Stencil

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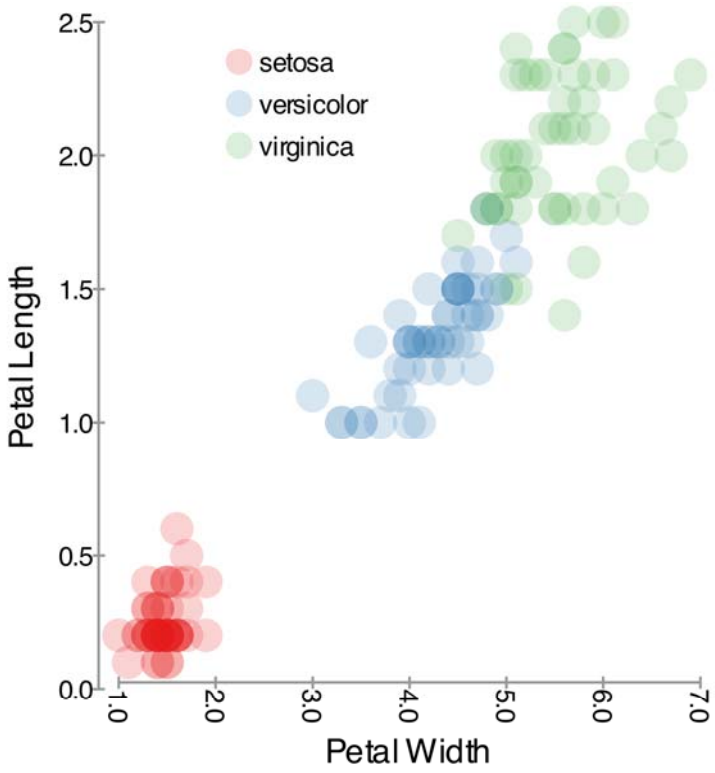
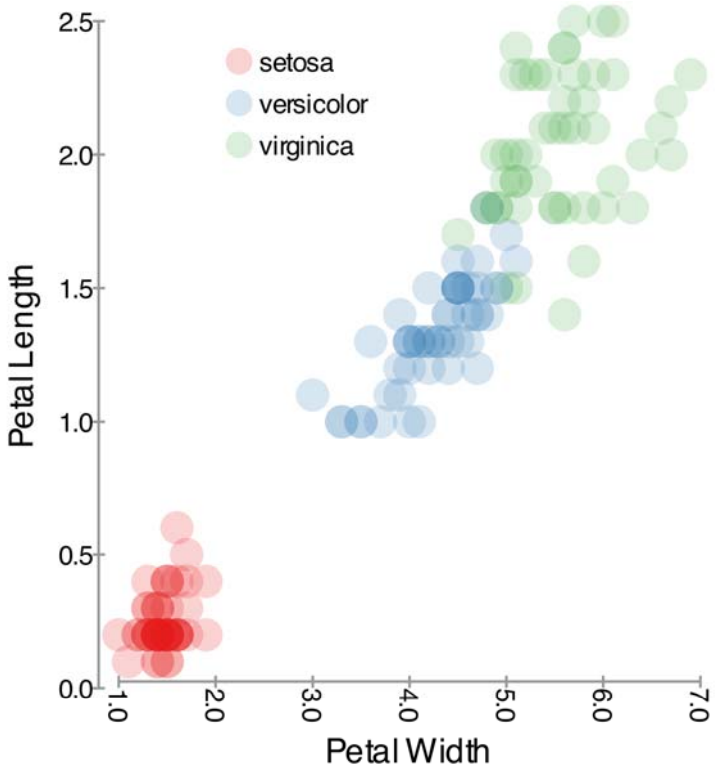


