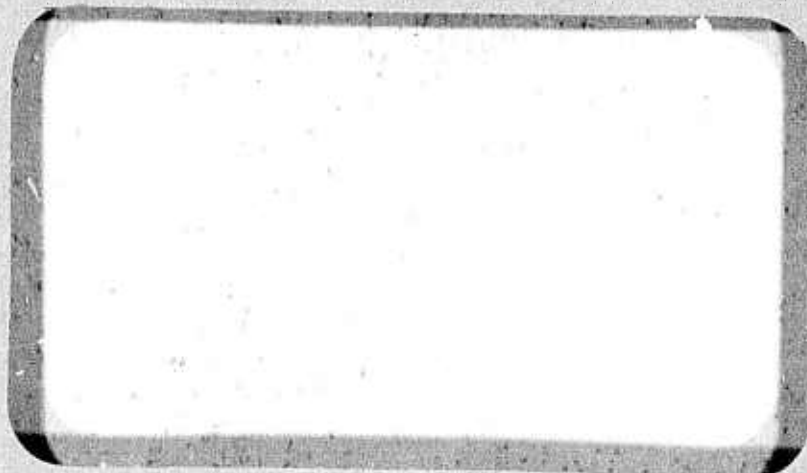


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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER (14) CAC123 - Vol-1	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) (6) Development of Techniques for Multiple Data Stream Analysis and Short-Term Forecasting, Volume I, Multiple Data Stream Analysis.		5. TYPE OF REPORT & PERIOD COVERED (9) Final Report, 1 November 1974 - September 1975
7. AUTHOR(s) (10) Theodore J. Rubin, James Moore Vivian Moore		6. PERFORMING ORG. REPORT NUMBER
8. PERFORMING ORGANIZATION NAME AND ADDRESS CACI, Inc. 1815 North Fort Myer Dr. Arlington, Va. 22209		9. CONTRACT OR GRANT NUMBER(s) (15) MDA903-75-C-0129, ARPA Order-2863
11. CONTROLLING OFFICE NAME AND ADDRESS Same as above		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS (11) 1001/153 15 Nov 75
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) ARPA 1400 Wilson Blvd. Arlington, Va. 22209		12. REPORT DATE (12) 88 p.
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		13. NUMBER OF PAGES 72
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
18. SUPPLEMENTARY NOTES		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) multiple data stream analysis national security community event data crisis forecasting quantitative indicators defense analysis event analysis		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The work builds on prior research on the coding of event data and the development of quantitative indicators for defense analysis. The multiple data stream analysis is based on event data coded from the daily New York Times and The Times of London from mid-1971 to mid-1974. The analysis illustrates the similarities and differences in the international interests, attention, and viewpoints of the United States and United Kingdom as reflected in these public media sources.		

