SI Appendix

Figures show more traditional network layout diagrams for the 9 different network structures used in the experiments, color-coded by the preferred color of each vertex/subject. A visually more informative version of these networks is provided in Figure 2, but we include the layouts below for completeness. For each of the 9 networks, we provide two alternative layouts: the left layout emphasizes the common group incentives, while the right layout makes it easier to detect specific neighborhood structure.

Below is the text script of the sequence of events used for the experimental session, including a summary of the instructions given to the subjects.

TIME: 4:00 PM --- SET-UP

* Karl from CETS will be onhand in case of problems
* arrangement of terminals
* placement of cardboard partitions
* logon to all workstations, alert to any problems
* playing of practice games
* discussion of proctor roles/assignments

CETS EMERGENCY NUMBER: 8-5617

TIME: 5:45 --- SUBJECTS ARRIVE

* as they arrive before 5:45, ask them to wait in the hall
* remind them to use the bathroom
* 5:45 --- start checking regular participants in, match them against the list
* tell alternates to wait patiently
* set them a few at a time from the hall; tell them to put all gear on the floor and sit quietly
* tell them not to touch the computers

TIME: 6:00 --- BEGIN TRAINING SESSION

* remind people of the expected time commitment (8-8:30, 9 worstcase)
* remind them re: color-blindness
* remind them re: request for Hillary/Barack preference
* if no drop-outs, dismiss alternates
* give verbal overview of experiments:

  - behavior: throughout, you should behave as if in a final exam
  - only interaction/comms through system
  - no talking or any other attempts at comms
  - no commenting, giggling, exclaiming
  - no looking around, or at others' screens
  - pay attention, sit quietly
  - if you have a question, raise your hand and

* To whom correspondence should be addressed. E-mail: mkearns@cis.upenn.edu.

wait for a proctor

- series of approximately 90 1-minute experiments
- in each, you control one vertex in 36-vertex NW
- you control the color of your vertex from 2 choices
  (small change to last series of exps)
- may change your color any time
- you will have only a local "first nbrhood" view
- see your own color, your neighbors' colors
- see edges to your neighbors and between them
- see info on your neighbors' degrees

- PAYOFFS: you will be paid REAL USD in accordance
  with COLLECTIVE PERFORMANCE/BEHAVIOR
- payment details given later via email
- collective "goal": converge to a GLOBAL CONSENSUS
  of color
- if this occurs, experiment is halted and EVERYONE
  will be paid SOME amount
- incentives are thus GLOBAL, not local
- if 1 minute arrives without global consensus,
  NOBODY is paid anything for that exp
- in each exp, you will have DIFFERENT payoffs for
  global consensus to each color
- SUM of these payoffs will be $2 for each person; thus
  a successful exp will pay $1 per person on AVG
- your payoffs may be DIFFERENT than other players'
- questions?

* run training experiments on computers, field questions

TIME: 6:30 --- BEGIN EXPERIMENTS

* run sequence of 81 1-minute "Cohesion" and "Minority Rules" experiments

TIME: AFTER THE ABOVE --- HILLARY & BARACK EXPERIMENTS

* describe elicitation of their personal preference:

- before beginning our final sequence of exps, we
  ask that in a moment you indicate your personal
  preference for the winner of the Democratic primary
- this preference, like all other data collected
  tonight, will remain anonymous forever (IRB requirements)
- collective behavior and anonymous individual behavior
  may be publicly reported in scientific or other pubs
- may also report such findings to the popular media

* run elicitation process on computers
* describe coming experiments:

- the remaining experiments are exactly as throughout
  the evening, except the choices have been changed from
  colors to Hillary Clinton and Barack Obama; and the
  payoffs for each person may no longer sum to $2

* run sequence of 1-minute H&B experiments

TIME: AFTER THE ABOVE --- EXIT SURVEY

* run exit survey, encourage them to take time/be thoughtful
* permit subjects to leave quietly as they complete survey

TIME: AFTER THE ABOVE --- TAKE-DOWN

* BACKUP ALL EXPERIMENTAL DATA!!!
* terminal log-off
* take down partitions, etc.

