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Direct And Indirect Influence Among Political Science Departments:

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A discipline is defined by the institutions which train its Ph.D.s. But not all departments are equal. Some play a much greater role in shaping the discipline because of their success in placing students at other Ph.D. granting institutions, thus having an indirect as well as a direct influence on disciplinary norms and practices. Moreover, Burris (2004), among others, has provided compelling evidence that the institutions which are most successful in placing their Ph.D.s tend to be those which are assigned high prestige in reputational and other studies. As we will show, the network structure of placements in political science (like that in sociology), can be modeled as a *directed network* that has what the social network theorist, Scott Feld (Feld, Bisciglia and Ynalvez, 2003; Feld, Bisciglia and Grofman, 2005) refers to as a *vertical organization*. The two defining characteristics of vertical organization are (a) *high variation in out-degree*, here variation in the number of Ph.D. students placed at other Ph.D. granting institutions; and (b) *positive correlation of out-degree*, i.e., such that departments that are successful in placing their students tend disproportionately to draw their own faculty from departments that are successful in placing their students.

These two characteristics of vertical organization create strong patterns of both direct and indirect influence of (sets of) departments on other departments. A central aim of this paper is to describe such patterns of influence in terms of who gives to whom and who receives from whom. We also look at geographic variations in placement, considering placements in regional terms (Northeast, West, Midwest, South) to determine whether regionalism distorts an otherwise clear pattern of top-down influence.

Burris (2004) asserts that the departments with many placements at other Ph.D. constitute a core set of institutions that dominate the rest of the system. However, he does not offer a clear definition of influence. Here we propose a concept of influence that seems natural in political science, namely one based on majorities. We say that a set of departments, A , *majority dominates* a department j , if a majority of the faculty teaching at j received their Ph.D.s from any of the departments in the set A ; while A is said to *indirectly (at one remove) majority dominate* j if A does not majority dominate j , but a majority of the faculty at j either were trained or A or were trained at departments the majority of whose faculty came from A . We define *indirect majority dominance at the k th remove* in like manner.

After ordering political science departments in terms of their number of placements at other Ph.D. granting departments, we can seek to specify the minimal set of departments who

together form a cluster whose members draw a majority of their faculty from one another. Then we can extend the analysis to look for dominance at first remove, second remove, etc. Essentially the idea is of a ripple effect. The top departments draw very largely from one another, creating a relatively cohesive core. Also, a subset of the remaining departments draw especially heavily from that core, and end up with a majority of their own faculty coming from the core. Furthermore, the departments which draw most heavily on faculty from the core tend to be ones which themselves train a larger number of Ph.D. students. Thus, the departments whose members come disproportionately from the core institutions, in combination with the core itself, supply a majority of the faculty to a much larger group of departments, and the students trained by those institutions (together with those students with Ph.D.s from core institutions and those trained at institutions where the majority of faculty come from the core) provide the majority for many of the remaining departments. Moreover, this spillover is accentuated by the fact that core institutions and other prestige institutions train a very large proportion of the faculty employed at Ph.D. granting departments.

Thus, there is a chain of influence, where the core departments (viewed as a set) strongly influence each other and dominate appointments at the next level, and core and core dominated institutions dominate the next level further down, etc.¹ When most faculty who teach at Ph.D. granting departments are trained at institutions which either directly or at one or more removes are majority dominated by faculty who are trained at core institutions, then it seems reasonable to believe that we are more likely to get relatively homogeneous departmental cultures that affects institutional norms and practices, perceptions of the boundaries of the discipline, etc., based on what is common at core institutions.²

In the paper we will first examine two formal properties of the structure of placements in political science:

- (1) Political science placements satisfy the structure of a vertically organized network of ties.
- (2) Political science placements exhibit greater variation in out-degree than in-degree.

Then, we will look at some substantive structural features of the political science discipline that are closely linked to the nature of its placements as a vertically organized network of ties.

- (3) A handful of departments will “majority dominate” the discipline directly or indirectly via their placements.
- (4) Departmental prestige is closely correlated with placements.
- (5) The structure of political science placements creates a pattern of downward mobility.
- (6) Placements reflect a strong within-region bias, but, except for the South, the overall pattern of majority dominance is not strongly affected, and even Southern institutions are dominated at most at second remove by the big eight institutions.

Data and Data Analyses

Data

We compiled a list of political science faculty in Ph.D. granting departments in the U.S. from the APSA 2000 “Graduate Faculty and Programs in Political Science,” with supplementary information on faculty taken as needed from the APSA 2002-2004 “Directory of Political Science Faculty.” According to these directories, there are 4,127 regular faculty members in the 133 Ph.D. granting departments in political science in the U.S. For our analysis, we excluded the 169 (4%) faculty members who did not receive their Ph.D.s from one of these schools, and we also had to exclude 312 (8%) faculty members for whom we were unable to find information regarding their educational background. Thus, our dataset includes 3646 faculty members employed in 133 Ph.D. granting political science departments in the U.S.. Of these, 275 (8%) are presently employed at the same institution from which they received a Ph.D.³

