 | 2 |
| living | way | 2 |
| living | 5 | 1 |
| barely | living | 1 |
| barely | way | 1 |

# Semantic networks

## Worked example: *9 to 5*


### 4: Rolling window

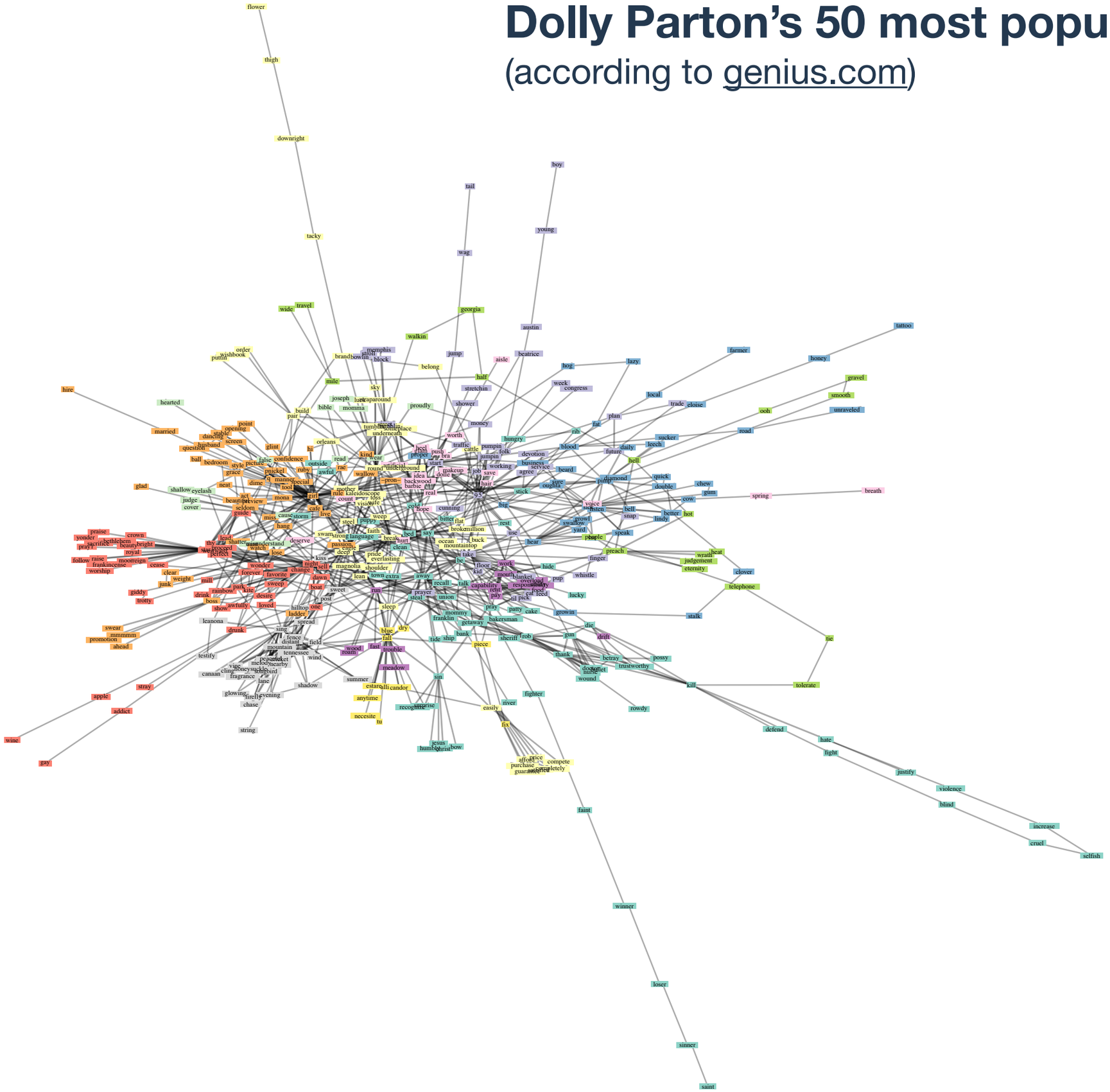
> work 9 5 way living barely get
> take give use mind give credit
> drive crazy let