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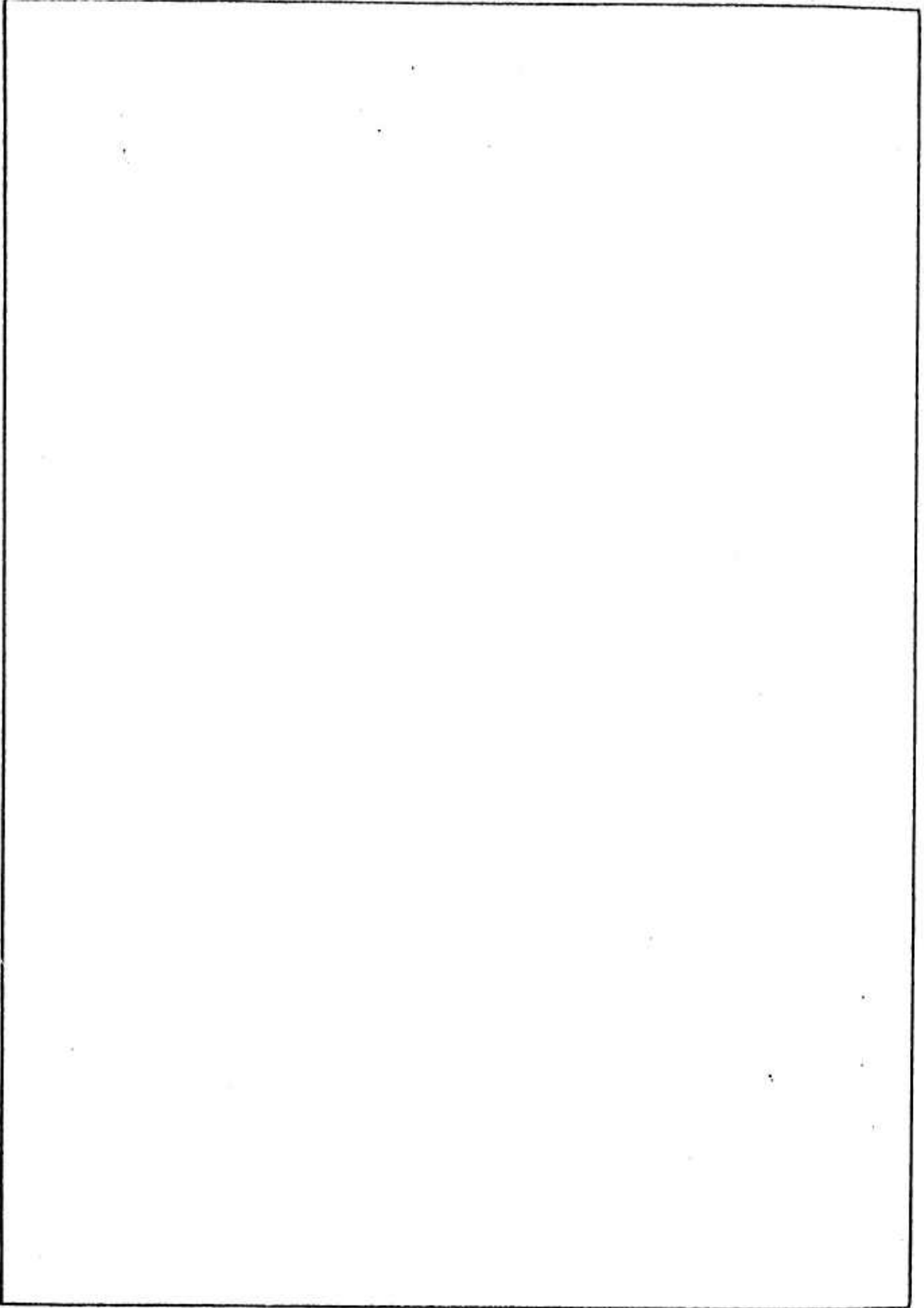
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FINAL REPORT
November 15, 1975

DEVELOPMENT OF TECHNIQUES FOR
MULTIPLE DATA STREAM ANALYSIS AND SHORT-TERM FORECASTING
VOLUME I

Sponsored by:
Defense Advanced Research Projects Agency

ARPA Order Number	2863
Program Code Number	5W10
Contractor	CACI, Inc. 1815 N. Fort Myer Drive Arlington, VA 22209
Effective Date of Contract	1 November 1974
Expiration Date of Contract	15 September 1975
Contract Number	MDA903-75-C-1029
Principal Investigator	Theodore J. Rubin (805) 965-0076

This research is sponsored by the Department of Defense under Contract No. MDA903-75-C-1029 monitored by the Defense Advanced Research Projects Agency. Views and conclusions contained in this report should not be interpreted as representing the official opinion or policy of the Department of Defense.

Distribution Statement
Approved for public release: Distribution unlimited.

PREFACE

This report describes research performed for the Defense Advanced Research Projects Agency, Human Resources Research Office, on development of techniques of event analysis and its application within the national security community. It is part of a larger project which included both multiple data stream analysis (MDS) and short-term forecasting.

The work reported herein is concerned with the development and analysis of multiple data stream techniques. It builds on prior research devoted to the coding and collection of event data and the development of quantitative indicators for defense analysis. The continuing objective of this program of research has been to develop event analysis which is useful to the national security community as a means for systematically recording, analyzing, and forecasting significant international phenomena.

The work is of interest to agencies involved with the management of foreign affairs and national security programs.

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EXECUTIVE SUMMARY

OBJECTIVE AND APPROACH

This project focuses on the potential utility of systematic review of media sources within societies as a guide to projection and understanding of national security behavior. This is part of ongoing ARPA efforts to identify tools which will enhance the capacity of the Department of Defense to forecast, plan for, and understand the policies of foreign governments which impinge on U.S. defense interests.

Two major research efforts were made in the study:

- A literature review of comparative analyses of media coverage was undertaken to prevent unnecessary research duplication and determine the current level of knowledge about the capacity of media to reflect policy orientation of non-authoritarian states.
- Systematic comparison of the reporting and tone of events in two key, non-controlled news sources (The New York Times and The Times of London) was undertaken to review their meaningfulness as guides to the national security behavior of governments.