While our focus will be on the set of faculty placed within U.S. Ph.D. granting departments; for some purposes it is useful also to take into account the total number of Ph.D.s being produced by different U.S. institutions. For this purpose we have gathered data on Ph.D. production within political science in the U.S. Using statistics provided by the National Science Foundation and the Department of Education’s National Center for Education Statistics,⁴ we were able to tally the number of Ph.D.s produced by each U.S. political science department for all but one year between 1966 and 2001.⁵

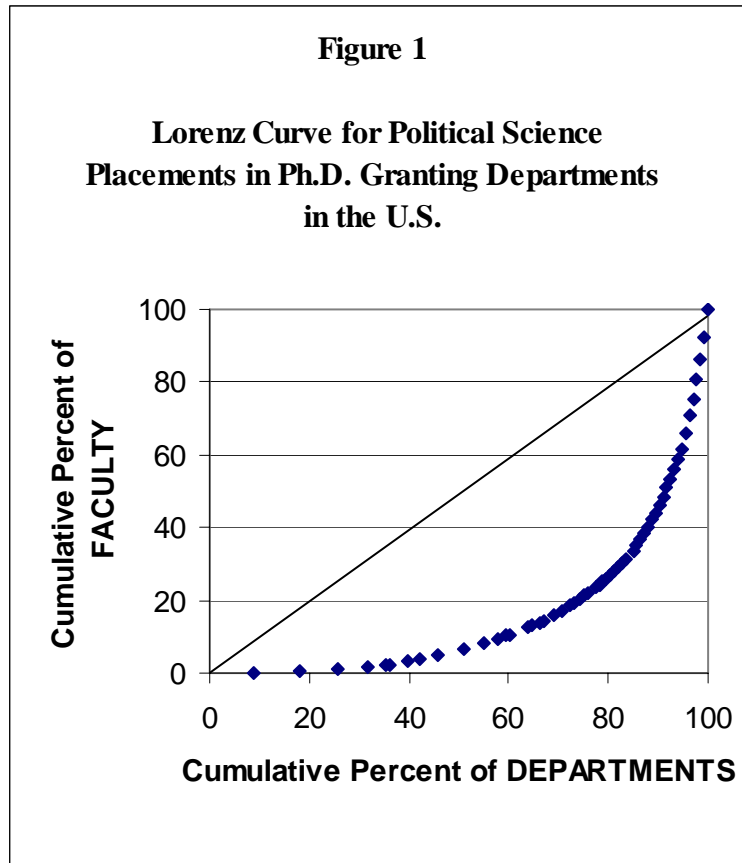
Empirical Evidence of the Structure of Placements and Its Implications

(1) Political science placements satisfy the structure of a vertically organized network of ties.

(a) Substantial variation in out-degree

We take the normalized standard deviation, i.e., σ/μ , as our measure of variation in out-degree. U.S. Political Science departments vary dramatically in the number of students they place at other U.S. Ph.D. granting institutions. The number of placements range from 0 to 290 with a mean of 27.8 and a standard deviation of 48.1, giving us a normalized standard deviation of well above one (1.73). Harvard, Berkeley, Chicago, Yale and Michigan are the top five departments in placements, each having placed no fewer than 170 students in Ph.D. granting departments. Students from these same five schools account for 29.3% of all political science faculty members in Ph.D. granting institutions. Similarly, students who received their Ph.D.s from the 50 schools which placed the fewest students *in toto* account for only 2.9% of all political science faculty members at Ph.D. granting departments.⁶

We can show the stark pattern of concentration in terms of a Lorenz Curve which allows us to visualize the inequality. See Figure 1. For example, we can read from this figure that the bottom 80 percent of departments as ranked by total placements at Ph.D. granting institutions *in toto* generate only roughly 20 percent of the faculty at Ph.D. granting institutions, while the top 10 percent account for roughly 55 percent of all placements, and the top 5 percent alone (the top-placing 6-7 schools) account for around 35 percent of all placements.



(b) High correlation in out-degree

Our second essential property of the vertical organization of directed ties is a positive correlation of out-degrees over ties. We take the correlations between the mean out-degree of the faculty origins of a department’s members with the out-degree of the department itself as a measure of the extent to which there is a positive correlation of out-degrees. In other words, schools that place large numbers of students tend disproportionately to take faculty from schools that also place large number of students. If one correlates the mean out-degree of the faculty origins of departments with the department’s own out-degree, the correlation is .63.⁷

(2) Political science placements exhibit greater variation in out-degree than in-degree.

In the U.S., political science department sizes range from 3 to 80 members. The average size of political science departments is 27.7 with a standard deviation of 14.2. In comparison, as previously reported, the variation in out-degree ranges from 0 to 290 with a standard deviation of 48.1. So, as expected we see a greater variation in out-degree than in-degree.⁸

(3) A handful of departments will majority dominate the discipline directly or indirectly via their placements.