Anderson's Flowers



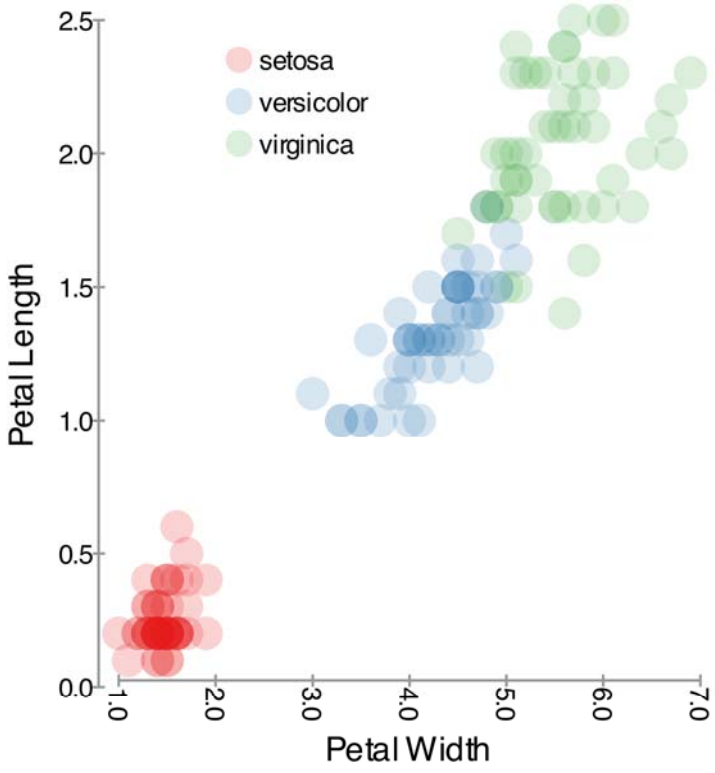
Anderson's Flowers

Dataset:

- Sepal Length/Width
- Petal Length/Width
- Species

Plot:

- X axis is Petal Width
- Y axis is Petal Length
- Color is the Species

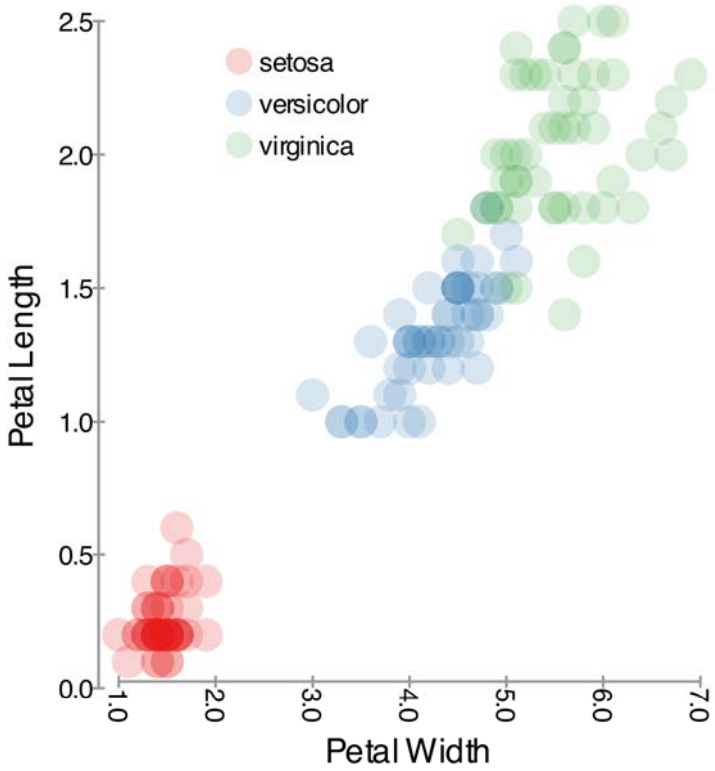


Anderson's Flowers

stream flowers (sepalL, petalW, sepalW, petalL, species, obs)

Plot

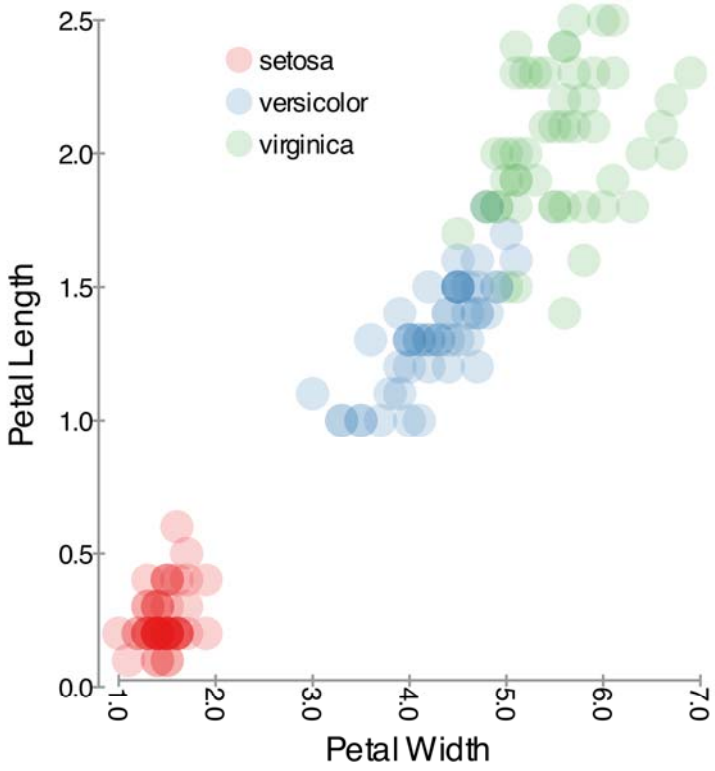
- X axis is Petal Width
- Y axis is Petal Length
- Color is the Species



