example: network study of corporate law firm

☑ univariate and bivariate entropies of vertex variables

```
##           senior status gender office years  age practice lawschool
## senior      6.15   6.15   6.15   6.15  6.15 6.15     6.15       6.15
## status        NA   1.00   1.70   2.08  2.01 2.28     1.98       2.46
## gender        NA     NA   0.82   1.93  2.23 2.38     1.80       2.32
## office        NA     NA     NA   1.12  2.69 2.67     2.09       2.61
## years         NA     NA     NA     NA  1.58 2.75     2.56       3.01
## age           NA     NA     NA     NA    NA 1.58     2.56       2.88
## practice      NA     NA     NA     NA    NA   NA     0.98       2.51
## lawschool     NA     NA     NA     NA    NA   NA       NA       1.53
```

redundancy

```
# matrix with bivariate entropies
H <- entropy_bivar(dat)
diag(H) # univariate entropies
```

☑ redundant variables

```
##           senior status gender office years age practice lawschool
## senior         0      1      1      1     1   1        1          1
## status         0      0      0      0     0   0        0          0
## gender         0      0      0      0     0   0        0          0
## office         0      0      0      0     0   0        0          0
## years          0      0      0      0     0   0        0          0
## age            0      0      0      0     0   0        0          0
## practice       0      0      0      0     0   0        0          0
## lawschool      0      0      0      0     0   0        0          0
```

```
# detect redundancy
redundancy(dat, dec = 3)
```

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☑ joint entropies of dyad variables

```
J <- joint_entropy(dat, dec = 3)
J$matrix # matrix of joint entropies
J$freq # table of joint entropy frequencies
```

	status	gender	office	years	age	practice	lawschool	cowork	advice	friend
status	1.49	0.17	0.09	0.79	0.38	0.00	0.08	0.02	0.05	0.05
gender	NA	1.55	0.03	0.28	0.07	0.00	0.06	0.00	0.01	0.01
office	NA	NA	2.24	0.08	0.14	0.05	0.13	0.06	0.10	0.08
years	NA	NA	NA	2.67	0.61	0.05	0.20	0.02	0.05	0.07
age	NA	NA	NA	NA	2.80	0.02	0.41	0.01	0.02	0.05
practice	NA	NA	NA	NA	NA	1.96	0.04	0.05	0.08	0.01
lawschool	NA	NA	NA	NA	NA	NA	2.95	0.00	0.01	0.02
cowork	NA	NA	NA	NA	NA	NA	NA	0.62	0.18	0.04
advice	NA	NA	NA	NA	NA	NA	NA	NA	1.25	0.18
friend	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.88

strongest dependence

	j	#(J = j)	#(J >= j)
1	0.79	1	1
2	0.61	1	2
3	0.41	1	3
4	0.38	1	4
5	0.28	1	5
6	0.2	1	6
7	0.18	2	8
8	0.17	1	9
9	0.14	1	10
10	0.13	1	11
11	0.1	1	12
12	0.09	1	13
13	0.08	4	17
14	0.07	2	19
15	0.06	2	21
16	0.05	7	28
17	0.04	2	30
18	0.03	1	31
19	0.02	5	36
20	0.01	5	41
21	0	4	45

independence