FINDINGS

At the most general level, the findings are very promising--the key media sources are found to produce accurate, interesting, and precise descriptions of the scope, tone, and orientations of the national security policies of governments. They differentiate on both empirically clear and intuitively satisfying grounds between the general views of the world of national governments. While the results must be interpreted with care since these are free press sources, their efforts to cover top decision-makers and the use of news media as policy outlets by policy-makers appear to result in systematic patterns of perceptions and policy statements

which can be projected over time, make sense in terms of substantive analysis down to the issue-specific level, and hold out some promise as predictive policy variables.

The fundamental conclusion of the analysis, stripping aside the normal social science caveats, is that even in free societies with uncontrolled press, key media can be located which present a realistic portrait of the national security orientation, focus of attention, tone and attitudes of government bureaucracies across a spectrum of issues. There is some evidence that the efforts of both media (to report policies and changes in policies promptly and accurately) and policy-makers (to communicate policies and their rationales in a timely and accurate manner to the population and its parliamentary representatives) result in early and accurate signals of policy changes in key media sources.

The comparison of The New York Times (NYT) with The Times of London (TOL) resulted in several important specific findings:

- During the period covered in the analyses (mid-1971 through mid-1974) NYT reporting of international affairs became deeper, while TOL reporting remained roughly stable. This trend reflects U.S.-Southeast Asian involvement and is broken in early 1974 as disengagement becomes a reality.
- In general, the TOL reports a somewhat more pessimistic view of the international situation, while the view of the NYT becomes more optimistic as U.S.-Vietnam involvement winds down and policy initiatives of the Nixon administration come to fruition.
- The regional differences in coverage of the two sources are consistent with the current levels of involvement, historical relationships, and geographic locations of the two governments.
- There is considerable similarity between the patterns of specific country and dyad (country-pair) reporting in the NYT and TOL. Differences are readily explained in terms of historical relationships, geography, and specific current involvements.
- Expressions of perception of friendship or hostility of third countries corresponded in over three-quarters of

the cases examined. Where differences occurred, however, they tended to be large, reflecting genuine disagreement about the activities of other states.

- The actions of the United States toward the United Kingdom and of the United Kingdom toward the United States show meaningful patterns over time in both sources. Differences in those patterns suggest that lag/lead variables (predictors) can be defined. In-depth analyses of specific issues--for example, defense, energy, and economic policy--confirmed this pattern and suggested that it related to the behavior of policy-makers at the highest levels.
- Analysis of the similarities and differences of alignment toward third countries shows considerable correspondence between sources as would be expected given the similar international postures of the two countries; but important differences also exist. The NYT sees Britain as closer to France; the TOL sees the United States as closer to France. The TOL views the United Kingdom as slightly negative toward Israel, while the NYT sees a considerably more negative orientation for that country.

Multiple data stream analysis is a potentially powerful tool for the creation of an explicit, sensitive monitoring system for national security orientations and policies. Even in countries with a free press, the desire for effective communication and press coverage appears to produce a solid "trace" of policy, including leading indicators of policy change. The research performed in this study suggests that validation of the tentative finding should be undertaken by exploring the policy profiles of several different countries according to experts and selected media sources.

TECHNICAL SUMMARY

The formal task statement for this portion of ARPA Contract Number MDA903-75-C-0129 is shown below. This is part of a larger project involving the development and evaluation of other techniques for projecting and understanding national security policies and behaviors of governments as they relate to Department of Defense needs.

MULTIPLE DATA STREAM RESEARCH

Task 1. CACI will perform comparative analyses based on both the New York Times (NYT) and The Times of London (TOL) event data sources as follows:

- a. A literature survey will be performed to assess previous research in the area of inter-source comparisons,
- b. A comparative source analysis will be performed of interactions between the United States and the United Kingdom,
- c. Comparative source analysis will be performed of interaction between other pairs of international actors, and
- d. Comparative source analysis will be performed of interaction between the United States and the United Kingdom and other international actors.

Task 2. Based on the results of Task 1, the principal similarities and differences between the sources in both scope of coverage and point of view will be identified and evaluated.

Task 3. The potential utility of multiple data stream analysis (MDS) as a technique for providing unique information to the Department of Defense from available foreign sources will be assessed.

