**Appendix**

**Identifying revisionists and strategies**

Table 1 of the paper lists revisionists, their position in institutions, and strategies. Two characteristics, in particular, define states as revisionists. The first is the capacity to “redraft the rules” of the international system. Many states may dislike the status quo but, for our purposes here, we are only interested in those states that present a plausible challenge to an existing international order. Second, revisionism is also a matter of intent: rising powers need not be revisionist states. We are thus looking for those rising powers who have stated their interest in challenging the rules and norms of the international system.

Capacity and will were used to identify the states in Table 1. Capacity was measured quantitatively, through Angus Maddison GDP data. I included on the list both rising powers and existing great powers. To qualify as a rising power, I looked for an ordinal transformation among the great powers or, in other words, does a rising power surpass one of the existing great powers? To qualify as a “great power,” I looked to see if the state had more than 5% of the collective GDP of the great powers, a measure that, while somewhat arbitrary, captures the need to identify only those rising powers that might be considered contenders for great power status. “Revisionist interest” and revisionist strategies were determined qualitatively. The case studies contain the citations used to determine revisionist intent.

Qualitative evidence was used to designate states’ access and brokerage. I relied on secondary historical accounts of states’ membership in the dominant institutional order, as well as whether they had ties with other subgroups in the international system. A state was coded as having “access” if it was described as having ongoing ties with other great powers, or if it was a member of dominant institutions (alliances, economic arrangements, diplomatic organizations, etc.). I coded a revisionist as having a brokerage position if it was also a member of an important subgroup of institutions, often a member of regional alliances or economic organizations.

**Quantitative Network measures of position**

To model the network structures of the four cases in this paper, I relied on data from the Alliance Treaty Obligations and Provisions (ATOP) dataset. I used the directed-dyad dataset, in order to map both “in-degree” and “out-degree” relations.

Access captures the connections of a state to great powers within a dominant network. I measured access through three network measures of centrality: degree centrality, closeness centrality, and Eigenvector centrality. The degree centrality node is the sum of the value of the ties between that node and every other node in the network, so it is a broad measure of access. Closeness centrality is calculated using the length of the path between a node and every other node. As Hafner-Burton, Montgomery, and Kahler argue, it measures distance between an actor and other nodes, but may miss the *importance* of these connections. Eigenvector centrality corrects for this, by measuring not only the strength of ties, but the centrality of other nodes to which the actor is connected.

Between-ness centrality is used to measure brokerage. Betweenness centrality measures “the number of shortest paths in the network that pass through a particular node, and therefore it measures the dependence of a network on a particular node for maintaining connectedness.” (Hafner-Burton, Montgomery, and Kahler, 564). Here I was particularly interested in looking for between-ness not within the dominant institutional order, but between a dominant order and a sub-order.

The measures below were calculated using NodeXL, and open-source program that allows for network visualization and analysis.

**Case 1: 1821 Russia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Graph Metrics |   |   |   |   |
| Vertex | Country | Degree | In-Degree | Out-Degree | Betweenness Centrality | Close-ness Centrality | Eigenvector Centrality |
| 200 | UK | 4 | 4 | 4 | 0.000 | 0.250 | 0.200 |
| 255 | Prussia | 4 | 4 | 4 | 0.000 | 0.250 | 0.200 |
| 300 | Austria | 4 | 4 | 4 | 0.000 | 0.250 | 0.200 |
| 365 | Russia | 4 | 4 | 4 | 0.000 | 0.250 | 0.200 |
| 220 | France | 4 | 4 | 4 | 0.000 | 0.250 | 0.200 |

This model is the sole departure from the ATOP data, which codes only the Quadruple Alliance of 1815 as a great power alliance. The above relations also include the Holy Alliance and the Quintuple Alliance. This is consistent with the historiography of institutions during the Concert. As Britain’s Prime Minister George Canning argued in There are "three treaties in my view which rule the politics of to-day. The first is the Quadruple Alliance...the second is the ‘Holy Alliance,’..the third is the Quintuple Alliance.” Quoted in Temperley 453. The only structural difference in a model that includes the latter two alliances is that France becomes integrated within the system, which is a more accurate representation of networks in 1821.

The positions in this network model are fairly straightforward (note, there are more ties than represented here, but NodeXL collapses replicating ties into a single tie). Each of the great powers are equally central to the 1821 institutionalized alliance system, and none have brokerage positions.