Below is an internal team email detailing the naming scheme for the experiments and their data files.

From: J. Stephen Judd [sjudd@seas.upenn.edu]
Sent: Thursday, May 08, 2008 11:34 AM
To: Michael Kearns; Jenn Wortman; Jinsong Tan
Subject: gameBuild data

Attachments: gameBuild.data; ATT00472.txt

The attached file is used by a program to construct Objects that are the final unitary loadable thingamies that fully define a game. There are no further
parameters that go into these things at run time, so this is THE gameBuild document.

A game is defined on a single line.
There are two types of games being defined, VTR and DEM.
The VTR type is used for the Cohesion experiments and the CentralPower experiments.
(CentralPower has been also known in my head as Minority, Lightweight/heavyweight,
and Ingroup/Outgroup. It's name hasn't settled down.)
The DEM game is for the final few games that try to measure political defection price.

VTR games start with the string "VTR".
Then is a string that will become part of the filename of the game. It has no significance
today except that we want to be able to interpret it later to know what's in there.
You will see that I have echoed some parameters in the name.
When {a,b,c} occur they reflect bias settings.
When {M,P,L} occur they reflect bias settings (think Mild, Pushy, Limbaugh).
{t1, t2, t3} reflect trial numbers.

Next comes the name of a GraphPack object which defines the graph, graphlets, node groupings, and all the layouts. The origins of these names

already reflect their generating definitions:
coPA is the 2 cohesion groups with PA distribution of edges.
coER is the 2 cohesion groups with ER distribution of edges.
Then comes "_" and a number {.67, 1, 1.5} indicating the relative number
of interedges to intraedges; higher numbers mean less group cohesion.
sorry.
power is a PA[36,3] graph partitioned into groups by degree.
Then comes the size of the lightweight group,
followed by "t" and graph number, of which there are only 3.

Next comes the number of seconds in the game, after which no payoffs will be awarded.

Then come 4 numbers defining the payoffs (and therefore the biases).
In all the VTR games, nodes are partitioned into 2 groups...
the first two numbers here define group 1's payoffs for Red and Blue
the last two numbers here define group 2's payoffs for Red and Blue
The biases should always be of opposite polarity.
Payoffs here and elsewhere are in US$.

DEM games start with the string "DEM".
Then comes a file name.
Then comes a GraphPack name. This is always a single ER graph with density 0.3.
Then comes the game time in seconds.
Then comes 2 payoffs values; the first is for sticking, the second is for defecting.

The very first DEM game has no payoffs, and a crazy long game time.
The graph is
36 isolated nodes. Results from this poll are used in later DEM games.
Not all the DEM games will be run. We will start off with low incentives to
defect and gradually raise them until everyone defects.