Anderson's Flowers

```
stream flowers
(sepalL, petalW,
sepalW, petalL,
species, obs)

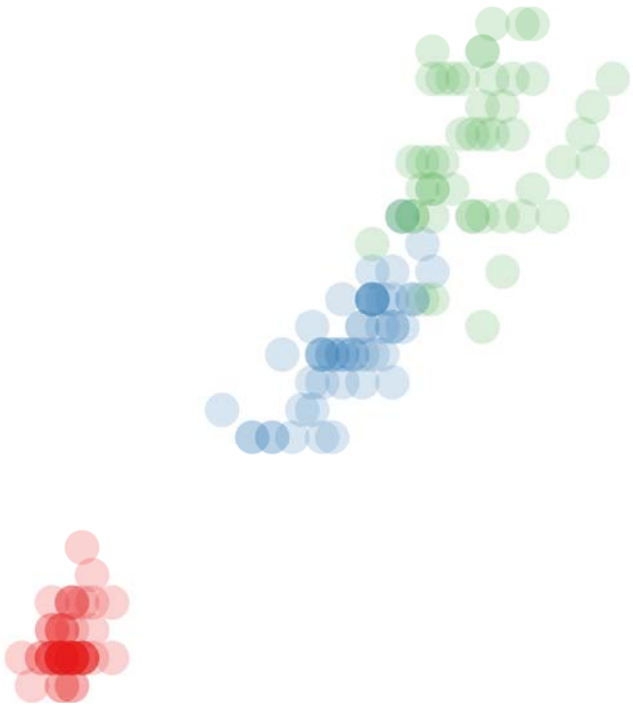
layer FlowerPlot
from flowers
  X:* Scale[0, 100](petalL)
  Y:* Scale[0, 100](petalW)
 COLOR: BrewerColor(species)
          -> SetAlpha(50,_)
```



Anderson's Flowers

```
stream flowers
(sepalL, petalW,
sepalW, petalL,
species, obs)

layer FlowerPlot
from flowers
  X:* Scale[0, 100](petalL)
  Y:* Scale[0, 100](petalW)
 COLOR: BrewerColor(species)
          -> SetAlpha(50,_)
  ID: obs
  REGISTRATION: "CENTER"
```



Anderson's Flowers

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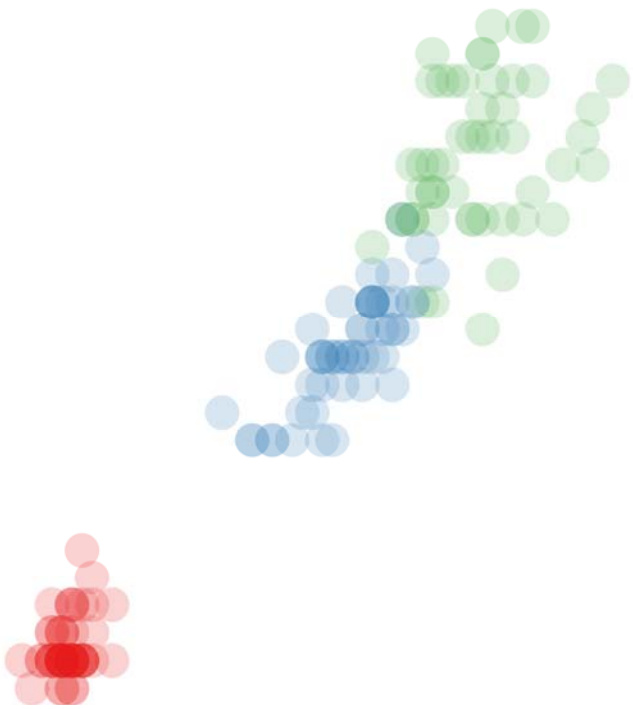
stream flowers
(sepalL, petalW,
sepalW, petalL,
species, obs)

