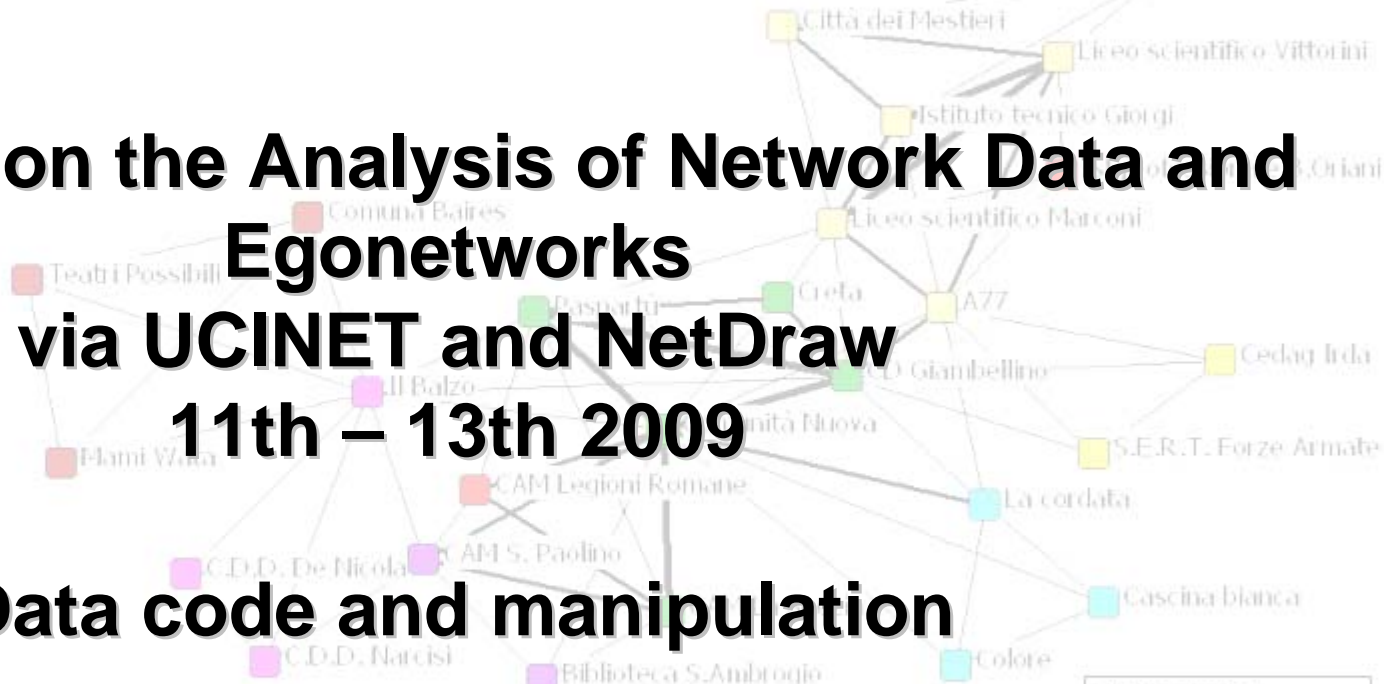
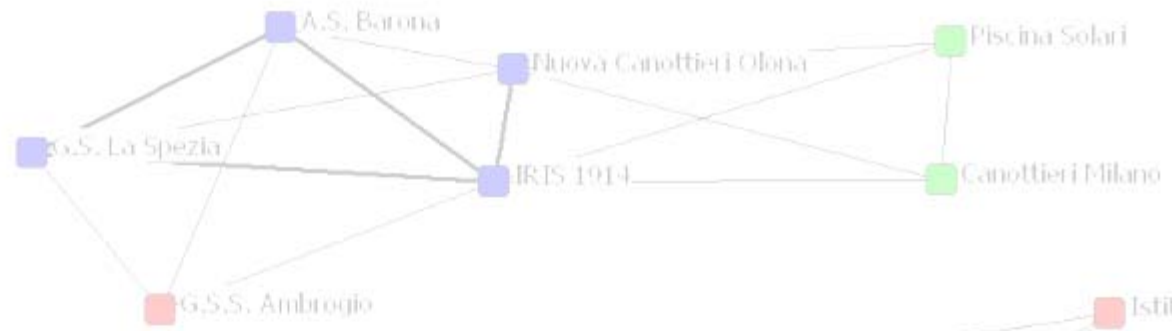


Aqorà
Amici della musica
Arcimetromondo



Atletico Milano
Barona E. Satta
Biblioteca Lorenteggio
C.P.B.A.
C.P.S. Soderini
C.P.S. Vigilio
C.T.F.
C.T.F. ...
C.T.F. ...
C.T.F. ...
Centro Consulenza Famiglia
Centro pittura Consivio
Centro studi attori
CFP – Paulo, Bauer, Vigorelli
Comunità Arianna
Cooperativa S.Rita
Cose dell'altro mondo
Don Orione
Enaip Lombardia
Futsal
Handicap: su la testal
Immacolata Concezione
Istituto d'arte Beato Angelico
Istituto Resistenza
L'impronta
La Creta
La Piazzetta
Le Tre Fontane
Liceo scientifico A. Carrel
Mani Tese
MB Sportello Marco Biagi
Mediazione familiare
Milano Sport
Palauno
Piscina Cardellino



Red	= group 0
Blu	=group 1
Light green	= group 2
Turquoise	= group 3
Dark green	= group 4
Orange	= group 5
Yellow	= group 6
Violet	= group 7
Pink	= group 8
Brown	= group 9

Workshop on the Analysis of Network Data and Egonetworks via UCINET and NetDraw

11th – 13th 2009

Data code and manipulation

UCINET MAIN WINDOW

File: routines which deal with files and folders, print setup, text editor and view previous output, launch Mage and Pajek, exit ucinet

Data: routines for managing Ucinet dataset

Transform: routines for transforming graphs and networks into other kinds

Tools: not strictly network procedures but widely used by network analysts, like multidimensional scaling, cluster analysis, etc. as well as statistics and matrix algebra