The extent to which we see mutuality in placements within a core set of institutions can be illustrated with the top five schools as ranked by their total number of placements to (themselves and) other Ph.D. granting institutions: Harvard, Berkeley, Chicago, Yale and Michigan. These top five departments tend to hire from each other, with a mean proportion of 63.1% hires from the set, ranging from 72 % (Harvard) to 44% (Michigan).⁹ However, we can better capture the structure of majority dominance in political science by looking at the “big eight” institutions in terms of their total placements at Ph.D. granting institutions.¹⁰ Here we add to the set of Harvard, Berkeley, Chicago, Yale and Michigan, three additional universities: Columbia, Princeton, and Stanford.

Our concern in this section is not with ranking departments by prestige, but rather to determine the direct and indirect influence of the core set of eight departments identified as those which place the most Ph.D.s at Ph.D. granting departments in political science. Simply having a large proportion of faculty come from a few institutions is not sufficient to guarantee a majority influence. For example, even though roughly 30% of the faculty in political science (and sociology) Ph.D. granting departments are drawn from the top five Ph.D. producing departments in the discipline, that disproportion alone provides no guarantee that any of the departments have a majority of their faculty from those disproportionately represented departments. In principle, the percentage could be identical across all departments. In fact, in political science, students of the eight departments which place the highest number of their students as faculty in Ph.D. granting institutions, not only constitute a majority of the faculty at these same eight departments,¹¹ they also constitute a majority of the faculty at 32 other departments. Thus, these eight departments produce a majority of faculty at 40 departments -- a rather strong indicator of direct influence!

Moreover, these 40 departments include most of the departments which place high numbers of faculty at other Ph.D. granting departments (19 out of the top 30),¹² and thus the big eight can be expected to have indirect influence over additional departments in whose faculty they do not comprise a majority but whose faculty come either from the big eight or from departments where big-eight trained faculty constitute the majority.¹³ Indeed, when we look at this next tier of influence we find an additional 63 schools where a majority of faculty come either from the big eight or from schools where big eight faculty make up a majority. Thus, 103 of the 133 departments in political science (77%) are either directly or at first remove majority influenced by the big eight. Moreover, all of the major Ph.D. producing departments fall into this set of 103. And, finally, all departments in political science are either directly or at first or second remove majority dominated by the big eight.¹⁴

(4) Departmental prestige is closely correlated with placements.

While classic studies of academic prestige did not examine correlation between departmental prestige rankings and out-degree, *per se*, it was common for those studies to observe that the most prestigious departments tended to disproportionately hire graduates of the most prestigious departments (see e.g., Long, Allison and McGinnis, 1979). As noted earlier, more recent studies have found positive correlation between overall out-degree and prestige (Hanneman, 2001; Burris, 2004).

Out-degree as an indicator of prestige can be validated by comparing it with widely used measures of department prestige, such as the National Research Council's (NRC) ratings of the quality of departments and the *U.S. News and World Report* survey, which is more recently updated. For political science, we compared the number of placements with the 2006 *U.S. News and World Report Graduate School* rankings. The *U.S. News* rankings provide two scores for each institution: a basic ranking among all political science graduate programs and an assessment score which ranges from 0 to 5. Although the *US News and World Reports* survey only provides rankings for 56 Ph.D. granting institutions in political science, we still find a high correlation between ranking and number of placements. The correlation of numbers of placements with the basic ranking is .72. The correlation of numbers of placements with the assessment scores is .80.¹⁵ Comparing placements among the 96 Ph.D. institutions ranked by the 1993 NRC rankings also reveals a strong relationship. The correlation of numbers of placements with the 1993 NRC assessment scores is .72. The correlation of numbers of placements with NRC's program ranking is .69. These correlations provide strong evidence that total placements are a reasonably good proxy for prestige

We would note, however, that although prestige and number of placements are highly empirically correlated, in principle, they tap different dimensions of a discipline. We may have schools that place large numbers of students at Ph.D. granting departments, yet are not ranked as prestigious as these placement numbers might suggest since their placements tend not to go to prestigious departments. And we may have schools that are prestigious despite relatively few overall placements because of their success in placing well the students whom they do place. We now consider both the number and proportion of students placed in Ph.D. granting departments placed in one of the "big eight" schools. Table 1 below provides this information for the top 20 departments ranked according to each of the three metrics.

The big eight are bolded in each of the columns in Table 1. We see that the big eight generally excel at all three methods. They rank in the top fifteen regardless of the way we choose to evaluate placements. However, while the correlation across the total universe of departments between the three different ranking methods is high ($r = .76$ for method 1 and method 2, $r = .71$ for method 1 and method 3, and $r = .90$ for method 2 and method 3 for our entire set of schools), we see from Table 1 that there are differences in ranking when we compare total numbers and proportions. The big eight defined by the total number of placements are also the top eight for total number of placements in the big eight. However, some schools that place a relatively small number of graduate students, but place them well; Brandeis, CUNY Graduate School, Carnegie-Mellon, and Rochester are among the top eight in terms of the proportions of their placements that go to the big eight.