layer FlowerPlot
from flowers
  X:* Scale[0, 100](petalL)
  Y:* Scale[0, 100](petalW)
 COLOR: BrewerColor(species)
          -> SetAlpha(50,_)
  ID: obs
  REGISTRATION: "CENTER"
```

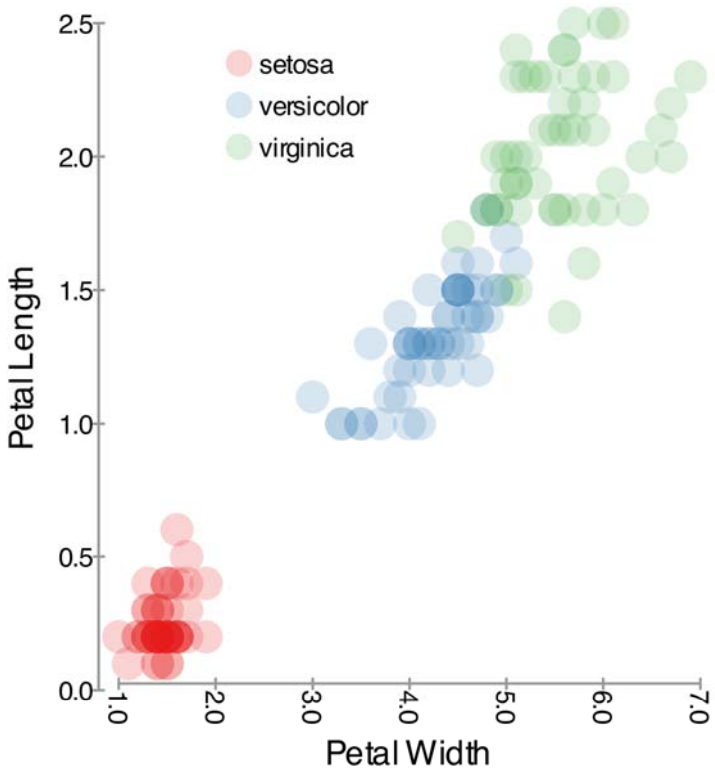


Anderson's Flowers

```
stream flowers
(sepalL, petalW,
sepalW, petalL,
species, obs)

canvas Main
guide sidebar
  from FlowerPlot COLOR
guide axis  from FlowerPlot Y
guide axis  from FlowerPlot X

layer FlowerPlot
from flowers
  X:* Scale[0, 100](petalL)
  Y:* Scale[0, 100](petalW)
 COLOR: BrewerColor(species)
          -> SetAlpha(50,_)
  ID: obs
  REGISTRATION: "CENTER"
```



Anderson's Flowers

```
stream flowers
(sepalL, petalW,
sepalW, petalL,
species, obs)

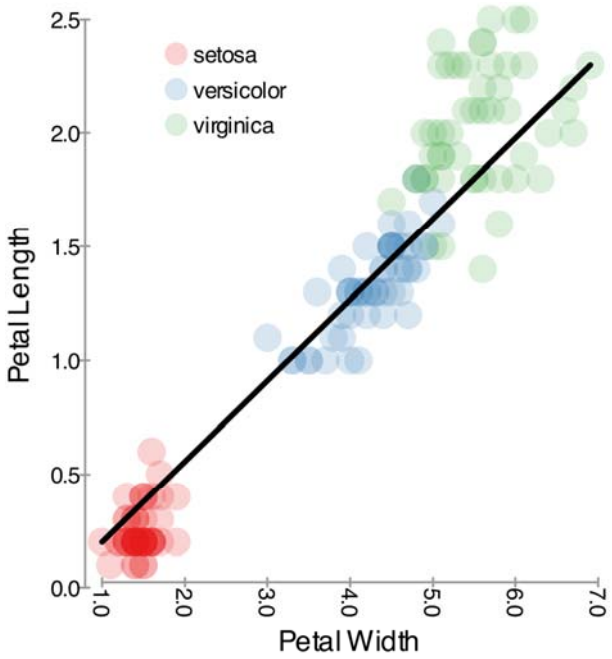
canvas Main
guide sidebar
  from FlowerPlot COLOR
guide axis  from FlowerPlot Y
guide axis  from FlowerPlot X

