

Who Talks, and Who's Listening? Networks of International Security Studies

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This article examines the international networks of communication among journals concerned with international security studies. It uses the *Web of Knowledge* database on which journals cited articles in which other journals over the decade 1999–2008, and on the overall impact of each journal in the field as a whole. We discover a complex set of networks, with different central journals exerting influence both overall and within subnetworks, as well as peripheral journals linked weakly to only a few others. Some subnetworks can be distinguished by methodology or theoretical schools. Subnetworks frequently cross geographical lines, including both European and USA journals. No single journal dominates the field.

Keywords network analysis • journal citations • sociology of knowledge • international relations theory

AN ESSENTIAL PART OF DESCRIBING the social and intellectual structure of an academic endeavor lies in establishing the patterns of communication within a broad research field. International security studies is an amorphous field operating across disciplinary, theoretical, epistemological, and national boundaries. Buzan & Hansen (2009: 1) identify it as 'one of the main subfields of Western IR', in turn subdivided by different conceptions of, for example, the importance of the state as maker or object of threat, the character of threat (military, political, environmental, etc.), the centrality of political science, and theoretical, ideological, or methodological schools such as realism, liberalism, constructivism, feminism, rational choice, statistical, interpretive, and so forth. The verbal picture becomes highly complex, as these differences cross-cut one another to form a great matrix of sub-subfields.

In this article, we try to superimpose on these international security studies conversations a certain degree of order as discernible in the patterns of communication represented by citations in journals. This might be done by



looking at individual scholars' citation records, by seeing which scholars are most heavily cited and, more relevant, what other scholars they cite or cite them. In other words, what are the networks of information-sharing within which they operate?

Networks can be analyzed at many levels of aggregation, all the way from individual behavior to such large units as nation-states. Buzan & Hansen are concerned with schools and subschools, which though perhaps heavily influenced by dominant scholars and states, should not be characterized *ex ante* by particular individuals or states. So, in this exercise in network analysis, we treat individual journals as the unit, asking which ones tend to cite each other heavily while paying scant attention to other journals. The result is something like a Facebook of international security studies. Our goal is to provide some information about the degree of unity in the field, and how the most prominent divisions sort out empirically. It is essentially an inductive exercise, done without anticipating any particular answers.

We began with two essential texts: the literal text of Buzan & Hansen (2009) and the web text of *Web of Science*, specifically its *Social Science Citation Index (SSCI)* of international scope.¹ This source reports the frequency of citations between 55 international relations journals and 99 journals in political science, with 11 journals making both lists. Our analysis examines citations during the years 1989–2008: sufficient to provide the most current information possible while smoothing out yearly fluctuations. Given this special issue's focus on the Buzan & Hansen volume, and in order to limit our own subjectivity, we began with Buzan & Hansen's characterization of the field by mentioning 44 journals. The *SSCI* indexes 23 of them.² We did a preliminary analysis of those 23 and then expanded the list in classic network-analysis style – that is, by looking for relationships not only within the original and somewhat arbitrary network but extending outward from the empirical record of citation links both within and outside the initial 'sample'. We found an additional set of 14 journals that showed up as rather heavily citing or cited by those in the initial sample. That addition too necessarily has some arbitrary characteristics, but we tried to be inclusive, with additional political science, international relations, and interdisciplinary journals, of which six are from the USA and eight from elsewhere. Other analysts might develop a somewhat different sample, but perhaps not with dramatically different results. The journals are listed in Table I. For the moment, ignore the column for Impact Factor.

¹ See http://thomsonreuters.com/products_services/science/science_products/a-z/social_sciences_citation_index.

² Others had ceased to exist by 1989, were too recent (established after 2004) to provide comparable information, or were not indexed by the *SSCI*. Some, like the *SIPRI Yearbook*, were not really journals and hence not indexed. Both the *SSCI* and Buzan & Hansen limit themselves to English-language journals. Whether this limitation reflects other indicators of scholarly communication or parochialism across regions and languages cannot be established here.