Using the naming schemes described above, the following is a complete list of the specifications for the 81 experiments.

```
// cohesion experiments
// first batch of 27 have ER generators
VTR 91coER_0.5a1   coER_0.5   60  0.75 1.25    1.25 0.75
VTR 61coER_0.5b1   coER_0.5   60  0.50 1.50    1.50 0.50
VTR 11coER_0.5c1   coER_0.5   60  0.75 1.25    1.50 0.50
VTR 21coER_0.5a2   coER_0.5   60  0.75 1.25    1.25 0.75
VTR 31coER_0.5b2   coER_0.5   60  0.50 1.50    1.50 0.50
VTR 81coER_0.5c2   coER_0.5   60  0.75 1.25    1.50 0.50
VTR 51coER_0.5a3   coER_0.5   60  0.75 1.25    1.25 0.75
VTR 71coER_0.5b3   coER_0.5   60  0.50 1.50    1.50 0.50
VTR 41coER_0.5c3   coER_0.5   60  0.75 1.25    1.50 0.50
```

```
VTR 97coER_1a1      coER_1      60  0.75 1.25    1.25 0.75
VTR 67coER_1b1      coER_1      60  0.50 1.50    1.50 0.50
VTR 17coER_1c1      coER_1      60  0.75 1.25    1.50 0.50
VTR 27coER_1a2      coER_1      60  0.75 1.25    1.25 0.75
VTR 37coER_1b2      coER_1      60  0.50 1.50    1.50 0.50
VTR 87coER_1c2      coER_1      60  0.75 1.25    1.50 0.50
VTR 57coER_1a3      coER_1      60  0.75 1.25    1.25 0.75
VTR 77coER_1b3      coER_1      60  0.50 1.50    1.50 0.50
VTR 47coER_1c3      coER_1      60  0.75 1.25    1.50 0.50

VTR 94coER_2a1    coER_2    60  0.75 1.25    1.25 0.75
VTR 64coER_2b1    coER_2    60  0.50 1.50    1.50 0.50
VTR 14coER_2c1    coER_2    60  0.75 1.25    1.50 0.50
VTR 24coER_2a2    coER_2    60  0.75 1.25    1.25 0.75
VTR 34coER_2b2    coER_2    60  0.50 1.50    1.50 0.50
VTR 84coER_2c2    coER_2    60  0.75 1.25    1.50 0.50
VTR 54coER_2a3    coER_2    60  0.75 1.25    1.25 0.75
VTR 74coER_2b3    coER_2    60  0.50 1.50    1.50 0.50
VTR 44coER_2c3    coER_2    60  0.75 1.25    1.50 0.50

// batch of 27 with PA generators
VTR 95coPA_0.5a1   coPA_0.5   60  0.75 1.25    1.25 0.75
VTR 65coPA_0.5b1   coPA_0.5   60  0.50 1.50    1.50 0.50
VTR 15coPA_0.5c1   coPA_0.5   60  0.75 1.25    1.50 0.50
VTR 25coPA_0.5a2   coPA_0.5   60  0.75 1.25    1.25 0.75
VTR 35coPA_0.5b2   coPA_0.5   60  0.50 1.50    1.50 0.50
VTR 85coPA_0.5c2   coPA_0.5   60  0.75 1.25    1.50 0.50
VTR 55coPA_0.5a3   coPA_0.5   60  0.75 1.25    1.25 0.75
VTR 75coPA_0.5b3   coPA_0.5   60  0.50 1.50    1.50 0.50
VTR 45coPA_0.5c3   coPA_0.5   60  0.75 1.25    1.50 0.50

VTR 98coPA_1a1      coPA_1      60  0.75 1.25    1.25 0.75
VTR 68coPA_1b1      coPA_1      60  0.50 1.50    1.50 0.50
VTR 18coPA_1c1      coPA_1      60  0.75 1.25    1.50 0.50
VTR 28coPA_1a2      coPA_1      60  0.75 1.25    1.25 0.75
VTR 38coPA_1b2      coPA_1      60  0.50 1.50    1.50 0.50
VTR 88coPA_1c2      coPA_1      60  0.75 1.25    1.50 0.50
VTR 58coPA_1a3      coPA_1      60  0.75 1.25    1.25 0.75
VTR 78coPA_1b3      coPA_1      60  0.50 1.50    1.50 0.50
VTR 48coPA_1c3      coPA_1      60  0.75 1.25    1.50 0.50

VTR 92coPA_2a1    coPA_2    60  0.75 1.25    1.25 0.75