layer FlowerPlot
from flowers
  X:* Scale[0, 100](petalL)
  Y:* Scale[0, 100](petalW)
 COLOR: BrewerColor(species)
          -> SetAlpha(50,_)
  ID: obs
  REGISTRATION: "CENTER"
```

Goals

- Direct
- Compact
- Deterministic
- Incremental/Dynamic
- Plays well with others
- Easy is easy, Hard is possible

Flowers: guide trendline from FlowerPlot



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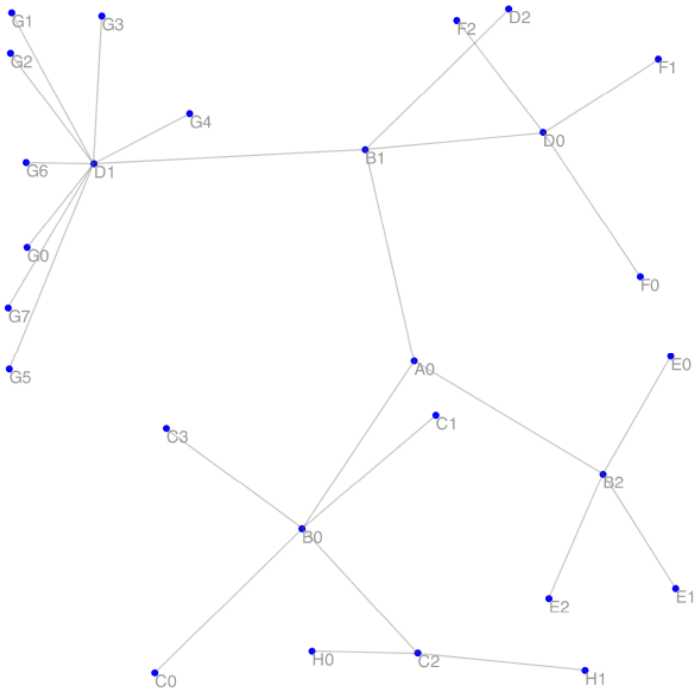


JUNG Spring Force Embedding

```
import JUNG
stream VertexList (parent, child)

canvas Main
  guide pointLabels from Nodes ID
        COLOR: @Color{GRAY60}

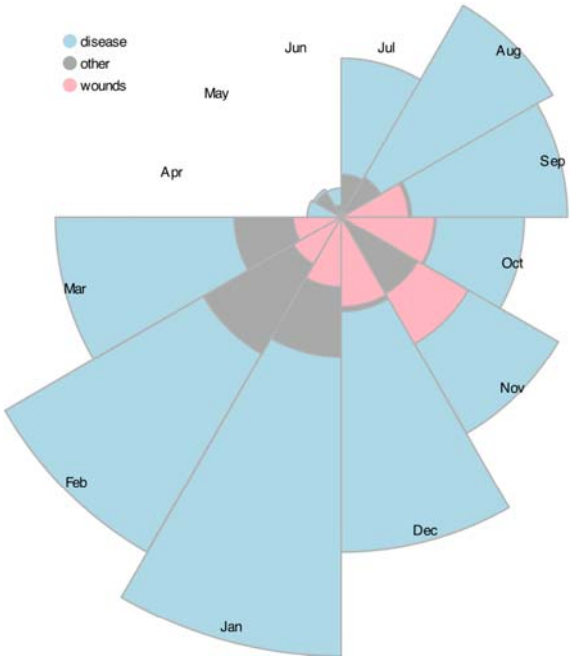
stream Prime ()
from VertexList
  () : Layout.add(parent, child)

layer Nodes
from VertexList
   ID: child
   REGISTRATION : "CENTER"
   FILL_COLOR:  @Color{BLUE}
   (SHAPE, SIZE) : ("ELLIPSE", 5)
    (X,Y) :* Layout.query(child)

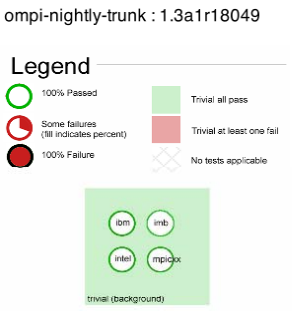
layer Edges[LINE]
from VertexList
    ID: Concatenate(parent, child)
    (X.1, Y.1):* Layout.query(parent)
    (X.2, Y.2):* Layout.query(child)
    PEN_COLOR: @Color{GRAY30,80}