Table 1: International Security Studies Journals Analyzed, 1999–2008

Journal	Impact Factor
<i>Alternatives</i> ^*	.736
<i>American Journal of Political Science</i> *	3.363
<i>American Political Science Review</i> ^*	4.197
<i>Annual Review of Political Science</i> *	2.414
<i>Australian Journal of International Affairs</i>	.446
<i>British Journal of Political Science</i>	1.628
<i>Bulletin of Atomic Scientists</i> ^*	.439
<i>Conflict Management and Peace Science</i> *	.909
<i>Cooperation and Conflict</i> ^	.200
<i>Defence and Peace Economics</i>	.576
<i>European Journal of International Relations</i> ^	2.360
<i>European Journal of Political Research</i>	2.734
<i>Foreign Affairs</i> ^*	1.777
<i>Global Governance</i> *	.613
<i>International Affairs</i> (London) ^	1.180
<i>International Interactions</i> *	.771
<i>International Journal</i> (Canada)	.271
<i>International Organization</i> ^*	4.110
<i>International Political Science Review</i>	.729
<i>International Politics</i> (Oslo) ^	.048
<i>International Security</i> ^*	2.824
<i>International Studies Quarterly</i> ^*	1.764
<i>Journal of Conflict Resolution</i> ^*	2.093
<i>Journal of Peace Research</i> ^	1.739
<i>Journal of Politics</i> *	1.962
<i>Journal of Strategic Studies</i> ^	.370
<i>Millennium</i> ^	.683
<i>Political Geography</i>	2.375
<i>Political Studies</i> ^	.895
<i>Review of International Political Economy</i>	1.345
<i>Review of International Studies</i> ^	.915
<i>Security Dialogue</i> ^	.800
<i>Security Studies</i> ^	1.024
<i>Studies in Conflict and Terrorism</i> ^*	.849
<i>Survival</i> ^	.528
<i>Terrorism and Political Violence</i> ^	.753
<i>World Politics</i> ^*	3.021

Note: Initial 23 journals (marked with ^) derived from Buzan & Hansen (2009); 10 are US-based journals (marked with *) and 13 Europe-based. The full list comprises 16 US journals and 21 from Europe and other parts of the world. It excludes journals first published after 2004. The right-hand column of the table lists the 2004–08 'Impact Factor' for each journal, that is, the average number of annual citations per article.

We ask four questions of the data: (1) Is the entire network relatively centralized and homogeneous, or do we find evidence of substantial subnetworks, as defined by geography, ideology, policy orientation, etc.? (2) What journals constitute central nodes with wide interactions, as contrasted with specialized journals operating nearer the periphery? (3) What journals are particularly influential – that is, racking up especially high citation counts? (4) What journals share similar patterns of attention to other journals?

We began with a matrix of citations for the 23 journals from Buzan & Hansen, counting as connected all pairs of journals with two or more citations to each other. Citation frequency is only that, not a measure of approval or disapproval of what is cited. We analyzed the matrix using a standard ‘forcing’ algorithm, a simple coherent method meant to produce aesthetically pleasing results in an acceptable manner. It analyzes the strength of attraction or its absence between units in a network. The forcing algorithm works by trying to minimize the distance between journals that are connected by an arrow while simultaneously maximizing the distance between journals that are not connected by an arrow. The relative strengths of these two forces are chosen to return a stable graph.³ The two-dimensional configuration is meant to be reasonably symmetrical within four equal borders. The initial placement of units is done randomly, with a stable final placement produced by convergence after thousands of iterations. The arrowheads indicate the citation direction; that is, $A > B$ means that journal A cited journal B.

Figure 1 shows a somewhat loose network of journals, with a somewhat diffuse central core. This middle group largely comprises US-based journals (blank circles): *American Political Science Review*, *International Organization*, *International Security*, *International Studies Quarterly*, and *World Politics*. European journals (dark circles) are predominantly at the top and lower right, with the top cluster largely ‘realist’, positivist, policy-oriented and topographically near the US journals *Foreign Affairs* and *International Security*, with *Bulletin of the Atomic Scientists* as an extreme outlier. The larger right cluster has most of the European journals, including many of an interpretive and critical character. *Journal of Peace Research* is the only European player in the core, serving as something of a bridge to the *European Journal of International Relations* and to the right-hand European cluster. Not surprisingly, a more complex picture emerges in Figure 2, with the expanded set of 37 journals.

This more inclusive graph shows the realist/policy group shifting from the left to the upper half of the network, with essentially the same constituents as before; the shift in position itself has little substantive importance. The configuration of particular relationships remains quite stable considering the addition of 14 more journals. The core appears somewhat tighter than in Figure 1, but retains its previous membership, now plus *International*

³ Fruchterman and Reingold (1991). Our results with this procedure were robust when compared with an alternative, that of Kamada & Kawai (1988).