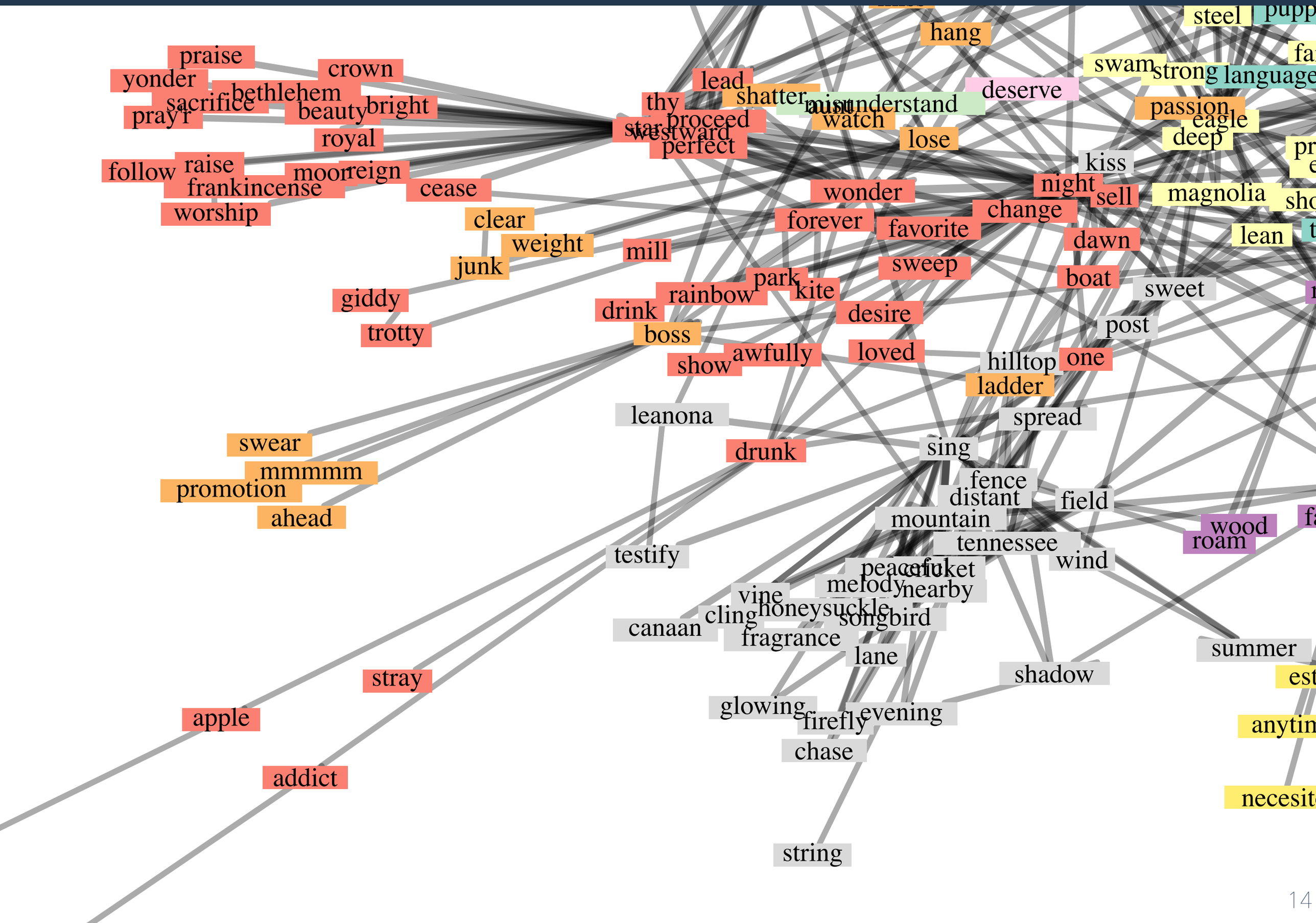
# Semantic networks

## Dolly Parton's 50 most popular songs

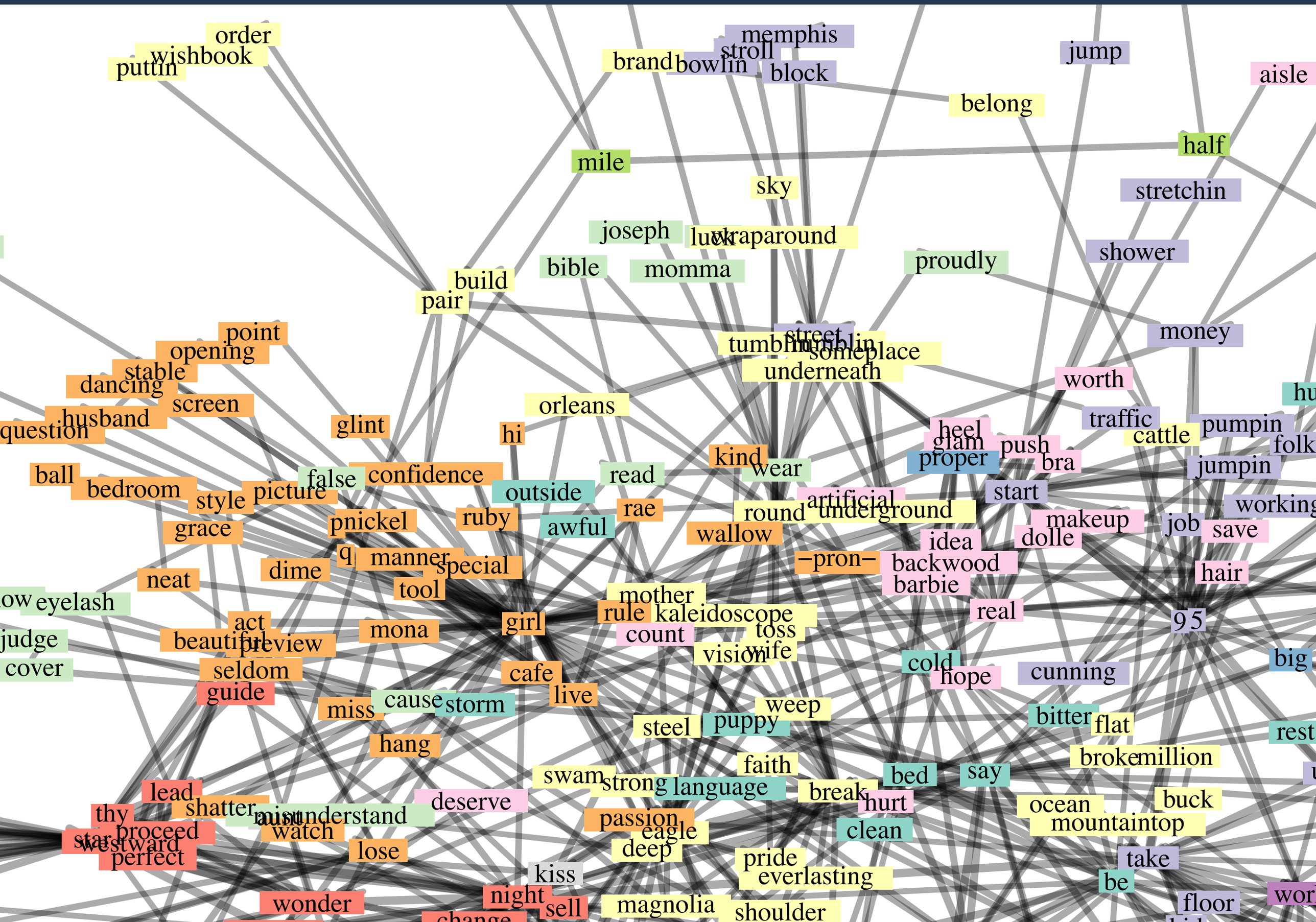
(according to genius.com)



# Semantic networks



# Semantic networks



# Semantic networks

## 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