Dissemination of Results

Task 1. Results of the study will be reported in an interim technical report and final technical report.

Two major components of research were undertaken--the literature survey (reported in Appendix A) and the systematic review of the coverage of the NYT and TOL using multiple data stream analysis.

The technique for event data analysis studied in this project is the treatment of public news media sources of different national origins as reflecting the perceptions, interests, and viewpoints of the originating countries. We term this approach multiple data stream analysis. It is contended that similarities and differences present in such media sources are indicative of official national similarities and differences and therefore can provide insight into present and prospective international behavior patterns. Specifically, it is assumed throughout that countries act on the basis of their own views rather than on the basis of any other reality. Therefore, we are well advised to identify the views of others as a means of anticipating the nature of their ongoing international participation. While the use of public media views as surrogates for official views must always be with caution, it is the purpose of this research to assume that some degree of substitutability is reasonable, estimate the correctness of that assumption, and, where possible, illustrate the kinds of unique information such an approach may provide on selected matters of national security concern.

DISCUSSION OF RESEARCH PERFORMED

The MDS research reported here is based on the use of two public media sources, the daily NYT and TOL. These sources were selected because they had previously been subjected to event data coding, thus requiring no further data development for project purposes. Data were available for both sources for the 36-month period from July 1971 through June 1974. A series of comparative analyses were performed, variously employing frequency distributions of the raw event data, summary indicators which depict the friendliness to hostility of international behavior, and English language abstracts of the event coding. Comparative analyses

were performed to answer a series of research questions. The findings illustrate the inferences regarding the similarities and differences in national interests, attention, and points of view which may be derived from multiple data streams.

The research questions were stated below, each followed by a summary of findings. The findings are couched in terms of U.S. and U.K. international behavior. It should be emphasized, however, that the findings are in fact U.S. and U.K. behavior as deduced from reports in the NYT and TOL.

What Were the U.S. and U.K. Views of Overall International Affairs Between Mid-1971 and Mid-1974?

The United States viewed this period as one of increasing international activity and declining animosity, apparently because of the emphasis on reconciliation with China, detente with the Soviet Union, and extrication of the United States from combat in Southeast Asia. The United Kingdom did not consider this period atypical in activity or hostility until the Yom Kippur war and oil embargo. Following these episodes the U.K. view of international affairs was substantially more negative than that of the United States.

What Regions, Countries and Country Pairs Drew the Interest and Attention of the United States and United Kingdom During This Period?

Geographic considerations appeared to dominate differing regional distributions of U.S. and U.K. actions toward the world. Europe was the paramount target of the United Kingdom while Asia was paramount to the United States. However, strategic and historical considerations appeared to be present as well. For example, within Europe, the United Kingdom directed about twice as much attention to its former colonies as did the United States. Overall, the priorities of interests of the two countries, as expressed by their actions during this period, appeared to be quite different. On the other hand, with regard to following the actions of other countries and interactions between other pairs of countries, the United

States and the United Kingdom manifested a generally similar pattern of attention. Both countries concentrated attention on and between countries which are major world powers and/or were directly or indirectly involved in conflict situations.

How Did the United States and the United Kingdom View the Friendliness to Hostility of Actions Flowing from Each Other to Third Countries and from Third Countries Toward Each Other?

In this analysis, the principal acting country, either United States or United Kingdom, was assumed to represent its own actions accurately. The other principal, as an "observer," was assumed to "misinterpret" the action if its reports did not reflect a degree of friendliness or hostility similar to that of the actor. Similarly, as recipients of the actions of third countries, the principal's views were assumed accurate and the observer's either similar or a misinterpretation.

The findings indicated correspondence between the views of the United States and the United Kingdom in 79% of all cases examined. Interestingly, however, the misinterpretation that existed in the remaining cases tended to be large (17% of the cases) rather than small (6% of the cases). The implication is that different interpretations form the foundations for subsequent actions between the principal countries and from them toward others. To the extent that their views differ, so may their future behavior--even if they are otherwise similarly disposed toward the issues involved.

What Were the U.S. and the U.K. Views of the Friendliness to Hostility of Their Own Interaction During This Period?

In this analysis, the policy style measure was employed to indicate the quality of actions initiated and received between the principal countries, the United States and the United Kingdom, over the 36-month time period. This case is unique in that the United States and the United Kingdom are

the countries of origin of the two media sources employed. It was therefore treated in greater detail than any other, being considered illustrative of the kinds of analyses possible were multiple data stream techniques extended to additional sources representing other countries.