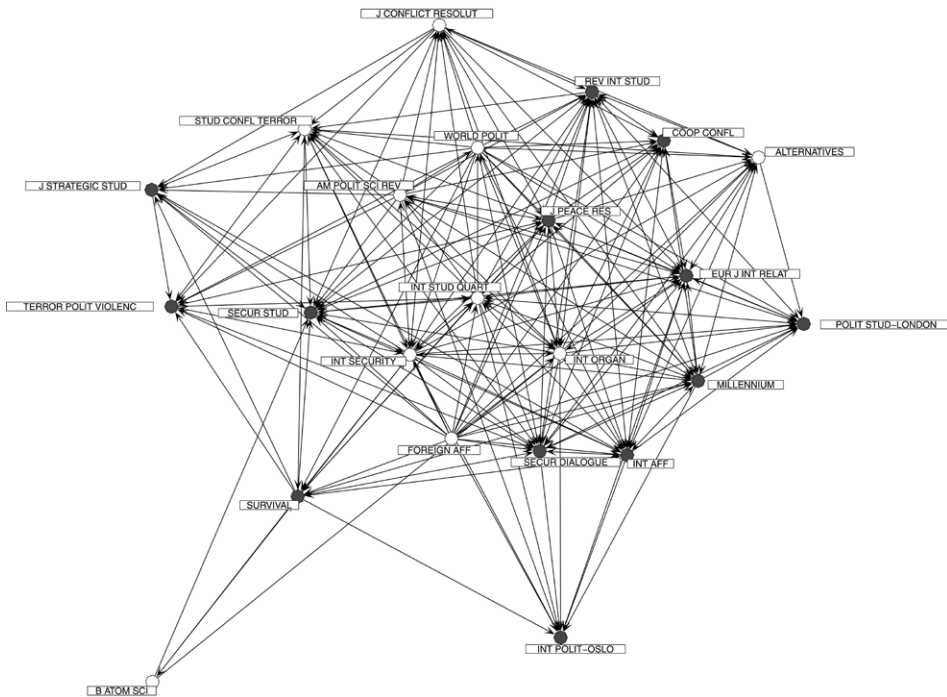


Figure 1: 23 International Security Studies Journals as Identified by Buzan & Hansen (2009)

Studies Quarterly. *Journal of Peace Research* retains a bridge position – now from the left of the center – and *Journal of Conflict Resolution* moves close to the core. A more substantial non-US group now appears across the lower and right sides, augmented by new members of the list: *Australian Journal of International Affairs*, *British Journal of Political Science*, *European Journal of Political Research*, *Global Governance*, *International Affairs (London)*, *International Political Science Review*, *Political Geography*, and *Review of International Political Economy*. *Security Dialogue* is on the right side between the periphery and the core, with its strongest connections mostly with other European journals such as *International Affairs* and *Millennium*. Journals with a positivist and quantitative bent are found on the left-hand side, the group now enlarged by the addition of *American Journal of Political Science*, *Annual Review of Political Science*, *Conflict Management and Peace Science*, *Defence and Peace Economics*, *International Interactions*, and *Journal of Politics*. Several of these are general political science journals that have substantial international relations content but do not specialize in IR.⁴ Their strong linkages result from both their

⁴ Ole Wæver (1998: 702) comments extensively on the national differences between journals, contrasting *International Security* and *International Organization* with *European Journal of International Relations* and *Review of International Studies*. The contrast between the two poles is surely striking, but *International Organization* and *European Journal of International Relations* are much more similar, with most of the differences between them not statistically significant.