VTR 62coPA_2b1    coPA_2    60  0.50 1.50    1.50 0.50
VTR 12coPA_2c1    coPA_2    60  0.75 1.25    1.50 0.50
VTR 22coPA_2a2    coPA_2    60  0.75 1.25    1.25 0.75
VTR 32coPA_2b2    coPA_2    60  0.50 1.50    1.50 0.50
VTR 82coPA_2c2    coPA_2    60  0.75 1.25    1.50 0.50
VTR 52coPA_2a3    coPA_2    60  0.75 1.25    1.25 0.75
VTR 72coPA_2b3    coPA_2    60  0.50 1.50    1.50 0.50
VTR 42coPA_2c3    coPA_2    60  0.75 1.25    1.50 0.50

// lightweight power (oka minority power) games
// first 9 have 22 nodes in the lightweight group (small)
VTR 99power22t1M    power22     60  0.75 1.25    1.25 0.75
VTR 69power22t1P    power22     60  0.50 1.50    1.50 0.50
VTR 19power22t1L    power22     60  0.75 1.25    1.50 0.50
```

```
VTR 29power22t2M    power22     60  0.75 1.25    1.25 0.75
VTR 39power22t2P    power22     60  0.50 1.50    1.50 0.50
VTR 89power22t2L    power22     60  0.75 1.25    1.50 0.50
VTR 59power22t3M    power22     60  0.75 1.25    1.25 0.75
VTR 79power22t3P    power22     60  0.50 1.50    1.50 0.50
VTR 49power22t3L    power22     60  0.75 1.25    1.50 0.50
// next 9 have 27 nodes in the lightweight group (critical)
VTR 93power27t1M    power27     60  0.75 1.25    1.25 0.75
VTR 63power27t1P    power27     60  0.50 1.50    1.50 0.50
VTR 13power27t1L    power27     60  0.75 1.25    1.50 0.50
VTR 23power27t2M    power27     60  0.75 1.25    1.25 0.75
VTR 33power27t2P    power27     60  0.50 1.50    1.50 0.50
VTR 83power27t2L    power27     60  0.75 1.25    1.50 0.50
VTR 53power27t3M    power27     60  0.75 1.25    1.25 0.75
VTR 73power27t3P    power27     60  0.50 1.50    1.50 0.50
VTR 43power27t3L    power27     60  0.75 1.25    1.50 0.50
// last 9 have 30 nodes in the lightweight group (large)
VTR 96power30t1M    power30     60  0.75 1.25    1.25 0.75
VTR 66power30t1P    power30     60  0.50 1.50    1.50 0.50
VTR 16power30t1L    power30     60  0.75 1.25    1.50 0.50
VTR 26power30t2M    power30     60  0.75 1.25    1.25 0.75
VTR 36power30t2P    power30     60  0.50 1.50    1.50 0.50
VTR 86power30t2L    power30     60  0.75 1.25    1.50 0.50
VTR 56power30t3M    power30     60  0.75 1.25    1.25 0.75
VTR 76power30t3P    power30     60  0.50 1.50    1.50 0.50
VTR 46power30t3L    power30     60  0.75 1.25    1.50 0.50

// Democratic Primary games
// The first one just polls; it MUST BE RUN BEFORE any other DEM games!
DEM -poll36       36nodes     500 0 0
// The following games increase temptations to defect
DEM tempt1.00     ER.3        50  1 1
DEM tempt1.10     ER.3        50  1 1.10
DEM tempt1.20     ER.3        50  1 1.20
DEM tempt1.50     ER.3        50  1 1.50
DEM tempt2        ER.3        50  1 2
DEM tempt5        ER.3        50  1 5
DEM tempt10       ER.3        50  1 10
DEM tempt20       ER.3        50  1 20
DEM tempt30       ER.3        50  1 30
DEM tempt40       ER.3        50  1 40
DEM tempt50       ER.3        50  1 50
```