The initial finding was that both the United States and the United Kingdom viewed their policy styles toward one another similarly over the 36 months. However, during portions of the overall period a counter-intuitive lead-lag relationship was evident, that is, the target country seemingly anticipated the actor country's policy style toward itself. In examining this in detail, it was found that these temporary lead-lag phenomena were related to the differing presence of and emphasis given to specific subjects in the interaction of the pair, as viewed by each party. Since it was also found that the style or quality of interaction on each subject was similarly viewed by both parties, it was evident that different subject emphasis was the basis of the leads and lags. Further, it was during periods when attention to subjects equalized that the lead-lag phenomenon disappeared. Some further evidence was developed showing that the style of the country emphasizing higher level bureaucratic actions (policy initiating actions) on a subject leads the style of the country emphasizing lower level bureaucratic actions (policy implementing actions) on the subject.

The implications of these multiple data stream findings are that lead-lag phenomena in the quality of a relationship are subject and, perhaps, bureaucracy related, and tend to be transitory. This phenomenon and its explanation, however, does provide guidance as to how MDS analysis between principal countries might be used predictively in the short term.

How Did the United States and the United Kingdom View the Friendliness to Hostility Between Other Pairs of Countries During This Period?

With respect to the interaction of other pairs of countries (for example, the Soviet Union and China), both the United States and the United Kingdom are observers. We wish to ascertain how similar or different are U.S. and

U.K. views of such pairs in order to compare their current assessment and to anticipate their future behavior toward situations evolving between other countries.

The U.S. and U.K. views of relations between eight country pairs over time were employed as cases in this analysis. The country pairs selected were those manifesting armed conflict during the period under examination and/or having an ongoing history of hostility. For the entire time period, close correspondence was found between the inferred U.S. and U.K. assessments for six of the eight cases and lack of correspondence was not unreasonably large for the other two cases.

During various segments of the total time period, however, there were seemingly different assessments in three of the eight cases. As in the case of the U.S.-U.K. analysis, it is in identifying these short-term incongruencies where the multiple data stream approach may prove most useful, if our assumption is correct that a country's future actions are based on the reality of its own current views. For example, prior to the Yom Kippur war, the United Kingdom viewed relations between Israel and Egypt as improving while the United States viewed them as declining steadily. Apart from the fact that in this instance the U.S. view was a better predictor of what followed, the United Kingdom apparently viewed the evolving situation as less urgent. Under such circumstances, would the United Kingdom act in concert with the United States to avert or manage a crisis it did not view as imminent? Incongruence in views, therefore, signals the need and provides the opportunity to review a situation in detail prior to rather than after the fact of crises.

What Were the Alignments Between the United States and the United Kingdom Toward Other Countries During This Time Period?

In this analysis, the alignment of the United States and the United Kingdom toward another country was measured as the difference between their policy styles toward that country. Alignment is most properly measured by the differing quality of actions each country reports initiated

toward another country. We term this the signalled alignment. Additionally there are the U.S. and U.K. views of alignment which are based on their own reported actions and their observations of actions initiated by the other. The signalled alignment can be considered to be truer and can be contrasted with separate U.S. and U.K. views.

Because of the generally similar international positions of the United States and the United Kingdom, their signalled alignments in 75% of the 21 cases examined tended to be close to very close. Of greater importance, however, are cases where the U.S. and U.K. views of alignment differ even though the signalled alignment is close. For example, the United States viewed U.K. behavior toward France as much more friendly than its own, while the U.K. view was just the opposite. This type of finding further emphasizes a previously stated implication. Where views differ, so may the subsequent behavior of the principals involved, if they act in accordance with their own reality. Through multiple data stream techniques, monitoring for incongruencies between views can help identify possible areas of future policy differences which may be detrimental to U.S. national security interests.

MULTIPLE DATA STREAM RESEARCH

INTRODUCTION

The research findings reported herein are based on selected comparative analyses of international affairs information reported in two public media sources, the daily New York Times (NYT) and The Times of London (TOL). These sources are similar in that both are leading, globally oriented newspapers produced within countries, the United States and the United Kingdom, respectively, which have long traditions of a free press. As such, news reported in the two sources may be assumed to overlap only partially with official governmental views of international affairs. Nevertheless, in the analyses it will be assumed that these media are surrogates for officialdom in order to suggest how such analyses might be interpreted were they based on news sources emanating from countries which exercise control over media reporting, that is, countries in which the media serve the role of governmental spokesman. The thrust of the analyses will be to determine the similarities and differences between the United States and United Kingdom, as inferred from the NYT and TOL, respectively, in their geographic interest and attention, and in their views of international relationships, including their own.

