Chapter 5

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Contents

Libraries and data used **1**
Libraries 1
Data 3

basic principles **4**

design Elements **4**
node color 4

Libraries and data used

Libraries

```
library(UserNetR)
library(statnet)
```

```
## Loading required package: tergm
```

```
## Loading required package: ergm
```

```
## Loading required package: network
```

```
## network: Classes for Relational Data
## Version 1.16.0 created on 2019-11-30.
## copyright (c) 2005, Carter T. Butts, University of California-Irvine
##                     Mark S. Handcock, University of California -- Los Angeles
##                     David R. Hunter, Penn State University
##                     Martina Morris, University of Washington
##                     Skye Bender-deMoll, University of Washington
##  For citation information, type citation("network").
##  Type help("network-package") to get started.
```

```
##
## ergm: version 3.10.4, created on 2019-06-10
## Copyright (c) 2019, Mark S. Handcock, University of California -- Los Angeles
##                     David R. Hunter, Penn State University
##                     Carter T. Butts, University of California -- Irvine
##                     Steven M. Goodreau, University of Washington
##                     Pavel N. Krivitsky, University of Wollongong
##                     Martina Morris, University of Washington
##                     with contributions from
##                     Li Wang
##                     Kirk Li, University of Washington
```

```
##                     Skye Bender-deMoll, University of Washington
##                     Chad Klumb
## Based on "statnet" project software (statnet.org).
## For license and citation information see statnet.org/attribution
## or type citation("ergm").

## NOTE: Versions before 3.6.1 had a bug in the implementation of the bd()
## constriant which distorted the sampled distribution somewhat. In
## addition, Sampson's Monks datasets had mislabeled vertices. See the
## NEWS and the documentation for more details.

## NOTE: Some common term arguments pertaining to vertex attribute and
## level selection have changed in 3.10.0. See terms help for more
## details. Use 'options(ergm.term=list(version="3.9.4"))' to use old
## behavior.

## Loading required package: networkDynamic

##
## networkDynamic: version 0.10.1, created on 2020-01-16
## Copyright (c) 2020, Carter T. Butts, University of California -- Irvine
##                     Ayn Leslie-Cook, University of Washington
##                     Pavel N. Krivitsky, University of Wollongong
##                     Skye Bender-deMoll, University of Washington
##                     with contributions from
##                     Zack Almquist, University of California -- Irvine
##                     David R. Hunter, Penn State University
##                     Li Wang
##                     Kirk Li, University of Washington
##                     Steven M. Goodreau, University of Washington
##                     Jeffrey Horner
##                     Martina Morris, University of Washington
## Based on "statnet" project software (statnet.org).
## For license and citation information see statnet.org/attribution
## or type citation("networkDynamic").

##
## tergm: version 3.6.1, created on 2019-06-12
## Copyright (c) 2019, Pavel N. Krivitsky, University of Wollongong
##                     Mark S. Handcock, University of California -- Los Angeles
##                     with contributions from
##                     David R. Hunter, Penn State University
##                     Steven M. Goodreau, University of Washington
##                     Martina Morris, University of Washington
##                     Nicole Bohme Carnegie, New York University
##                     Carter T. Butts, University of California -- Irvine
##                     Ayn Leslie-Cook, University of Washington
##                     Skye Bender-deMoll
##                     Li Wang
##                     Kirk Li, University of Washington
## Based on "statnet" project software (statnet.org).
## For license and citation information see statnet.org/attribution
## or type citation("tergm").

## Loading required package: ergm.count

##
```

```
## ergm.count: version 3.4.0, created on 2019-05-15
## Copyright (c) 2019, Pavel N. Krivitsky, University of Wollongong
##                     with contributions from
##                     Mark S. Handcock, University of California -- Los Angeles
##                     David R. Hunter, Penn State University
## Based on "statnet" project software (statnet.org).
## For license and citation information see statnet.org/attribution
## or type citation("ergm.count").

## NOTE: The form of the term 'CMP' has been changed in version 3.2 of
## 'ergm.count'. See the news or help('CMP') for more information.

## Loading required package: sna

## Loading required package: statnet.common

##
## Attaching package: 'statnet.common'

## The following object is masked from 'package:base':
##
##     order

## sna: Tools for Social Network Analysis
## Version 2.5 created on 2019-12-09.
## copyright (c) 2005, Carter T. Butts, University of California-Irvine
##  For citation information, type citation("sna").
##  Type help(package="sna") to get started.

## Loading required package: tsna

##
## statnet: version 2019.6, created on 2019-06-13
## Copyright (c) 2019, Mark S. Handcock, University of California -- Los Angeles
##                     David R. Hunter, Penn State University
##                     Carter T. Butts, University of California -- Irvine
##                     Steven M. Goodreau, University of Washington
##                     Pavel N. Krivitsky, University of Wollongong
##                     Skye Bender-deMoll
##                     Martina Morris, University of Washington
## Based on "statnet" project software (statnet.org).
## For license and citation information see statnet.org/attribution
## or type citation("statnet").

## unable to reach CRAN
```

```
library(RColorBrewer)
```