Using the naming schemes described above, below is the list of 81 experiments in the precise order they were held in the session.

```
demo.game

VTR-11coER_0.5c1.game
VTR-12coPA_2c1.game
VTR-13power27t1L.game
VTR-14coER_2c1.game
VTR-15coPA_0.5c1.game
VTR-16power30t1L.game
VTR-17coER_1c1.game
VTR-18coPA_1c1.game
VTR-19power22t1L.game
```

```
VTR-21coER_0.5a2.game
VTR-22coPA_2a2.game
VTR-23power27t2M.game
VTR-24coER_2a2.game
VTR-25coPA_0.5a2.game
VTR-26power30t2M.game
VTR-27coER_1a2.game
VTR-28coPA_1a2.game
VTR-29power22t2M.game

VTR-31coER_0.5b2.game
VTR-32coPA_2b2.game
VTR-33power27t2P.game
VTR-34coER_2b2.game
VTR-35coPA_0.5b2.game
VTR-36power30t2P.game
VTR-37coER_1b2.game
VTR-38coPA_1b2.game
VTR-39power22t2P.game

VTR-41coER_0.5c3.game
VTR-42coPA_2c3.game
VTR-43power27t3L.game
VTR-44coER_2c3.game
VTR-45coPA_0.5c3.game
VTR-46power30t3L.game
VTR-47coER_1c3.game
VTR-48coPA_1c3.game
VTR-49power22t3L.game

VTR-51coER_0.5a3.game
VTR-52coPA_2a3.game
VTR-53power27t3M.game
VTR-54coER_2a3.game
VTR-55coPA_0.5a3.game
VTR-56power30t3M.game
VTR-57coER_1a3.game
VTR-58coPA_1a3.game
VTR-59power22t3M.game

VTR-61coER_0.5b1.game
VTR-62coPA_2b1.game
VTR-63power27t1P.game
VTR-64coER_2b1.game
VTR-65coPA_0.5b1.game
VTR-66power30t1P.game
VTR-67coER_1b1.game
VTR-68coPA_1b1.game
VTR-69power22t1P.game

VTR-71coER_0.5b3.game
VTR-72coPA_2b3.game
VTR-73power27t3P.game
VTR-74coER_2b3.game
VTR-75coPA_0.5b3.game
VTR-76power30t3P.game
```

```
VTR-77coER_1b3.game
VTR-78coPA_1b3.game
VTR-79power22t3P.game

VTR-81coER_0.5c2.game
VTR-82coPA_2c2.game
VTR-83power27t2L.game
VTR-84coER_2c2.game
VTR-85coPA_0.5c2.game
VTR-86power30t2L.game
VTR-87coER_1c2.game
VTR-88coPA_1c2.game
VTR-89power22t2L.game

VTR-91coER_0.5a1.game
VTR-92coPA_2a1.game
VTR-93power27t1M.game
VTR-94coER_2a1.game
VTR-95coPA_0.5a1.game
VTR-96power30t1M.game
VTR-97coER_1a1.game
VTR-98coPA_1a1.game
VTR-99power22t1M.game


DEM--poll36.game
DEM-tempt1.00.game
DEM-tempt1.10.game
DEM-tempt1.20.game
DEM-tempt1.50.game
DEM-tempt2.game
DEM-tempt5.game
DEM-tempt10.game
DEM-tempt20.game
DEM-tempt30.game
DEM-tempt40.game
DEM-tempt50.game


CLR-1pair.game
CNS-1pair.game
DEM--poll2.game
DEM--poll6.game
DEM-2tempt2.game
DEM-2tempt3.game
VTR-test6.game
VTR-1pair.game
```