**Table 1: Ranking of Schools According to Placements
at Ph.D. Granting Departments and at “Big Eight” Departments**

Rank	University	1. Proportion of Ph.D.s placed in Ph.D. granting institutions who are placed at the big eight	University	2. Number of Ph.D.s placed at the big eight	University	3. Total number of placements at Ph.D. granting departments
1	Harvard	28%	Harvard	82	Harvard	290
2	Yale	25%	Yale	46	UC Berkeley	212
3	Columbia	25%	Columbia	44	Chicago	184
4	Stanford	20%	UC Berkeley	35	Yale	184
5	Brandeis	20%	Chicago	30	Michigan	177
6	CUNY-Graduate Center	18%	Michigan	27	Columbia	176
7	Carnegie-Mellon	18%	Princeton	24	Princeton	151
8	Rochester	17%	Stanford	22	Stanford	109
9	Howard	17%	MIT	13	Wisconsin	102
10	UC Berkeley	17%	Rochester	8	Minnesota	95
11	MIT	16%	UCLA	7	UCLA	89
12	Princeton	16%	Duke	6	Indiana	83
13	Michigan	15%	Cornell	6	Northwestern	81
14	Chicago	15%	Northwestern	5	MIT	79
15	Rice	14%	UC San Diego	4	North Carolina-Chapel Hill	77
16	UC San Diego	14%	University of Iowa	3	Cornell	76
17	Duke	13%	Syracuse	3	Ohio State	62
18	Cal Tech	10%	North Carolina-Chapel Hill	3	Johns Hopkins	60
19	Vanderbilt	9%	Minnesota	3	Syracuse	57
20	Cornell	8%	Brandeis, CUNY, Carnegie Mellon, Rice, Cal Tech, NYU, Illinois-Urbana-Champaign, Wisconsin	2	Duke	48

The ordering among the schools becomes less consistent for different dimensions of ranking when we go beyond the top eight. Midwestern schools such as Indiana and Ohio State rank highly in terms of total number of placements. However, they do not rank in the top twenty when we consider total number or proportion of placements in the big eight -- indicating a potential regional bias we will have more to say about later. Moreover, there are high producing schools such as Wisconsin, Minnesota and North Carolina, that have shown the ability to place at a big eight institution, yet given their large number of total placements, they fail to make the top twenty using our first ranking method. Conversely, as noted above, some schools which do not make the top twenty in terms of total placements are relatively successful at prestigious placements.

However, we also wish to consider placement success relative to the total number of Ph.D.s produced, not just relative to the subset that is hired at Ph.D. producing institutions in the U.S. 25,647 Ph.D.s were produced in the U.S. over the period of 1966-2001 ($n = 35$ years), many more than presently hold jobs in Ph.D. granting departments in the U.S. Roughly 14% of all Ph.D.s produced during this time period have been placed at a Ph.D. granting institution.¹⁶ U.S. political science departments, even the very best ones, produce a significant number of students who are not placed at Ph.D. granting academic institutions in the U.S. For example, while Harvard placed 290 of its Ph.D.s in U.S. Ph.D. granting departments, it produced 874 Ph.D.s over this period (a 33% placement rate).¹⁷

But, perhaps even more importantly we see that ranking departments by their total placements conceals the fact that departments differ dramatically in the proportions of Ph.D.s they produce who get jobs in Ph.D. granting departments. In Table 2, we show the top 20 departments according to the ratio of those who get jobs at Ph.D. granting institutions and at the big eight proportion relative to the total number of Ph.D.s produced by that department over the period 1966-2001.

While the "big eight" departments have solid rates of success (an average success rate of 32%)¹⁸ in placing the Ph.D. students they graduate in jobs in Ph.D. granting departments, some departments which produce relatively few Ph.D.s nonetheless have even greater success in placing their Ph.D.s at other Ph.D. granting departments. For example, Cal Tech (95%), UC San Diego (55%), Washington University-St. Louis (39%), SUNY Stony Brook (38%), and UC Irvine (34%) are all more successful at getting their students jobs in Ph.D. producing departments than are Harvard (33%), Princeton (33%), Stanford (33%) or Chicago (32%). One explanation for this placement success may be that each of these departments has (or has had) at least one small specialized high quality program; e.g., formal modeling at Cal Tech, UC San Diego, and Washington University, St Louis; political psychology at SUNY Stony Brook; and democratization at UC Irvine.¹⁹

When we consider the proportion of the total number of Ph.D.s produced that are placed at a big eight school, all departments, including the big eight themselves, show relatively low success rates. Schools place no more than 10 percent of all their Ph.D. graduates at a big eight institution. Big eight schools are generally most able to place at a big eight institution: Yale, Harvard and Stanford all rank within the top five using this ranking method, while the other five schools made the top dozen. However, like the results we found when we examined the proportion of Ph.D. *placements* to a big eight school (Table 3), high production numbers do not always correlate with prestigious placements. Departments that have granted relatively small numbers of Ph.D.s also made the top twenty list: Cal Tech, UC San Diego, Rice and SUNY Stony Brook have all granted less than 100 total Ph.D.s within the last 35 years.