Data

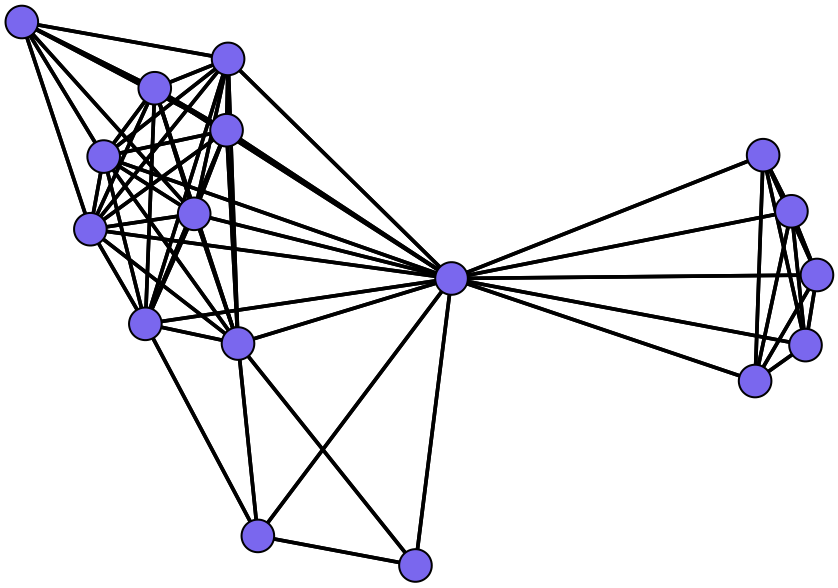
```
data("Bali")
```

basic principles

design Elements

node color

```
gplot(Bali,
      vertex.col = "slateblue2",
      gmode = "graph")
```