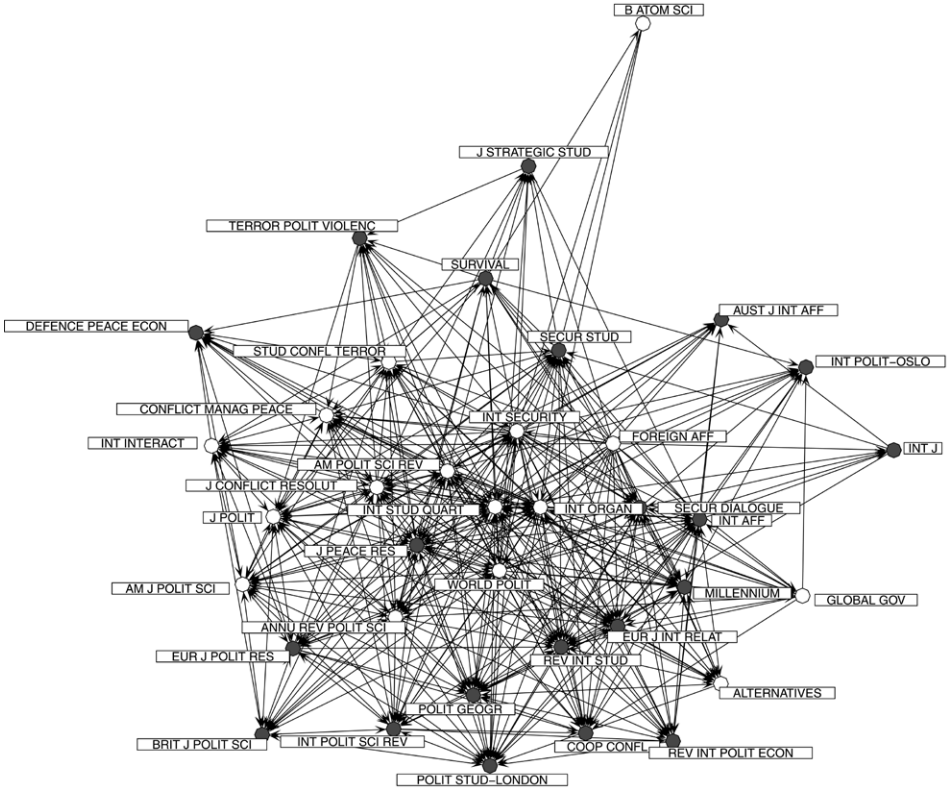


Figure 2: 37 Journals (Buzan & Hansen’s 23, Plus an Additional 14)

contribution to international security studies and their mutual immersion in political science more broadly.

Figure 2 informs us of paths of influence, but not degree of influence. For that, we go to the *Web of Science* compilation of journals’ ‘impact factors’, which is a measure of citations to each journal by all other journals indexed by *Web of Science*.⁵ The impact factor of a journal refers to the average number of citations per year garnered by its articles in other journals, over the most recent five years of data. This constitutes the right-hand column of Table I. The variation is extremely great, from more than 4 annual citations per article to near zero; the mean is under 1.0. Using this information, we reproduce the network depiction of Figure 2 but make the circles reflect relative weights as divided into four categories: 2.0 or more citations; 2.0–1.0; 1.0–0.5; and under 0.5. Figure 3 dramatically shows the results.

Not surprisingly, the high-impact journals are mostly in the middle and are disproportionately US-based. Nevertheless, several Europe-based journals

⁵ ‘Impact’ should be interpreted in this limited way, largely among academic social scientists. Patterns of influence, especially in the policy world, may be very different.