**Table 2: Ranking of Schools According to Placements
at Ph.D. Granting Departments and at “Big Eight” Departments in Terms of Ratio of
Success to Total Number of Ph.D.s produced, 1966 - 2001**

Rank	University	Proportion of ALL Ph.D.s produced who are placed in Ph.D. granting institutions	University	Proportion of ALL Ph.D.s produced who are placed at the big eight
1	Cal Tech	95%	Yale	10%
2	UC San Diego	55%	Cal Tech	10%
3	Yale	42%	Harvard	9%
4	Washington University	39%	UC San Diego	8%
5	SUNY-Stony Brook	38%	Stanford	7%
6	UC Irvine	34%	Princeton	5%
7	Harvard	33%	Rochester	5%
8	Stanford	33%	UC Berkeley	5%
9	Princeton	33%	Chicago	5%
10	Chicago	32%	Michigan	5%
11	Minnesota	31%	Columbia	5%
12	Rochester	31%	Rice	4%
13	UC Berkeley	31%	MIT	3%
14	Michigan	31%	Duke	3%
15	Northwestern	28%	Carnegie-Mellon	2%
16	University of Iowa	27%	UCLA	2%
17	Rice	26%	Cornell	2%
18	Wisconsin-Milwaukee	26%	University of Iowa	2%
19	Wisconsin-Madison	25%	Northwestern	2%
20	UCLA	25%	SUNY Stony Brook	2%

We began this section by reporting correlations between *US News and World Reports* surveys and the older NRC rankings and out-degree in total placements. While those correlations were high, we might hypothesize that the correlations with prestige would be even higher were we to look at placements at the top institutions rather than total placements. In terms of the big eight institutions, we have previously identified three ways to do this: in raw numbers of placements at the big eight, in placements at the big eights as a proportion of all placements, and in placements at the big eight as a ratio to all Ph.D. s produced. When we correlate each of those measures with the 2006 U.S. News and World report basic rankings, we find correlations of .60, .72, and .70 as compared to the previously reported correlation of .72 with total placements. Thus we see that there is little or no difference between the correlation between measures of prestige and total placements and that with placements at the top eight institutions.²⁰

(5) The structure of political science placements creates a pattern of downward mobility.

The distributions of in-degree and out-degree of a network of placements, and the correlation between in-degree and out-degree structure the degree to which there is downward mobility (see Feld, Bisciglia and Ynalvez, 2003). Because there is a greater variation in out-degree than there is in in-degree in political science departments, there are not enough jobs in the high placement schools for the high placement schools to absorb their many students. Thus, schools that place large number of students must be sending many of their students to schools that do not place large numbers of students. Since there is a strong correlation between placements and prestige, then what we can expect to find is a tendency for placements to go downwards (see Feld, Bisciglia and Ynalvez, 2003; cf. Burris, 2004). The “top” institutions produce too many students to place them all at top places, and lower prestige readily hire students from higher prestige institutions with the aim of buying “name brands,” and perhaps, too, increasing their own status.²¹ Tables 1 and showed the extent to which even the top schools are unable to place most of their Ph.Ds at the top schools.. Indeed, in general, we find that 86% of the faculty in U.S. Ph.D. granting political science departments work in departments with fewer placements than the one that trained them. Moreover, even this figure understates downward mobility, since, as shown in Table 2, a very high proportion of Ph.D.s produced by virtually all U.S. departments (with Cal Tech the most notable exception) do not end up teaching up at Ph.D. granting institutions, at least those within the U.S.

(6) Political science placements show strong regional differences.

Table 3(a) shows the raw data for the pattern of regional placements: the ij th cell is the number of placements from region j to region i . This same data is represented in Table 3(b) in percentaged form and, for ease of visualization, shown graphically in Figure 2. We see that each of our four region is more likely to hire from its own region than would be expected by chance alone (i.e., a ratio of 1), with self-hire bias highest in the West (ratio=1.83) and lowest in the Midwest (ratio=1.37).

Table 3(a): Placements by Region (raw data)

hires/places	Northeast West		Midwest	South	Grand Total
Northeast	470	105	189	62	826
West	210	222	166	69	667
Midwest	257	152	349	108	866
South	336	154	321	313	1124
Grand Total	1273	633	1025	552	3483

Table 3(b): Placements by Region (percentages)

hired/places	Northeast	West	Midwest	South
Northeast	13.5%	3.0%	5.4%	1.8%
West	6.0%	6.4%	4.8%	2.0%
Midwest	7.4%	4.4%	10.0%	3.1%
South	9.6%	4.4%	9.2%	9.0%