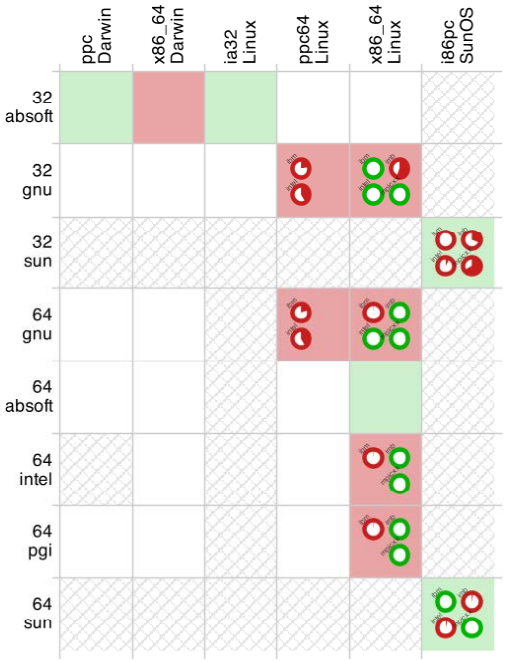
operator Layout :FRLayout
```

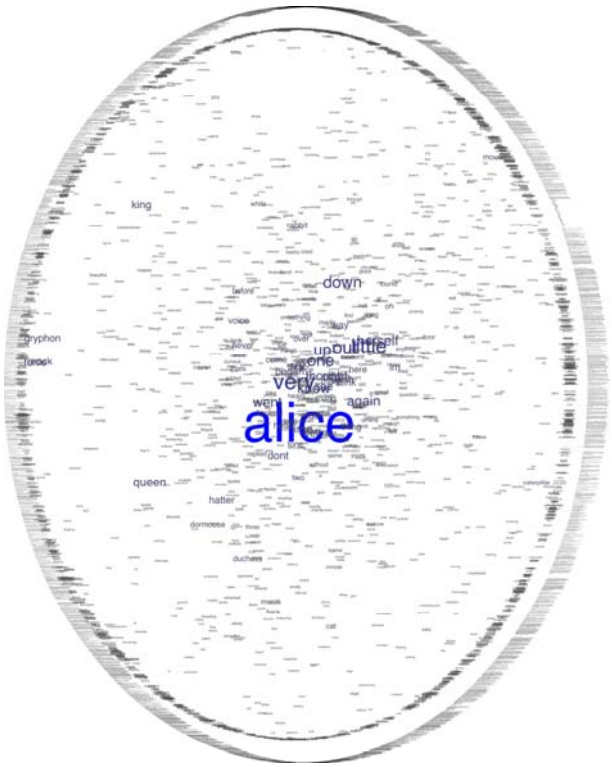
Crimean Rose



See Test







TextArc

Processes raw text from Project Guttenberg

Makes use of:

- Custom operators
- Map/Gather
- Stream/Stream transformer

TextArc: 55 lines (8pt font)

```
import Layouts
import Geometry as Geo

stream RawLines(text)

stream Lines (line, text)
from RawLines
  line: Counter()
  words: text

stream RawWords (line, word)
from Lines
  line: line
  word: Split(text, "\\s+") >> Strip(_) -> ToLower(_)

stream Words (line, word)
from RawWords
  filter(stopWord !~ "true", word !~ "")
  prefilter(stopWord) : StopWords(word)
  line: line
  word: word

stream PrimeCenter ()
from Words
 () : LineIndex.query(word) -> ExtendTuple(_, line)
   -> LineIndex.put(word, *)
 () : WordCount(word)
```

```
layer Border[TEXT]
from Lines
  ID: line
  TEXT: text
  (X,Y):* Layout(line)

layer Center[TEXT]
from Words
  ID: word
  TEXT: word
  (X,Y):* Centroid(word) -> Contract(X,Y)
  REGISTRATION: "CENTER"
  (COLOR, FONT):*
      [count] WordCount.query(word) -> Max[range: ALL](_) ->
      [freq]  Divide(count[_], _) ->
                                  [color] HeatScale[hot: "BLUE", cold:
"GRAY30"](freq[_]) ->

                  Scale[min: 50, max:1000](freq[_]) -> @Font{{_}} ->
(color[_],_)

operator WordCount base Count

operator LineIndex base Dict[fields: "lines"]

operator Centroid (word) -> (X,Y)
 (ALL) =>
   (X): LineIndex(word) -> ToTuple(_) >> Layout.query(_) >-
        Select[field: 0](*) -> Average[range: LAST](LAST)
   (Y): LineIndex(word) -> ToTuple(_) >> Layout.query(_) >-
        Select[field: 1](*) -> Average[range: LAST](LAST)

operator Layout base CircularLayout[start: 0, size: 10, ratio: .75]
operator Contract base Geo::Scale[by: .94]
```