Network: specific network routines

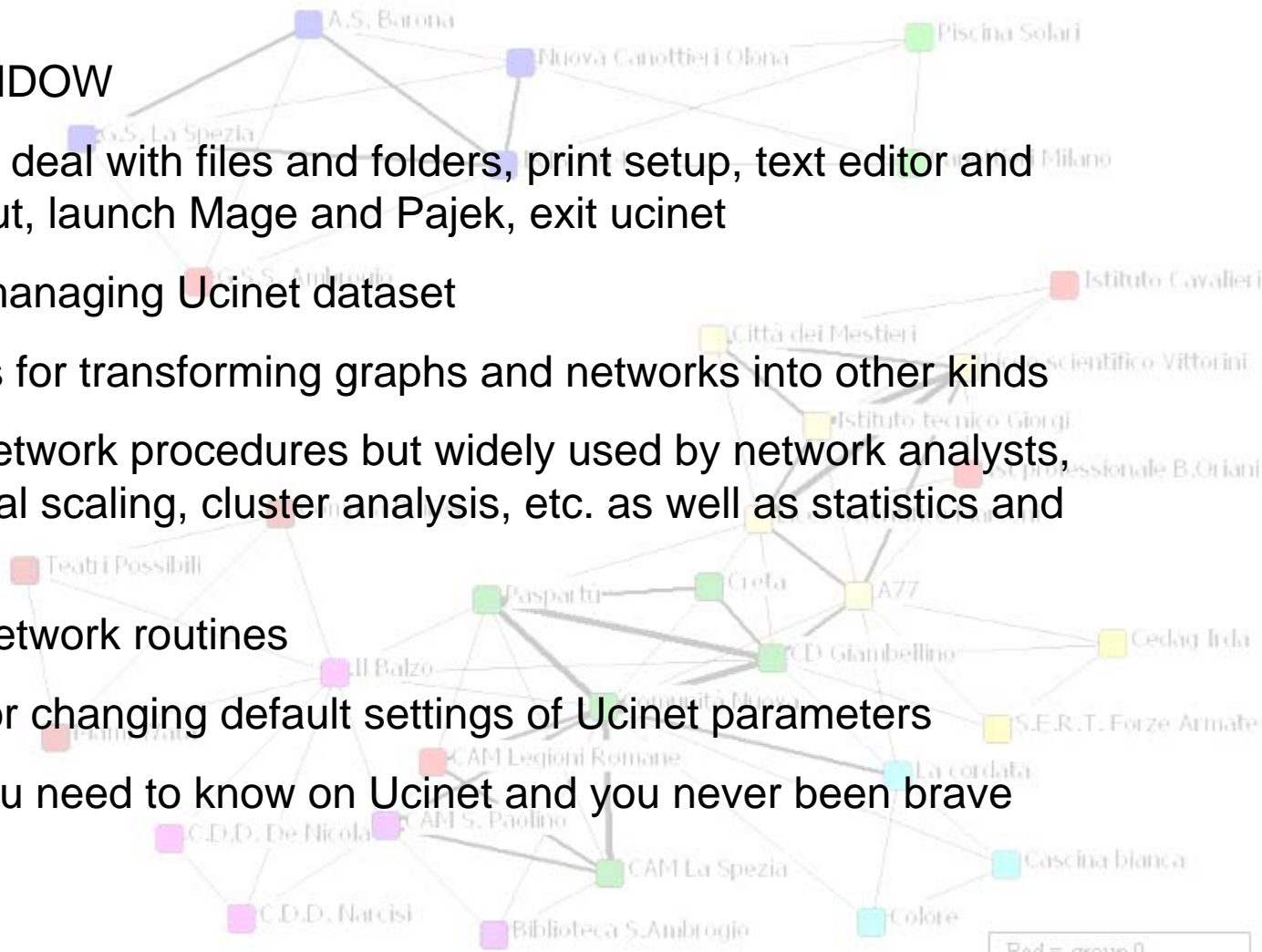
Options: routines for changing default settings of Ucinet parameters

Help: everything you need to know on Ucinet and you never been brave enough to ask!!!

UCINET FILES

#d

#h



Red	=	group 0
Blu	=	group 1
Light green	=	group 2
Turquoise	=	group 3
Dark green	=	group 4
Orange	=	group 5
Yellow	=	group 6
Violet	=	group 7
Pink	=	group 8
Brown	=	group 9

WHERE ARE YOUR FILES?

In Ucinet

Under "file"

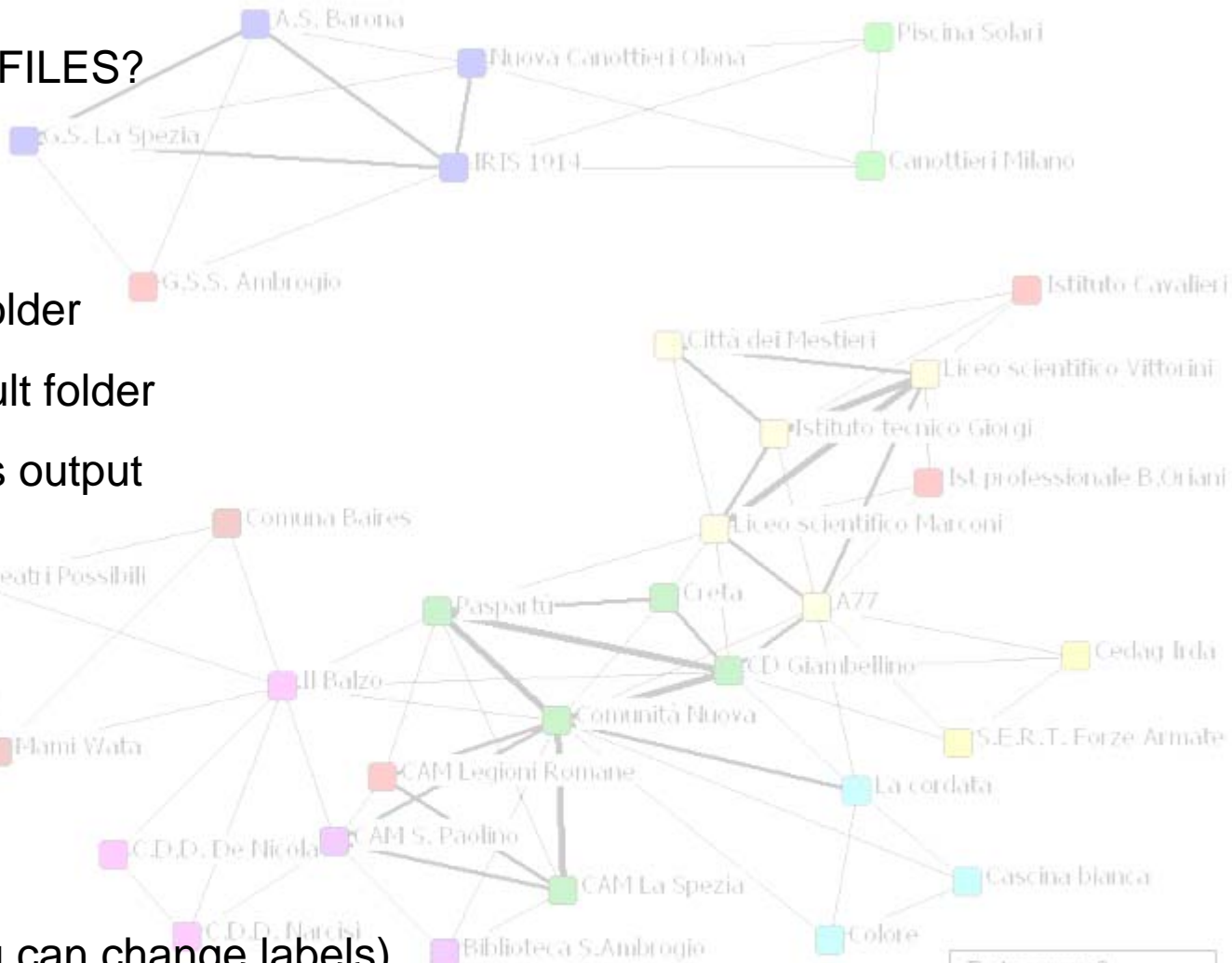
- Create new folder
- Change default folder
- View previous output