Figure 2: Regional Breakdown of Placements

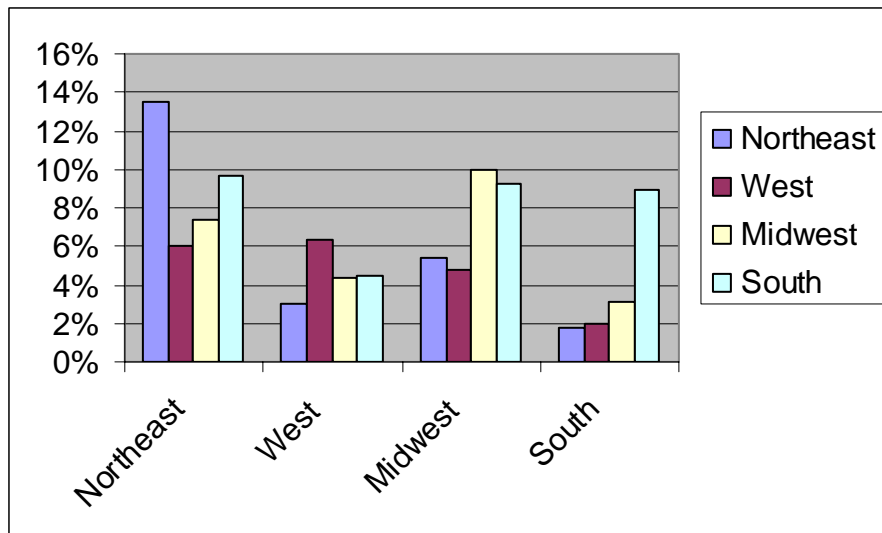


Table 4 shows how region impacts placements in a different way. We see that, on average, relative to their own sizes (in-degree), the departments in the different regions are not equally adept at (generating and) placing students. In particular, northeastern schools place roughly one and a half times as many Ph.D.s in Ph.D. granting institutions as they accept, while southern schools place only half as many Ph.D.s in Ph.D. granting institutions as they accept.

Table 4: Regional Biases in Placements

	Ratio of actual to expected own-region placements	Ratio of placements to hires (out-degree/ in-degree)
Northeast	1.56	1.54
West	1.83	0.95
Midwest	1.37	1.18
South	1.76	0.49

However, despite these regional biases, the majority dominance of the big eight institutions largely cuts across regional lines – with only the partial exception of the South. We show the raw data in Table 5(a) and a percentaged version of that data in Table 5(b). We show the same data in bar chart form in Figure 3, using regions as our unit. The big eight, themselves, include four from the Northeast, and two each from the West and Midwest, respectively. They majority dominate 32 others, including 12 from the Northeast, 5 from the Midwest, 9 from the West, and 6 from the South. The combined set of 40 majority dominate another 63 that are even more proportionally distributed across the regions. However, while all but a handful of schools in the Northeast and the West are directly or indirectly dominated by the big eight, and an overwhelming majority of the schools in the Midwest are also directly or indirectly dominated by the big eight, only 59 percent of the Southern schools are directly or indirectly dominated by the big eight. The rest of the southern schools are majority dominated by the big eight only at second remove. Thus, to paraphrase V. O. Key, southern schools are different – they are more insular than the rest of the profession. But even they are only somewhat insulated from the powerful influence of the top-placing schools.

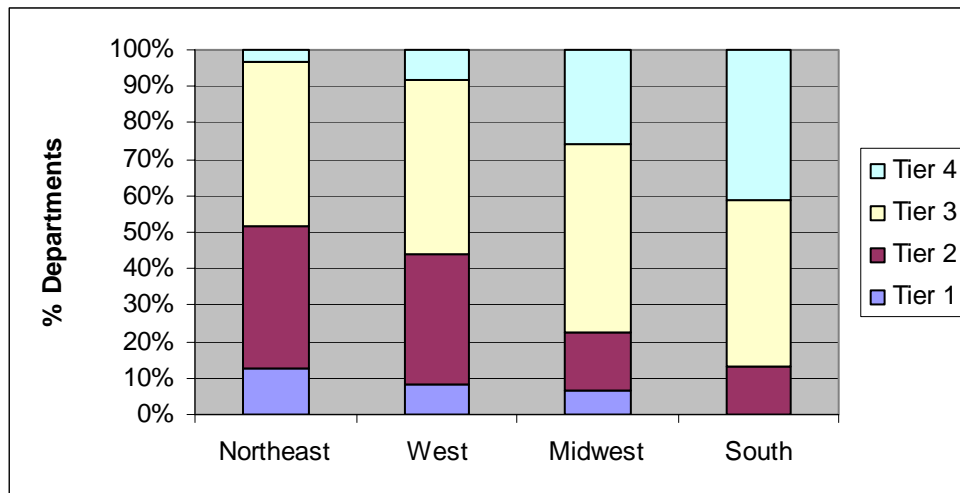
Table 5(a): Placements by Tiers by Region (raw data)

	Northeast	West	Midwest	South
Tier 1	4	2	2	0
Tier 2	12	9	5	6
Tier 3	14	12	16	21
Tier 4	1	2	8	19
TOTAL	31	25	31	46

Table 5(b): Placements by Tiers by Region (percentages)

	Northeast	West	Midwest	South
Tier 1	13%	8%	6%	0%
Tier 2	39%	36%	16%	13%
Tier 3	45%	48%	52%	46%
Tier 4	3%	8%	26%	41%

Figure 3: Regional Breakdown of Placements by Tiers



Discussion

The data we have offered is for a particular point in time. At earlier time points the relative production rates of Ph.D.s and department's success rates in placements were almost certainly different. Yet, we would expect that a similar pattern of vertical organization of ties would be found. Specifically, we expect that success in placements as a long-term factor strongly associated with department prestige, the existence of a very small core set of departments which have direct or indirect majority influence over virtually the entire discipline, and the necessity of

downward mobility for most Ph.D.s, are general characteristics of the structure of American Political Science.