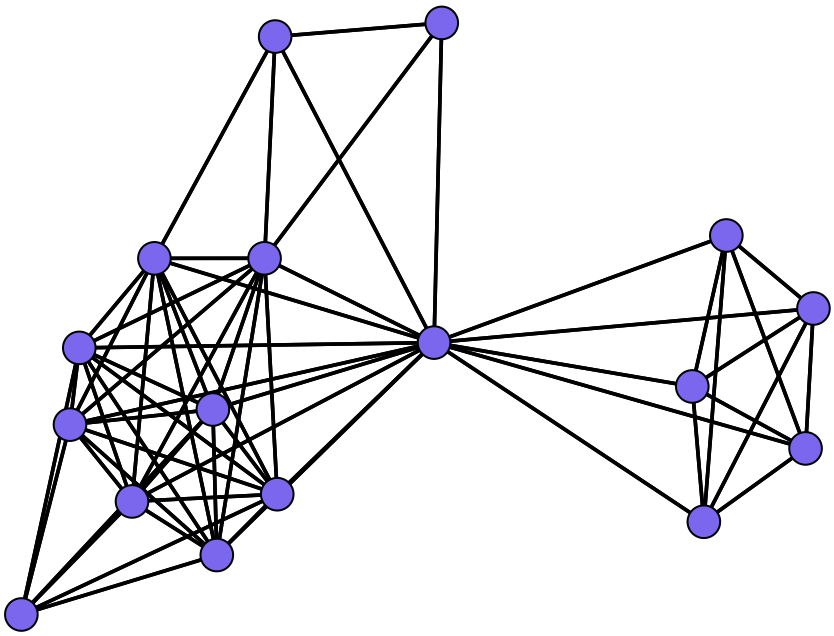


```
col2rgb('slateblue2')
```

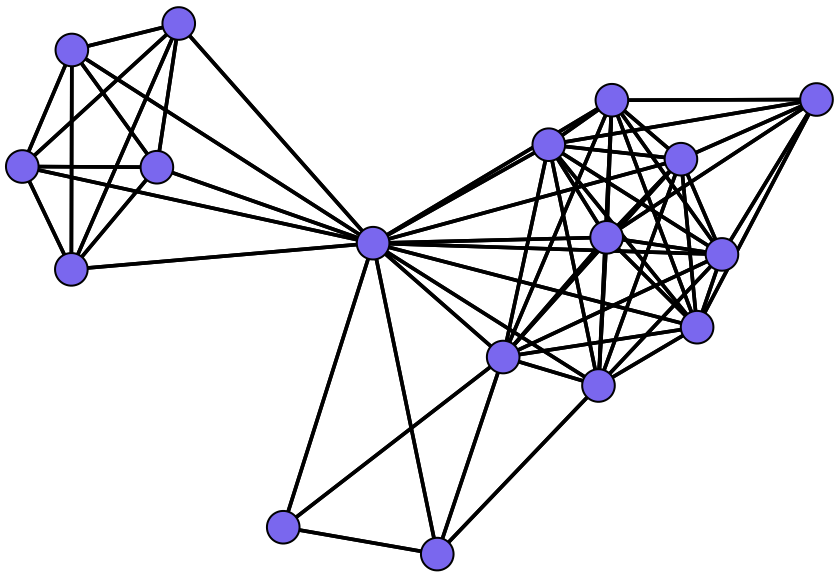
```
##       [,1]
## red    122
```

```
## green  103
## blue   238
```

```
gplot(Bali,
      vertex.col = rgb(122, 103, 238,
                       maxColorValue = 255),
      gmode = "graph")
```



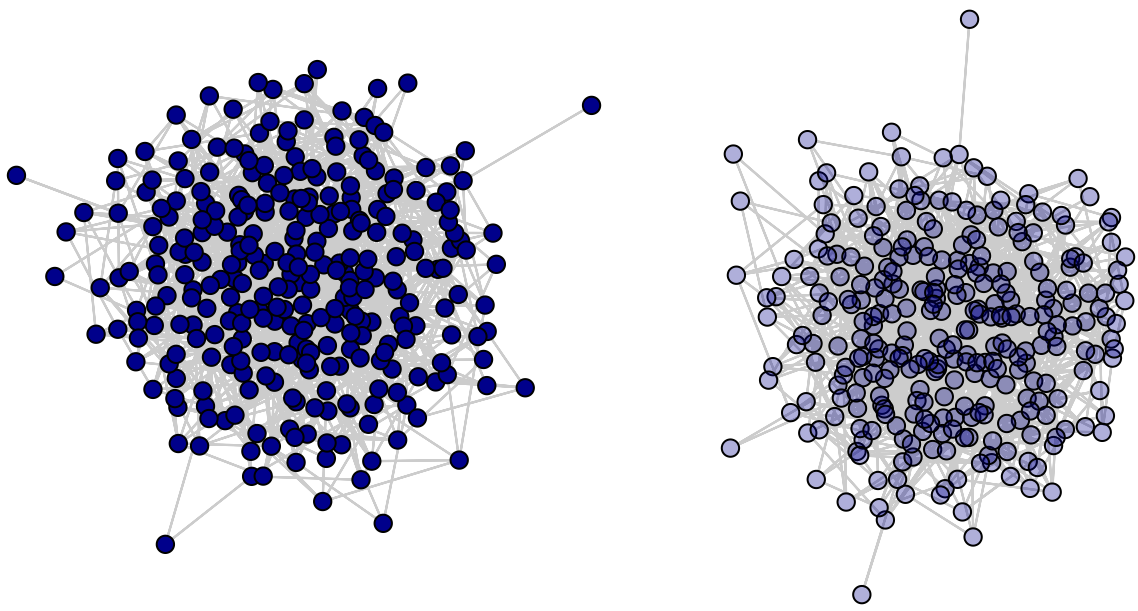
```
gplot(Bali,
      vertex.col = "#7A67EE",
      gmode = "graph")
```



```
ndum <- rgraph(300,
               tprob = 0.025,
               mode = "graph")
op <- par(mar = c(0, 0, 2, 0),
          mfrow = c(1, 2))
gplot(ndum,
      gmode = "graph",
      vertex.cex = 2,
      vertex.col = rgb(0, 0, 139,
                       maxColorValue = 255),
      edge.col = "grey80",
      edge.lwd = 0.5,
      main = "Fully Opaque")
```