Under "data"

- Spreadsheet
- Import
- Export
- Display

In Netdraw

- Default folders
- Open (Ucinet file, DI file, VNA file, Pajek file)



Red	= group 0
Blu	=group 1
Light green	= group 2
Turquoise	= group 3
Dark green	= group 4
Orange	= group 5
Yellow	= group 6
Violet	= group 7
Pink	= group 8
Brown	= group 9

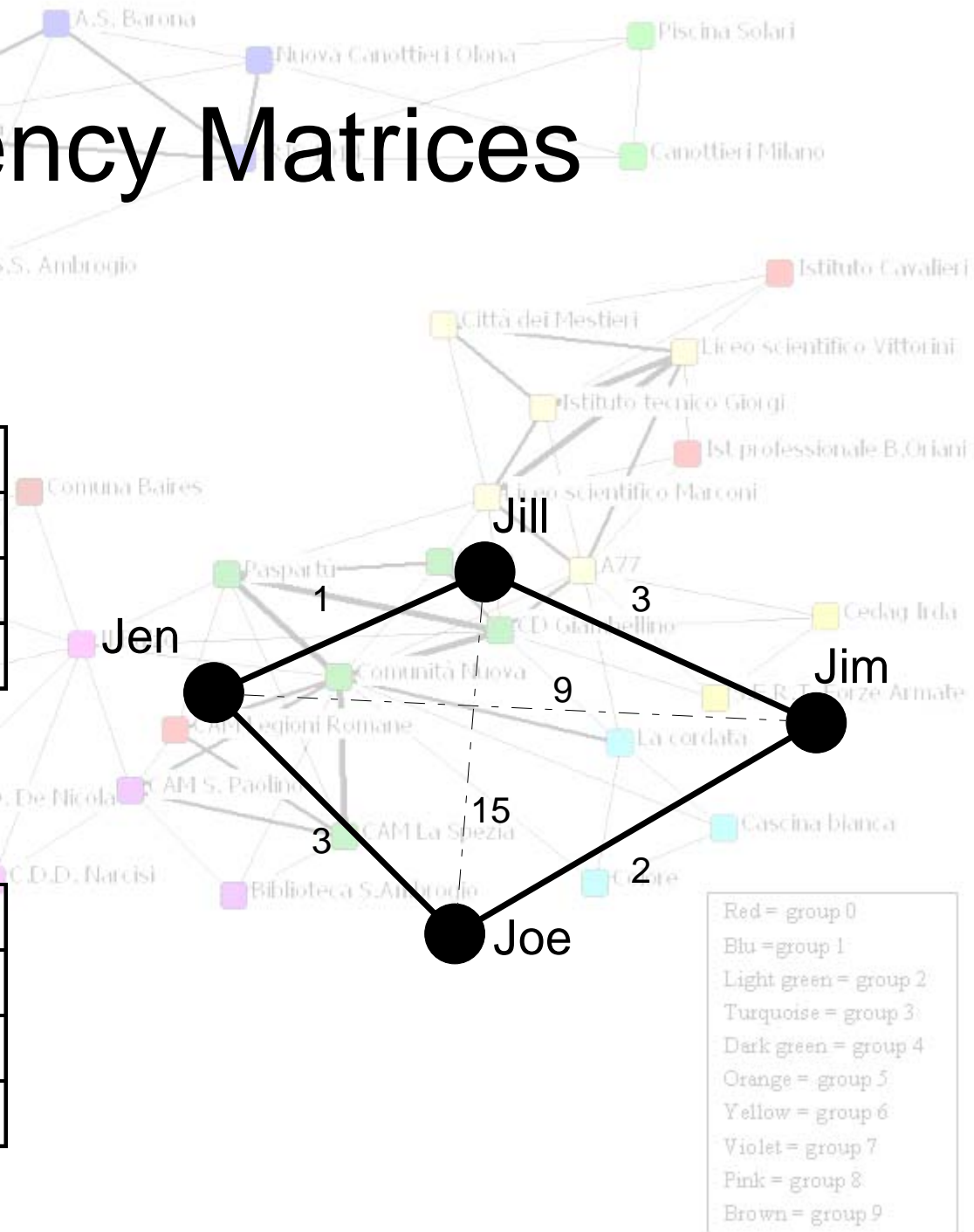
Adjacency Matrices

Friendship

	Jim	Jill	Jen	Joe
Jim	-	1	0	1
Jill	1	-	1	0
Jen	0	1	-	1
Joe	1	0	1	-

Proximity

	Jim	Jill	Jen	Joe
Jim	-	3	9	2
Jill	3	-	1	15
Jen	9	1	-	3
Joe	2	15	3	-



Affiliation Matrix

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14
EVELYN	1	1	1	1	1	1	0	1	1	0	0	0	0	0
LAURA	1	1	1	0	1	1	1	1	0	0	0	0	0	0
THERESA	0	1	1	1	1	1	1	1	1	0	0	0	0	0
BRENDA	1	0	1	1	1	1	1	1	0	0	0	0	0	0
CHARLOTTE	0	0	1	1	1	0	1	0	0	0	0	0	0	0
FRANCES	0	0	1	0	1	1	0	1	0	0	0	0	0	0
ELEANOR	0	0	0	0	1	1	1	1	0	0	0	0	0	0
PEARL	0	0	0	0	0	1	0	1	1	0	0	0	0	0
RUTH	0	0	0	0	1	0	1	1	1	0	0	0	0	0
VERNE	0	0	0	0	0	0	1	1	1	0	0	1	0	0
MYRNA	0	0	0	0	0	0	0	1	1	1	0	1	0	0
KATHERINE	0	0	0	0	0	0	0	1	1	1	1	1	1	1
SYLVIA	0	0	0	0	0	0	1	1	1	1	0	1	1	1
NORA	0	0	0	0	0	1	1	0	1	1	1	1	1	1
HELEN	0	0	0	0	0	0	1	1	0	1	1	1	0	0
DOROTHY	0	0	0	0	0	0	0	1	1	0	0	0	0	0
OLIVIA	0	0	0	0	0	0	0	0	1	0	1	0	0	0
FLORA	0	0	0	0	0	0	0	0	1	0	1	0	0	0

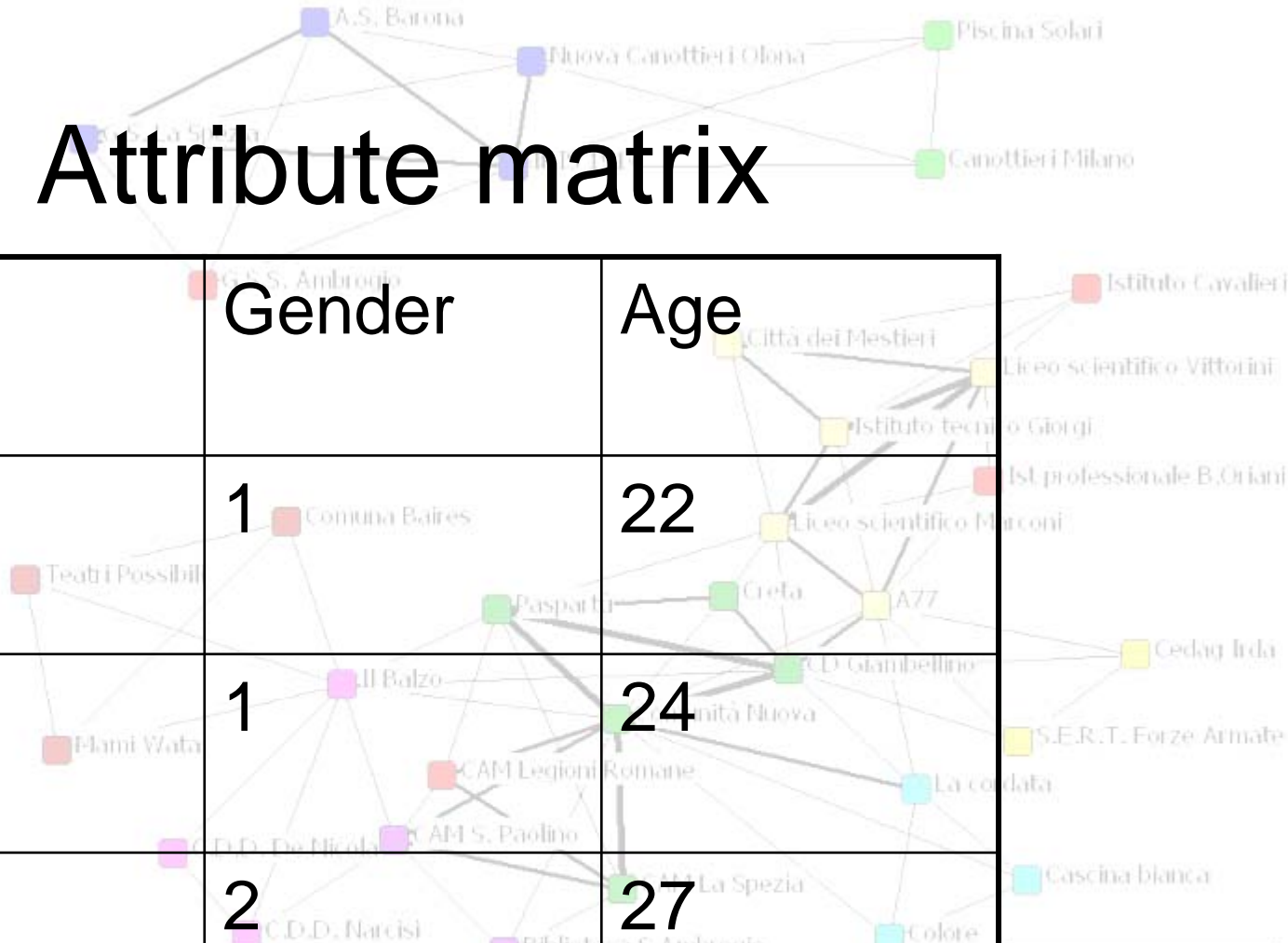
Red = group 0