Of course, there are many avenues of interest which this brief essay cannot explore. For example, we have only briefly mentioned the strong positive relationship between a department's prestige and the prestigious departmental origins of its faculty. One might be interested in the multiple processes underlying this association, including the tendency for prestigious departments to be able to hire faculty with prestigious pedigrees, and the tendency for departments that hire prestigious faculty to become prestigious departments themselves. More generally, what are the mechanisms that cause and maintain departmental prestige differences?²² Another area that is worth further exploration is regional differences in placement patterns. For example, it would be interesting to apply traditional social network approaches (such as clique analysis) to our data.²³

Earlier work has shown a pattern of vertical organization in sociology, and suggested that such patterns may be common across disciplines. The unique contributions of the present paper are to show the nature of that pattern in political science and, even more importantly, to demonstrate the new result that vertical organization implies a strong pattern of majority dominance and indirect majority dominance by a small group of elite schools. This lays bare the structure by which the culture of the elite comes to regularly pervade an entire field. It is not just that some departments supply a disproportionate share of faculty to the others; the distribution of those placements enhances elite effectiveness. The fact that the Ph.D. placements of core schools are disproportionately concentrated in high placing schools gives rise to a structure where majority dominance occurs both directly and indirectly. Furthermore, even though there is some distortion by within-region placements, it hardly affects the basic pattern by which the elite effect their influence overall, except for that influence being somewhat more diluted in the South.

We believe that the social structure of academic disciplines, a traditional area of concern in the sociology of science, has been relatively neglected for at least the past two decades, and that this neglect is especially marked in political science. We hope that this paper's emphasis on the vertical organization of ties, and its introduction of the concepts of direct and indirect majority dominance in exchange networks, will contribute to a resurgence of interest in this topic.

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¹ Our choice of majority influence illustrates the phenomenon, but the basic idea goes through if, instead, we shift from majority to supermajorities to specify a cutoff for influence, or if we simply assume that influence of A over j is proportional to the share of j's faculty that comes from institutions in A (see Owen and Gambarelli, 1994). If we do, then the larger the supermajority required for dominance, the larger the core must be to be internally dominated (i.e. to have every department within the core have a supermajority of its members come from the core),

² Of course, in other ways, faculty from a given institution (or set of institutions) need not be cohesive, e.g., in beliefs about the nature of the discipline, or about appropriate methodologies or epistemological perspectives.

³ A comparable data set for the 111 Ph.D. granting departments in sociology consists of 2,054 regular faculty with Ph.D.s on which we have data, of whom 86 (4%) did not receive Ph.D.s from one of these schools, leaving us with an n of 1968. Of this set, 87 (4%) currently work in the department from which they received their Ph.D.s.

⁴ The production data we utilize come from the most comprehensive data sets we could find; while they have limitations they are not severe ones. On the one hand, our data on Ph.D. production most likely overcounted the number of political science Ph.D.s, since the data provided by NSF combines the political science *and* public policy/administration departments at each university into one figure. Thus, schools with large public policy schools are likely to have their production of political science Ph.D. faculty overestimated. On the other hand, the production count may also be slightly underestimated. NSF derives data through two different self-reported surveys--one database uses statistics derived from surveys completed by Ph.D. candidates when they file their dissertation, the other database derives statistics as reported by the university. The self-reported surveys completed by Ph.D. candidates, in particular, may undercount production since it is very likely that not all Ph.D. candidates complete the survey.

⁵ The National Science Foundation did not collect Ph.D. production data in 1999. The number of Ph.D.s awarded during this year is not included in the total count.

⁶ The sociology data is very similar, but the variation not quite as extreme. Ph.D. departments in sociology have a range of 0 to 138 in out-degree, with a mean of 17.0 and a standard deviation of 25.0, for a normalized standard deviation of 1.47. In sociology, as in political science, the top 5 schools (here Wisconsin, Chicago, University of California, Berkeley, Michigan, and Harvard) account for roughly 30% of all placements (29.9% to be more precise). In sociology, each of the top five schools trained at least 87 faculty (4.6%) at other Ph.D. granting departments. The bottom 45 schools in sociology, taken together account for only 78 of the faculty placements at Ph.D. granting departments in sociology (4.1%), which is less than any one of the top 5 producers.