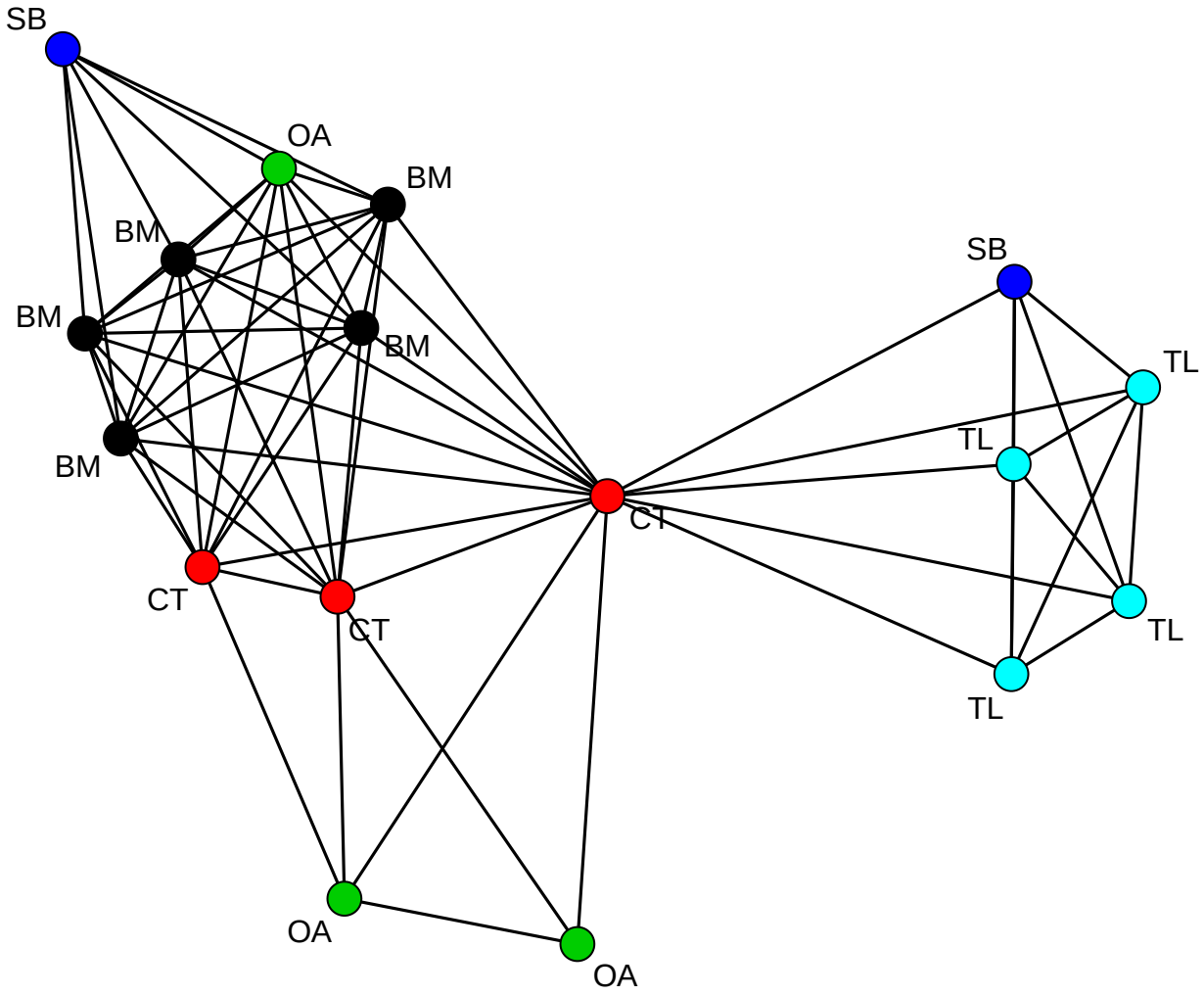
```
gplot(ndum,
      gmode = "graph",
      vertex.cex = 2,
      vertex.col = rgb(0, 0, 139,
                       maxColorValue = 255,
                       alpha = 80),
      edge.col = "grey80",
      edge.lwd = 0.5,
      main = "Partly Transparent")
```