 Blue = group 1
 Light green = group 2
 Teal = group 3
 Dark green = group 4
 Orange = group 5
 Yellow = group 6
 Violet = group 7
 Pink = group 8
 Brown = group 9

Attribute matrix

	Gender	Age
Bill	1	22
Joe	1	24
Anna	2	27
Carol	2	21

- Red = group 0
- Blu = group 1
- Light green = group 2
- Turquoise = group 3
- Dark green = group 4
- Orange = group 5
- Yellow = group 6
- Violet = group 7
- Pink = group 8
- Brown = group 9

- Agorà
- Amici della musica
- Arcimetromondo
- Arcobaleno
- Arcobaleno Danza
- Arno Stern
- Ass. Sportiva dilettantistica
- Atelier di pittura
- Atletico Milano
- Barona E. Satta
- Biblioteca Lorenteggio
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- C.T.F.
- C.T.P. S. Paolino
- C.T.P. Zuara
- Centro Consulenza F. Vigilio
- Centro pittura Consalvio
- Centro studi attori
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- Comunità Arianna
- Cooperativa S.Rita
- Cose dell'altro mondo
- Don Orione
- Enaip Lombardia
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- Istituto d'arte Beato Angelico
- Istituto Resistenza
- L'impronta
- La Creta
- La Piazzetta
- Le Tre Fontane
- Liceo scientifico A. Carrel
- Mani Tese
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- Mediazione familiare
- Milano Sport
- Palauno
- Piscina Cardellino



DATA INPUT (UNDER DATA)