⁷ There are alternative ways to generate measures of this correlation. For example, we might take the correlation between placements of school j to school i with placements of school i to school j as our indicator of this second property, using the set of pairs of departments as our

cases, or we might take individual faculty origins and placements as our set of cases. The way we report in the text has an n equal to the number of departments in our sample. Taking the mean out-degree washes out the "noise" in the variation of the sources and gives us a cleaner indication of the extent to which schools share placement characteristics with the schools of origin of the faculty they hire. In sociology, for example, the correlation for the approach we report using mean values is .70, but the correlation for the third approach (the one using the set of individual faculty as the cases) is only .30, and we would expect the correlation using pairs of departments would be even lower. By looking at means we see that, even though each dept draws from a variety of institutions, there is a very strong tendency for higher-placing departments to draw more from higher-placing departments than would be expected by the raw numbers of faculty placements by these top-placing departments alone.

⁸ Similarly, the 111 PhD sociology department sizes range from 4 to 50 with a mean of 17.0 and a standard deviation of 7.5, which is considerably less than the variation in out-degree we noted earlier: a range from 0 to 138 with a standard deviation of 25.9.

⁹ These proportions are considerably greater than from the average placement proportions of these schools.

¹⁰ We could have used a set of only seven departments and still had a majority of placements at these institutions come from within the set, but adding an eighth department increases the number of departments that are majority covered either directly or at first remove, and thus simplifies our later exposition of majority influence of core institutions. There are also other possible sets that we could have used as the core, but we opted for simplicity in choosing the core institutions as ranked according to their number of total placements. Also, alternatives ways of configuring the core institutions only involve substitutions of one or two universities from the eight we have identified.

¹¹ These eight departments tend to hire largely from each other, with a mean proportion of 77% hires from within the set, ranging from 90% (Berkeley) to 61% Stanford.

¹² Departments which place large numbers of faculty at Ph.D. granting institutions which are not in this set of 40 are Minnesota, Indiana, North Carolina, Syracuse, Washington University, St. Louis, Iowa, Illinois, Texas, Michigan State, and Pittsburgh. Some of these exclusions may be due to the regional patterns of placements we previously identified, especially a strong Midwest placement factor. Thus, while 8 departments have a dominant influence on the discipline, one which corresponds almost perfectly with prestige, other departments can also play an influential role. For example, 114 out of 133 departments (85%) have at least one faculty member with a Ph.D. from one of the 10 institutions listed directly above. Moreover, Ph.D.s from these 10 institutions make up 15% of the total political science faculty. So although these 10 institutions do not place their Ph.D.s at "prestigious" schools (only 6 out of their total of 542 placements went to a "big eight" department), their influence is felt among lower ranked universities.

¹³ We might also note that the 40 institutions with a majority of their faculty from the big eight tend to hire from each other as well, with a mean proportion of 85% hires from within the set, ranging from 100% (Boston College and Cornell) to 57% (Wayne State).

¹⁴ Thus, there are 30 “tier 4” departments.

¹⁵ By comparison, using 2001 data, for the 65 sociology departments for whom data is provided, Feld, Bisciglia and Grofman (2005) report a correlation of .74 between number of placements and ordinal rank in the *U.S. News and World Reports* ranking. They also find that, for the 93 sociology departments that were rated, the correlation between number of placements in Ph.D. granting institutions in sociology in 2001 and the 1993 NRC prestige ratings was .77.

¹⁶ Here we must be careful in that some of the Ph.D.s produced in the 1966-2001 period may no longer be in the set of living /professionally active faculty. Still, using Ph.D.s over this period as our denominator should not bias our results.

¹⁷ So, our previous analysis of downward mobility based simply on the universe of students placed at Ph.D. granting institutions clearly understates the true extent of downward mobility in the profession. Of course, there are prestigious Ph.D. granting departments outside the U.S., and prestigious liberal arts schools which do not have Ph.D. programs, as well as think tanks and other jobs, including jobs in both government and the private sector, that are highly desirable (e.g., National Security Adviser, or President of the World Bank, to name but two). Still, we would expect placements in U.S. Ph.D. granting institutions (especially in the top tier of such institutions) to serve as a very good proxy for departmental success in placements.

¹⁸ Of the “big eight,” we find Yale has the best success rate, at 42%, while Columbia does not quite make the top twenty.

¹⁹ Another explanation may be that students at the top departments are better able to get types of high-prestige jobs other than teaching at Ph.D. granting departments.

²⁰ One explanation for this lack of difference is that the substantial variability in rankings across different types of placements occurs only among a very limited set of schools (primarily in the second and third tiers). Tier 1 schools both place large numbers of students and are successful at prestigious placements. Tier 4 schools place few students and are also unsuccessful at prestigious placements.

²¹ Of course, not all institutions with a high proportion of faculty from prestige departments will themselves be departments with many placements: in part because some departments are less focused on graduate training, and in part because having a high proportion of faculty from prestige institutions is associated with prestige but is no guarantee of it. (In the New Hebrides (now Vanuatu), having lice was taken as a sign of health, but that does not mean that giving lice to people makes them healthy.)

²² Here, as noted earlier, we must be careful not to confuse the correlation of prestige with total placements with causation. As we showed, some schools that do not produce large numbers of Ph.D. students are still able to make prestigious placements.

²³ It would also be interesting, we think, to consider the data on placement exchange networks from the social choice perspective (e.g., ranking schools according to a metric which is analogous to a Borda score).