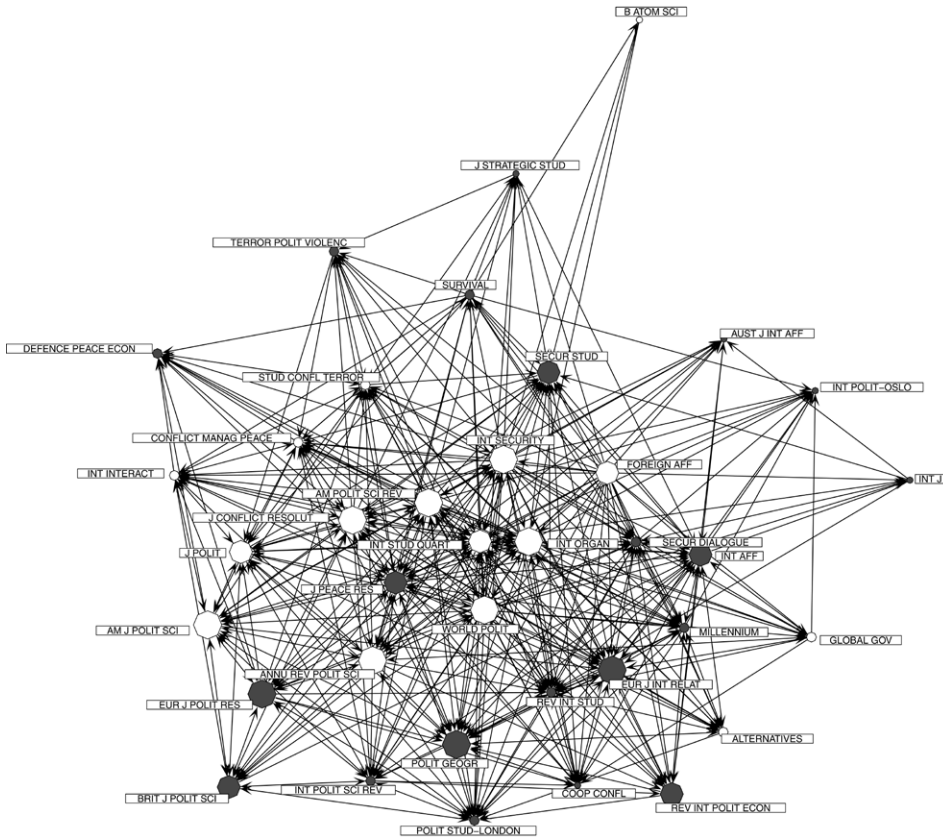


Figure 3: 37 Journals Weighted by Impact Factor

(*European Journal of International Relations*, *European Journal of Political Research*, *Political Geography*) are also heavyweights, and five more are in the next tier.

The citation data can be put to one more use. We computed the correlation matrix for each journal’s citation of other journals in the 37-country set, to produce a measure of similarity of attention. The correlation coefficients for any pair of journals are symmetrical, so there are no arrows in this graph. Most of the correlations were very weak, indicating little similarity. But Figure 4, graphing all the correlations of 0.20 and higher, produces a reasonable image of moderate shared attention. (Two journals with no correlations that high are omitted.)

By this standard, three groupings are apparent. To the left is a group of eight US journals, with a European journal on each side. Toward the bottom is a group of seven or eight European and two US journals. And to the right side is a group of about ten journals of a rather mixed traditional security policy bent. Not very different from what we saw in Figure 2.

war problem. The snapshot by itself cannot tell us how the 'field' of international security studies originated, whether it evolved or fractured, or where it is going.

(2) The initial 'sample' of journals in Figure 1 is from the set deemed relevant by Buzan & Hansen, though limited by the availability of information about their citation patterns on the *Web of Science*. We expanded it with some other journals we found empirically to be linked with many of the initial journals, an expansion again limited by the *Web of Science* criterion. This expansion for Figure 2 doubtless reflects our own subjectivity, but while it increased the size and complexity of the networks it did not fundamentally change the initial configuration of putative influence.

(3) The impact factors, as well as the clustering, reflect influence not just within international security studies, however that is delineated, but overall influence in the wide enterprise of social science (notably in political science, but also in economics and geography, not much in psychology or sociology). This mapping includes only the near parts of adjacent mountain ranges and oceans representing other disciplines. Some of the apparently peripheral units may be substantially linked into other journals that are not part of this particular network. Further expansion or modification of this sample over time and/or space can be done by anyone, but to go beyond the *Web of Science* data will require slogging through many issues of many journals in multiple languages.⁶

From this kind of analysis, we can make only tentative conjectures about the content of what is being communicated in these networks and subnetworks. To what degree are we building something of a consensus about one or more common research programs in international security studies, networking with friends and similar intellects? Are we actively and fractiously disagreeing in an informed way with one another? Or are we largely ignoring those outside our subnetworks? Different readers will have different answers. And, of course, how we normatively evaluate information from this exercise depends on how we believe the field should develop.

One can read the graphics presented here for evidence of hegemony and of diversity. Both interpretations fit within Buzan & Hansen's description of the field in their final chapter: wide though fragmented linkages, substantial integration into political science, but no single focal point within the wider international security studies community. A kind of hegemony can be seen in that big central network of journals from the country that contains by far the world's largest international relations/political science 'industry', and that for better and worse exerts the greatest influence in the world. Still, and as Steven Miller (2010) contends in his contribution to this issue, there is no single US or European perspective. Nor is the full picture one of hegemony by

⁶ Our data and computations are available at <http://www.prio.no/Research-and-Publications/Security-Dialogue/Replication-Data/>.

a single journal power, nor a bipolar system, but a broad multipolar system of about 18 great and middle powers, many of whom are linked to one another by citation 'alliances', yet also clustered with smaller powers into competing alliance subnetworks. Furthermore, half of those great and middle powers are based in Europe, connected in various degrees both with one another and with the United States. One might even find a simulacrum of contemporary US–EU security relations.

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