Spreadsheet

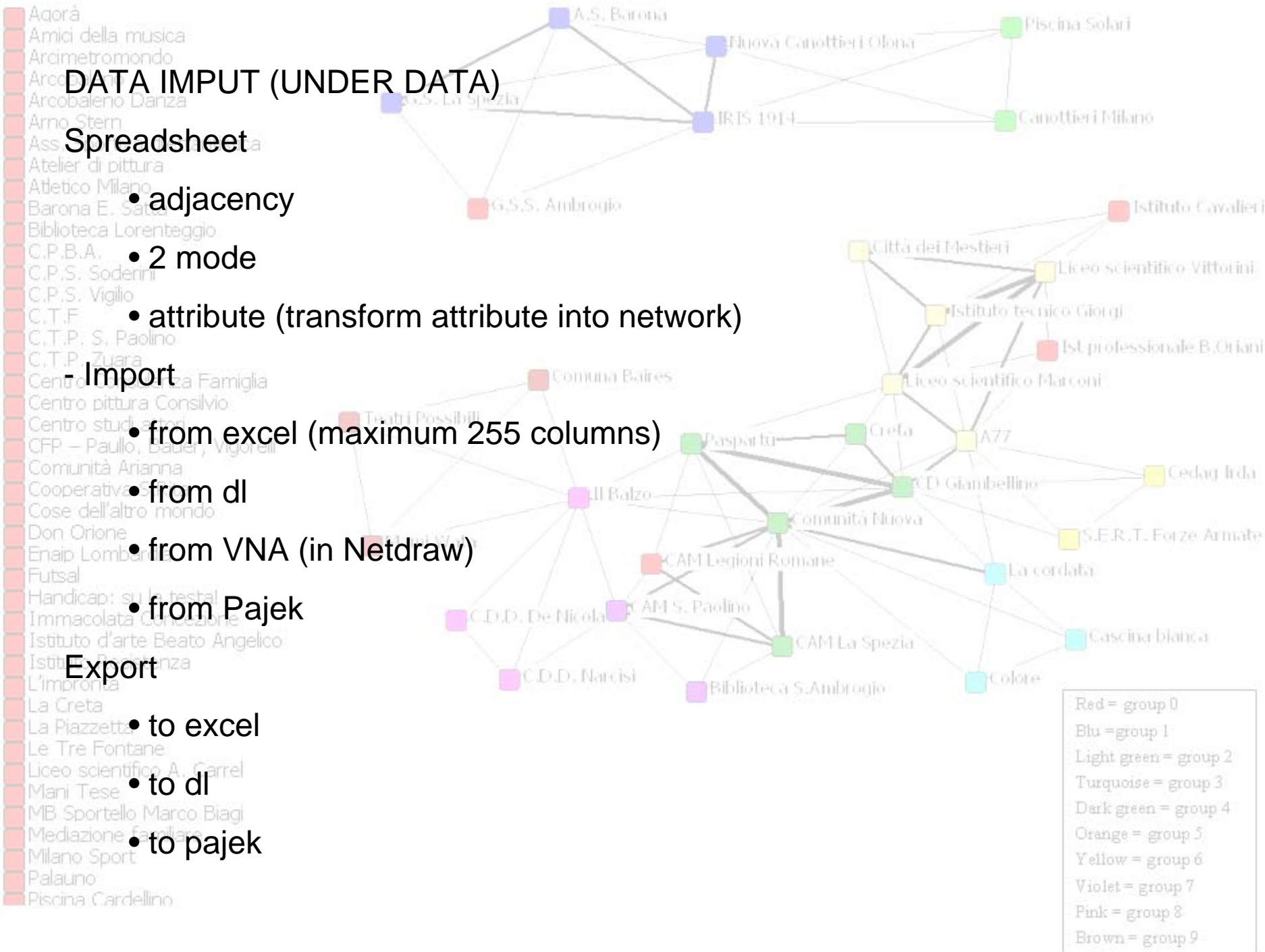
- adjacency
- 2 mode
- attribute (transform attribute into network)

- Import

- from excel (maximum 255 columns)
- from dl
- from VNA (in Netdraw)

Export

- to excel
- to dl
- to pajek



DL files: *txt files written with a text editor (notepad). DL identifies as a dl file, n = * number of rows and columns, nr and nc = * of rows or columns, format = format of data, data: indicates that what follows are data themselves

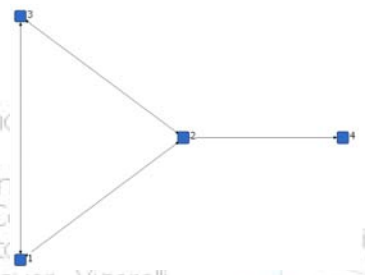
Full matrix format

Rectangular matrix

dl n = 4 format =
fullmatrix

data:

```
0 1 1 0
1 0 1 1
1 1 0 0
0 1 0 0
```



NB: when you set up the no. of rows and col, it does not matter which format you input data:

dl n = 4 data:

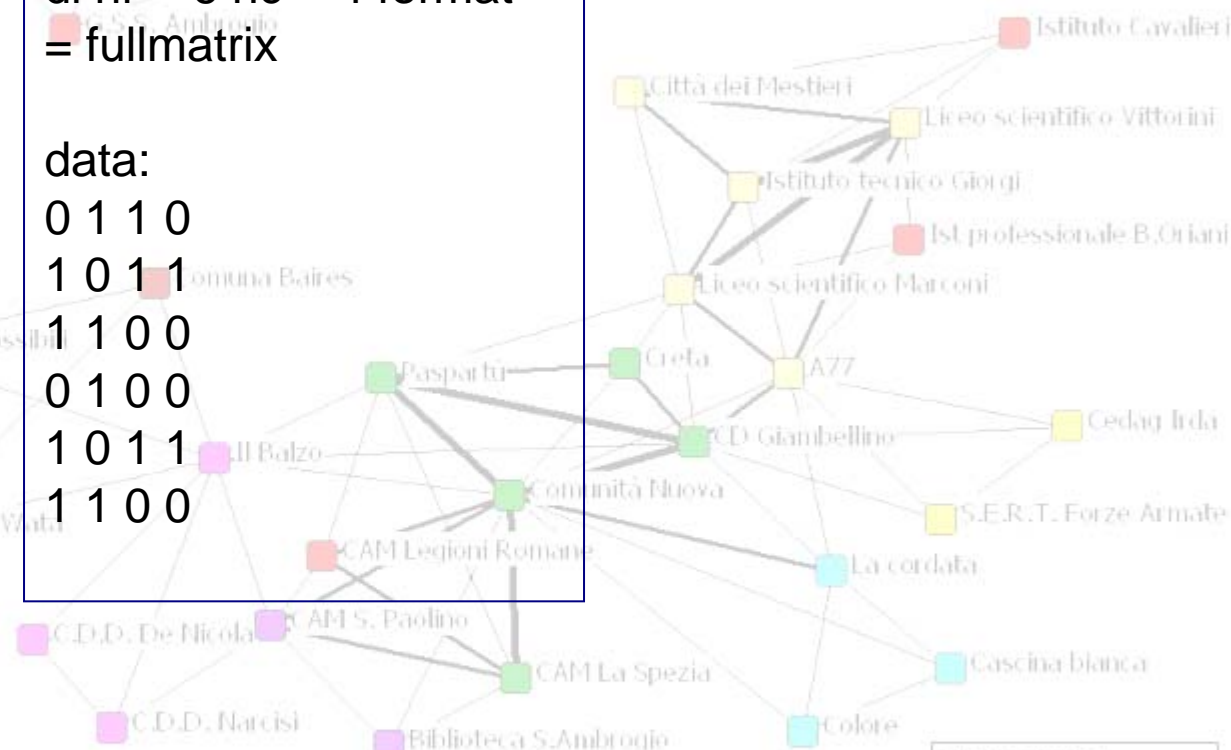
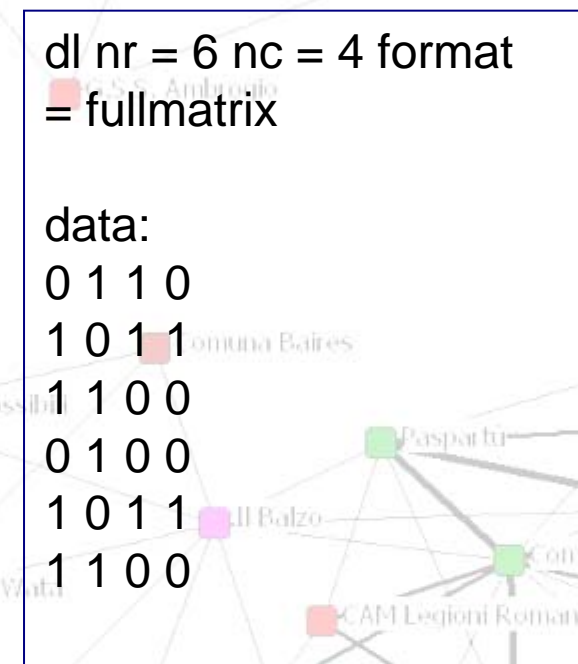
```
0 1 1 0 1 0 1 1
1 1
0 0
0 1 0
0
```

Will still be read in the same way

dl nr = 6 nc = 4 format = fullmatrix

data:

```
0 1 1 0
1 0 1 1
1 1 0 0
0 1 0 0
1 0 1 1
1 1 0 0
```



- Red = group 0
- Blu = group 1
- Light green = group 2
- Turquoise = group 3
- Dark green = group 4
- Orange = group 5
- Yellow = group 6
- Violet = group 7
- Pink = group 8
- Brown = group 9

Labels

dl n = 4 format fullmatrix
labels: Carol, Matt, Mike,
Jenny

data:

0 1 1 0

1 0 1 1

1 1 0 0

0 1 0 0

dl nr = 6 nc = 4 format =
fullmatrix

Row labels: Jenny, Mike,
Mark, Laura, Bob, Rob

Col labels: gender, role,
prize, owner

data:

0 1 1 0

1 0 1 1

1 1 0 0

0 1 0 0

1 0 1 1

1 1 0 0

dl nr = 4 nc = 2 format
fullmatrix

Labels embedded

data:

Gender Age

“Carol Potter” 0 22

Matt 1 24

Mike 1 26

Jenny 0 21

Multiple matrices

dl n = 4 nm = 2 format
fullmatrix

labels: Carol, Matt,
Mike, Jenny

Matrix labels: marriage,
business

Data:

0 1 1 0

1 0 1 1

1 1 0 0

0 1 0 0

0 1 1 1

1 0 0 0

1 0 0 1

1 0 1 0

Red = group 0
Blu = group 1
Light green = group 2
Turquoise = group 3
Dark green = group 4
Orange = group 5
Yellow = group 6
Violet = group 7
Pink = group 8
Brown = group 9

Linked list format:

Nodelist:

Square matrix: nodelist 1

dl n = 4 format =
nodelist1

labels: Carol, Matt,
Mike, Jenny

Data:

1 2 3
2 1 3 4
3 1 2
4 2

DI n = 4, format =
nodelist1

Labels embedded

Data:

Carol Matt Mike
Matt Carol Mike Jenny
Mike Carol Matt
Jenny Matt

Rectangular matrix: nodelist 2

DI nr = 4, nc = 5 format
= **nodelist2**

Labels embedded

Data:

Carol math, stat,
Matt geo, math
Mike literature, stat
Jenny french, literature

DI nr = 4, nc = 5 format
= nodelist2

Row Labels: Carol,
Matt, Mike, Jenny

Col labels: math, stat,
geo, literature, French

Data:

1 1 2
2 3 1
3 4 2
4 5 4

Ranked list format (1 and 2):

dl n = 4 format =
rankedlist1

labels: Carol, Matt,
Mike, Jenny

Data:

1 2 3
2 1 3 4
3 1 2
4 2

DI nr = 4, nc = 5, format
= rankedlist2

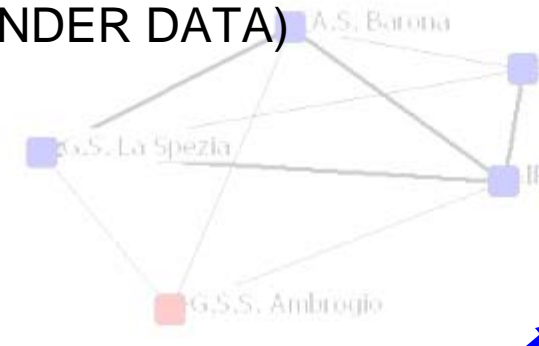
Labels embedded

Data:

Carol math, stat
Matt geo, math
Mike literature, stat
Jenny French, literature

- Red = group 0
- Light green = group 1
- Light blue = group 2
- Light purple = group 3
- Light orange = group 4
- Orange = group 5
- Yellow = group 6
- Violet = group 7
- Pink = group 8
- Brown = group 9