Fully Opaque **Partly Transparent**



```
par(op)

rolelab <- get.vertex.attribute(Bali,
                                "role")
```

```
op <- par(mar = c(0, 0, 0, 0))
plot(Bali,
     usearrows = FALSE,
     vertex.cex = 1.5,
     label = rolelab,
     displaylabels = TRUE,
     vertex.col = "role")
```



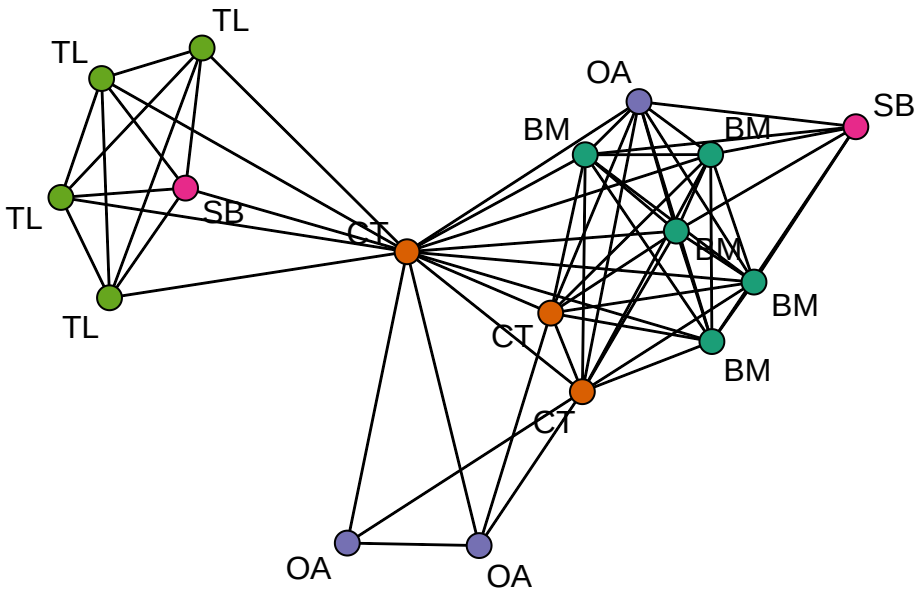

```
par(op)

palette()
```

```
## [1] "black"   "red"     "green3"  "blue"    "cyan"    "magenta" "yellow"
## [8] "gray"
```

```
display.brewer.pal(5, "Dark2")
```

Dark2 (qualitative)

```
my_pal <- brewer.pal(5, "Dark2")
rolecat <- as.factor(get.vertex.attribute(Bali, "role"))
plot(Bali,
     vertex.cex = 1.5,
     label = rolelab,
     displaylabels = TRUE,
     vertex.col = my_pal[rolecat])
```


TL
TL
TL
SB
TL
CT
OA
BM
BM
SB
BM
BM
BM
CT
CT
OA
OA