Below is sample raw data for a single experiment. The first line indicates a mapping of human subject ID numbers to vertices in the network used; the second line indicates the degree of each vertex. Subsequent lines are 4-tuples indicating a millisecond-scale timestamp, subject ID, vertex index, and a color value (1 or 2), indicating that a particular subject chose that color at that time. The final line indicates the payoffs to each subject.

Raw data for exp105-VTR-14coER_2c1.data:

clid 1028 1036 1034 1005 1020 1012 1010 1007 1011 1008 1009 1026 1024 1014 1027 1029 1032 1035 1001 1021 1019 1004 1002 1017 1033 10

03 1022 1013 1031 1018 1015 1006 1023 1016 1025 1030
degr 3 4 6 9 5 4 3 6 10 8 4 6 6 5 8 6 3 4 12 3 6 6 5 5 3 5 6 6 5 6 4 8 6 4 6 4
17 1011 n9 1
27 1028 n1 1
40 1027 n15 1
42 1021 n20 2
84 1033 n25 2
88 1026 n12 1
97 1036 n2 1
104 1003 n26 2
156 1015 n31 2
159 1031 n29 2
160 1025 n35 2
176 1027 n15 1
183 1010 n7 1
185 1011 n9 1
200 1009 n11 1
226 1021 n20 2
333 1022 n27 2
352 1027 n15 1
361 1011 n9 1
362 1035 n18 2
401 1030 n36 2
405 1006 n32 2
426 1021 n20 2
434 1032 n17 1
448 1003 n26 2
529 1015 n31 2
536 1016 n34 2
546 1032 n17 1
621 1019 n21 2
632 1003 n26 2
633 1023 n33 2
650 1008 n10 1
674 1021 n20 2
709 1029 n16 1
716 1001 n19 2
726 1004 n22 2
763 1013 n28 2
773 1018 n30 2
810 1017 n24 2
868 1002 n23 2
874 1021 n20 2
876 1005 n4 1
894 1014 n14 1
1032 1003 n26 2
1058 1012 n6 1
1066 1021 n20 2
1243 1024 n13 1
1272 1003 n26 2
1326 1034 n3 1
1734 1020 n5 1
1962 1007 n8 1
2709 1029 n16 2
3034 1017 n24 1
3641 1030 n36 1

3837 1018 n30 1
5422 1020 n5 2
5674 1021 n20 1
6362 1032 n17 2
7357 1013 n28 1
7691 1013 n28 2
8233 1030 n36 2
8302 1024 n13 2
8530 1017 n24 2
8729 1028 n1 2
9702 1018 n30 2
9996 1030 n36 1
10532 1004 n22 1
10537 1036 n2 2
11234 1032 n17 1
12198 1034 n3 2
12765 1018 n30 1
13023 1029 n16 1
14841 1033 n25 1
15183 1031 n29 1
16405 1018 n30 1
17002 1030 n36 2
17717 1023 n33 1
17924 1015 n31 1
17985 1030 n36 1
18024 1023 n33 2
18265 1003 n26 1
18433 1023 n33 1
18571 1012 n6 2
18664 1034 n3 1
18717 1033 n25 2
18730 1023 n33 2
19046 1013 n28 1
19051 1023 n33 1
19120 1006 n32 1
19138 1025 n35 1
19369 1023 n33 2
19816 1012 n6 1
19831 1006 n32 2
20043 1013 n28 2
20146 1028 n1 1
21569 1020 n5 1
23053 1033 n25 1
23725 1033 n25 2
23910 1004 n22 2
24087 1003 n26 2
24967 1019 n21 1
25031 1003 n26 1
25167 1012 n6 2
25267 1001 n19 1
25373 1033 n25 1
26055 1012 n6 1
26623 1010 n7 2
26704 1035 n18 1
26786 1024 n13 1
26817 1006 n32 1

27494 1033 n25 2
27692 1004 n22 1
28996 1036 n2 1
29293 1033 n25 1
29981 1010 n7 1
30269 1033 n25 2
30416 1034 n3 2
30758 1034 n3 1
31469 1033 n25 1
31686 1034 n3 1
31854 1002 n23 1
32270 1034 n3 2
32684 1013 n28 1
32758 1034 n3 1
33310 1034 n3 2
33726 1034 n3 1
34789 1033 n25 2
35241 1017 n24 1
35413 1033 n25 1
35933 1033 n25 2
36549 1033 n25 1
37365 1033 n25 2
37768 1023 n33 1
37925 1033 n25 1
38783 1022 n27 1
41919 1016 n34 1
earn 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1.250000 1
.250000 1.250000 1.250000 1.250000 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 0.50000
0 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 0.500000 31.500000