ORGANIZE DATA (UNDER DATA)



Original matrix

	1	2	3
Degree	NrmDegree	Share	
7 7	4.000	66.667	0.167
2 2	4.000	66.667	0.167
5 5	4.000	66.667	0.167
3 3	3.000	50.000	0.125
1 1	3.000	50.000	0.125
6 6	3.000	50.000	0.125
4 4	3.000	50.000	0.125

Sort

	1	2	3
Degree	NrmDeg	Share	
1 1	3.000	50.000	0.125
3 3	3.000	50.000	0.125
4 4	3.000	50.000	0.125
6 6	3.000	50.000	0.125
2 2	4.000	66.667	0.167
5 5	4.000	66.667	0.167
7 7	4.000	66.667	0.167

Permute

	1	2	3
Degree	NrmDeg	Share	
1 1	3.000	50.000	0.125
2 2	4.000	66.667	0.167
3 3	3.000	50.000	0.125
4 4	3.000	50.000	0.125
5 5	4.000	66.667	0.167
6 6	3.000	50.000	0.125
7 7	4.000	66.667	0.167

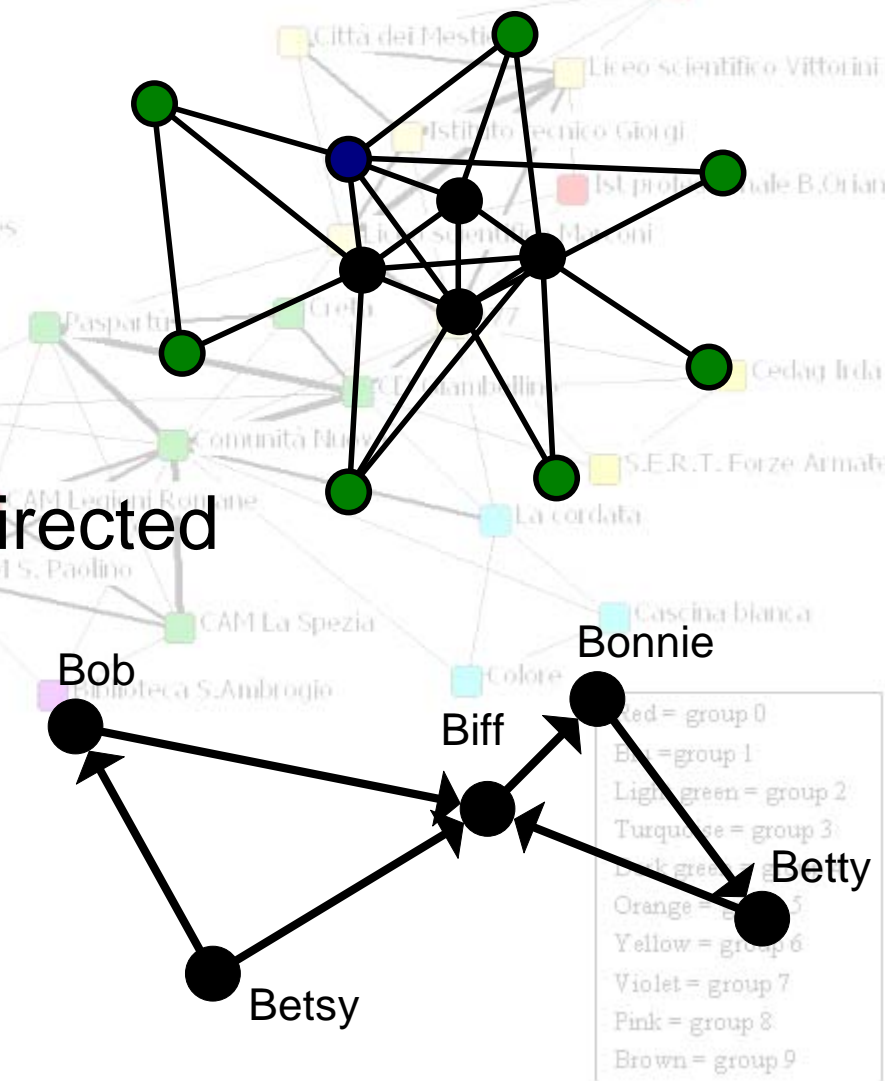
Transpose

	1	2	3	4	5	6	7
Degree	3.000	4.000	3.000	3.000	4.000	3.000	4.000
NrmDegree	50.000	66.667	50.000	50.000	66.667	50.000	66.667
Share	0.125	0.167	0.125	0.125	0.167	0.125	0.167

- Red = group 0
- Blue = group 1
- Light green = group 2
- Turquoise = group 3
- Dark green = group 4
- Orange = group 5
- Yellow = group 6
- Light blue = group 7

Directed vs undirected ties

- Undirected relations
 - Attended meeting with
 - Communicates daily with
- Directed relations
 - Lent money to
- Logically vs empirically directed ties
 - Empirically, even undirected relations can be non-symmetric due to measurement error