**Case 2: 1863 Prussia**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Vertex | Country | In-Degree | Out-Degree | Betweenness Centrality | Closeness Centrality | Eigenvector Centrality |
| 200 | UK | 2 | 2 | 0.000 | 0.043 | 0.012 |
| 220 | France | 2 | 2 | 0.000 | 0.043 | 0.012 |
| 300 | Austria | 11 | 11 | 40.000 | 0.077 | 0.099 |
| 240 | Hanover | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 245 | Bavaria | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 255 | Prussia | 10 | 10 | 22.000 | 0.071 | 0.097 |
| 267 | Baden | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 269 | Saxony | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 271 | Wuerttem-burg | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 273 | Hesse  | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 275 | Hesse | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 280 | Mecklen-burg | 9 | 9 | 0.000 | 0.067 | 0.096 |
| 365 | Russia | 1 | 1 | 0.000 | 0.040 | 0.011 |

The above provides the network measures of centrality and brokerage in the 1863 European system. Because this model treats the European system as inclusive of the German states, it overestimates the historical centrality (closeness, eigenvector) of the German powers (simply put, it models relations with the German states as being as important as relations with the great powers). Looking at the model for only the great powers shows Austria and Prussia as equally center among those institutionalized relationships. What is particularly striking are the measures of betweenness, or brokerage: the relations with the German states gives Austria and Prussia a unique brokerage position within the system. Once one considers ties not on this table, Prussia emerges as the sole broker.

**Case 3: the Soviet Union**

For the Soviet case, I created three network models in three time periods: 1930, 1947, and 1950. The institutionalized alliances were difficult to model at this time, given the outstanding effects of World War II. Using these time periods was an attempt to capture institutionalized orders in the interwar period (before Hitler emerged as a threat) and in the early Cold War.

Throughout the three periods, the Soviet Union maintains relatively high between-ness centrality, largely based on exclusive ties in Eastern Europe and Asia. Focusing in on eigenvector centrality, which remains low through these three models, indicates the Soviet’s lack of ties with the major great powers (save in 1947, with lingering World War II alliance ties).

**1930 Europe and the United States**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  Graph Metrics |   |   |   |  |
| Vertex | Country | In-Degree | Out-Degree | Betweenness Centrality | Closeness Centrality | Vertex | Country |
| 2 |  US | 2 | 2 | 0.000 | 0.025 | 2 |  US |
| 200 |  UK | 6 | 6 | 38.400 | 0.032 | 200 |  UK |
| 220 |  FRA | 9 | 9 | 63.267 | 0.038 | 220 |  FRA |
| 255 |  GER | 5 | 5 | 24.333 | 0.034 | 255 |  GER |
| 325 |  ITA | 8 | 8 | 77.967 | 0.037 | 325 |  ITA |
| 365 | RUS | 6 | 6 | 40.667 | 0.031 | 365 | RUS |

**1947 Europe and the United States**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Graph Metrics |   |   |   |   |
| Vertex | Country | Degree | In-Degree | Out-Degree | Betweenness Centrality | Closeness Centrality | Eigenvector Centrality |
| 2 | US |   | 20 | 20 | 0.000 | 0.050 | 0.048 |
| 200 | UK |   | 7 | 7 | 256.000 | 0.022 | 0.000 |
| 220 | FR |   | 2 | 2 | 0.000 | 0.018 | 0.000 |
| 365 | RUS |   | 8 | 8 | 308.000 | 0.022 | 0.000 |

**1950 Europe and the United States**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Graph Metrics |   |   |   |   |
| Vertex | Country | Degree | In-Degree | Out-Degree | Betweenness Centrality | Closeness Centrality | Eigenvector Centrality |
| 2 | US |   | 31 | 31 | 1440.000 | 0.009 | 0.047 |
| 200 | UK |   | 16 | 16 | 1334.333 | 0.010 | 0.005 |
| 220 | FR |   | 12 | 12 | 330.667 | 0.009 | 0.005 |
| 365 | RUS |   | 11 | 11 | 938.333 | 0.008 | 0.000 |

**Case 4: Japan**

The Japan case modeled the global alliance system in 1930, just a year before the Manchurian incident. Japan was embedded in an alliance, an outcome of the Washington Conferences of 1922, with the UK and US. Yet, it retained relatively few ties with these states, and thus low measures of centrality. Moreover, it had no alliance ties outside of the system, and a betweenness centrality score of 0.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Vertex | County | Degree | In-Degree | Out-Degree | Betweenness Centrality | Closeness Centrality | Vertex |
| 2 |  US | 3 | 3 | 3 | 0.000 | 0.017 | 2 |
| 200 |  UK | 8 | 8 | 8 | 108.267 | 0.020 | 200 |
| 220 |  FR | 11 | 11 | 11 | 151.233 | 0.025 | 220 |
| 740 |  JAP | 3 | 3 | 3 | 0.000 | 0.017 | 740 |
| 255 |  GER | 5 | 5 | 5 | 34.867 | 0.021 | 255 |