Strength of Tie

- We can attach values to ties, representing quantitative attributes

- Strength of relationship

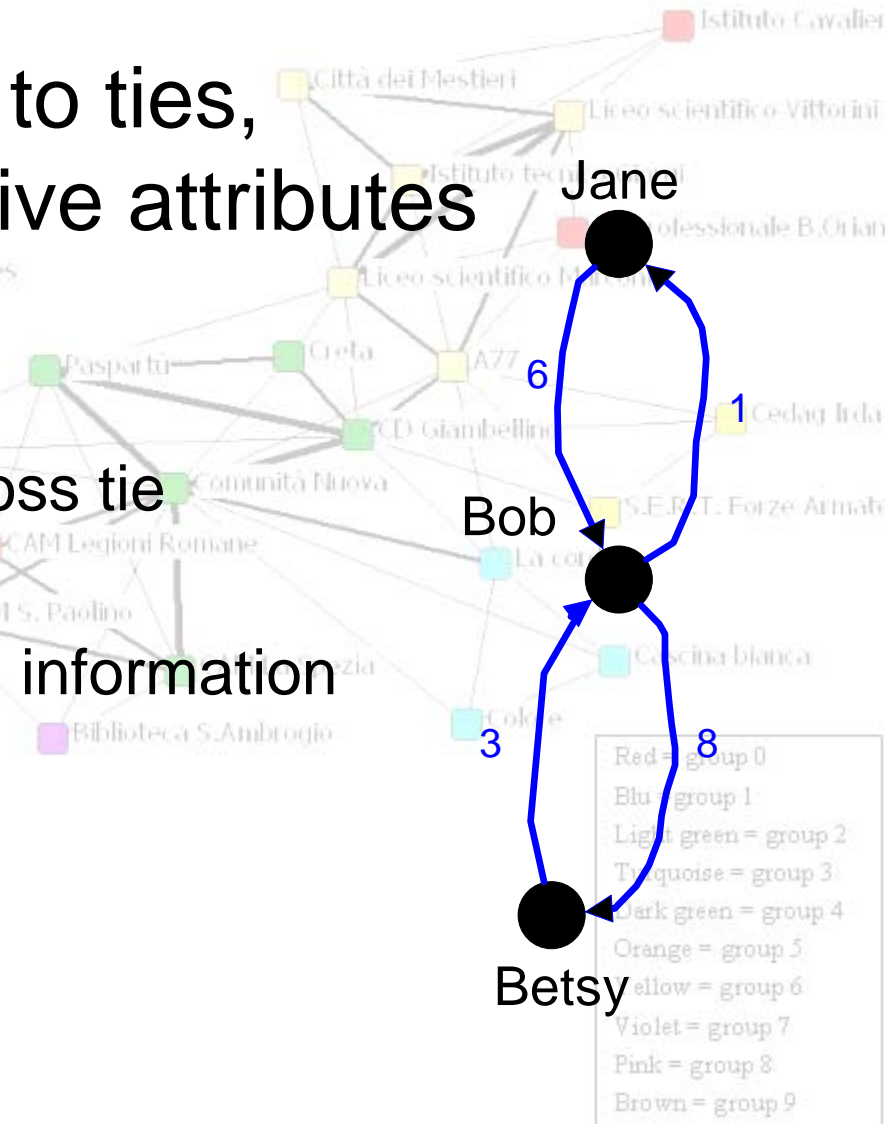
- Information capacity of tie

- Rates of flow or traffic across tie

- Distances between nodes

- Probabilities of passing on information

- Frequency of interaction



- Aqorà
- Amici della musica
- Arcimetromondo
- Arcobaleno
- Arcobaleno Danza
- Arno Stern
- Ass. Sportiva dilettantistica
- Atelier di pittura
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- Immacolata Concezione
- Istituto d'arte B...
- Istituto Resistenza
- L'impronta
- La Creta
- La Piazzetta
- Le Tre Fontane
- Liceo scientifico A. Carrel
- Mari Tese
- MB Sportello Marco Biagi
- Mediazione familiare
- Milano Sport
- Palauno
- Piscina Cardellino

MODIFY DATA (TRANSFORM MENU)

Original matrix

	1	2	3	4	5	6	7
1	1	0	4	3	5	1	1
2	2	0	0	0	0	2	2
3	3	2	4	0	4	4	3
4	4	3	4	3	0	0	4
5	5	1	0	2	0	0	0
6	6	1	0	0	0	1	0
7	7	0	2	0	0	1	4

Symmetrize (min, max, aver...)

MAX	1	2	3	4	5	6	7
	-	-	-	-	-	-	-
1	0	4	3	5	1	1	0
2	4	0	4	4	2	2	2
3	3	4	0	4	4	3	1
4	5	4	4	0	0	4	2
5	1	2	4	0	0	1	1
6	1	2	3	4	1	0	4
7	0	2	1	2	1	4	0

Dychotomize (cut off value)

>3	1	2	3	4	5	6	7
	-	-	-	-	-	-	-
1	0	1	0	1	0	0	0
2	0	0	0	0	0	0	0
3	0	1	0	1	1	0	0
4	0	1	0	0	0	1	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	1	0

- Red = group 0
- Blu = group 1
- Light green = group 2
- Turquoise = group 3
- Dark green = group 4
- Orange = group 5
- Yellow = group 6
- Violet = group 7
- Pink = group 8
- Brown = group 9

MODIFY DATA (DATA MENU)

Original attribute

		1	2
		Ge	Ag
		--	--
1	Bill	0	21
2	Bob	0	24
3	Carol	1	27
4	Anna	1	22

Attribute to matrix (for gender)

		1	2	3	4
		B	B	C	A
		--	--	--	--
1	Bill	1	1	0	0
2	Bob	1	1	0	0
3	Carol	0	0	1	1
4	Anna	0	0	1	1

Original 2mode

		1	2	3	4
		S	M	G	F
		--	--	--	--
1	Bill	1	1	0	0
2	Bob	0	0	1	1
3	Carol	1	0	1	0
4	Anna	0	1	0	1

Affiliation

		1	2	3	4
		B	B	C	A
		--	--	--	--
1	Bill	2	0	1	1
2	Bob	0	2	1	1
3	Carol	1	1	2	0
4	Anna	1	1	0	2

- Red = group 0
- Blu = group 1
- Light green = group 2
- Turquoise = group 3
- Dark green = group 4
- Orange = group 5
- Yellow = group 6
- Violet = group 7
- Pink = group 8
- Brown = group 9

MATRICES ALGEBRA

Original matrices: people by universities, people by courses

University		1	2	3	4
1	Bill	1	0	0	0
2	Bob	1	0	0	0
3	Carol	0	1	0	0
4	Jenny	0	1	0	0
5	Mark	0	0	1	0
6	Steve	0	0	1	0
7	Anna	0	0	0	1
8	Vicky	0	0	0	1

Transpose		B	B	C	J	M	S	A	V
Manchester		1	1	0	0	0	0	0	0
London		0	0	1	1	0	0	0	0
Sheffield		0	0	0	0	1	1	0	0
Leeds		0	0	0	0	0	0	1	1

Then multiply by

$unibycourse = prod(matrix1, matrix2)$

Courses		1	2	3	4
		M	S	G	F
1	Bill	1	1	0	0
2	Bob	1	0	1	0
3	Carol	0	1	1	0
4	Jenny	0	0	1	1
5	Mark	0	1	1	1
6	Steve	1	0	0	0
7	Anna	1	0	0	1
8	Vicky	0	1	0	1

Result is:

Uni by courses		1	2	3	4
		M	S	G	F
1	Manchester	2	1	1	0
2	London	0	1	2	1
3	Sheffield	1	1	1	1
4	Leeds	1	1	0	2

Dychotomize uni by course, then run affiliation and you get uni by uni, where cells values are number of courses in common

- Red = group 0
- Blu = group 1
- Light green = group 2
- Turquoise = group 3
- Dark green = group 4
- Orange = group 5
- Yellow = group 6
- Violet = group 7
- Pink = group 8
- Brown = group 9