This approach to the use and comparison of multiple sources of event data differs substantially from prior analyses. A survey of representative research studies on intersource event data comparison, reported in Appendix A, shows an emphasis on other objectives. Specifically, use of multiple data sources has been previously viewed primarily as a means to:

- Increase the comprehensiveness of reporting coverage and enlarge the total data base available for analysis;
- Reduce bias in interpretation by integrating different points of view; and
- Provide a means to validate events through multiple observations.

All these objectives are directed primarily toward a determination of the "true" international situation.

On the other hand, the objective pursued in the current research is toward exploiting rather than reducing differences which exist among sources. The intent is to consider each source as representing unique interests and points of view relative to international affairs, to examine source similarities and differences, and in so doing, to attempt to infer the commonalities and oppositions that are implied between the countries that the sources represent. It is assumed that for many purposes it may be more important to be aware of the similarities and differences between the views of countries than to be aware of the "true" state of foreign affairs.

All of the international event data employed in the analyses were previously coded from the NYT and TOL in the standard World Event/Interaction Survey (WEIS) format.¹ The WEIS coding elements include the actor country and the target country for each event (which is itself coded into one of 63 potential event categories) and the date the event was reported as taking place. For the analysis of interaction directly between the United States and the United Kingdom additional coding was performed on both sources to identify the principal subjects (or issues) of interaction. All analyses were performed variously using the raw event data, aggregate indicators developed from the event data, and the English language abstracts of the events which are prepared as part of the event coding process.

¹ WEIS is the acronym for World Event/Interaction Survey, a program conducted under ARPA sponsorship at the University of Southern California and directed by Professor Charles McClelland. Event coding of the NYT which originated at USC has been conducted by CACI, Inc., since 1972. Event coding of TOL continues by Professor McClelland to whom we are indebted for making the TOL data available for our use.

The time span of analysis is 36 months, from July 1, 1971, through June 30, 1974. While for some purposes a longer time span might have been preferable, this particular period represents the maximum period for which data were available to the project from both sources. For this 36-month period the total event data yield from the NYT was almost exactly double that of the TOL (30,925 events vs. 15,279 events, respectively).

The findings of the MDS analyses are organized below in terms of a series of general questions posed to the data. Emphasis in the findings is on the similarities and differences between the U.S. and U.K. viewpoints presented in or inferred from the two sources. The assumption throughout is that countries tend to act in terms of their own views rather than in terms of any other reality. Therefore, similarities and differences in current viewpoints are likely to precede similarities and differences in subsequent courses of action.

MDS FINDINGS

What Are the Trends in the Overall Character of International Affairs Between Mid-1971 and Mid-1974 as Conveyed by the NYT and TOL?

Most questions posed to the data were analyzed in terms of both event frequencies, which represent magnitudes of reported interaction, and event frequency ratios designed to represent the friendliness to hostility of interaction.

Table 1 displays the total worldwide event frequency reported in each of the two sources by six-month intervals during the available three year span. The number of TOL events in each period is relatively constant but NYT event totals show a continuous increase except for the last six month period. The ratios of these frequencies in Table 1 show the variation from period to period of NYT event reporting relative to that of TOL. Key international episodes of importance to both countries appear to the right of the table.

TABLE 1
Worldwide Event Frequency, Mid-1971 to Mid-1974

Time Interval	Total Events Reported, Worldwide			Key International Episodes
	<u>NYT</u>	<u>TOL</u>	<u>NYT</u> <u>TOL</u>	
1971, 2nd half	3783	2709	1.4	UK joins Common Market India-Pakistan War
1972, 1st half	4274	2786	1.5	Nixon visits Peking & Moscow
1972, 2nd half	5466	2329	2.3	
1973, 1st half	5939	2564	2.3	Truce in S.E. Asia E. German-W. German Treaty
1973, 2nd half	7393	2729	2.7	Yom Kippur War Arab Oil Embargo
1974, 1st half	4070	2162	1.9	
Total, 36 months	30,925	15,279	2.0	

Two possible and related explanations of the increasing trend in NYT worldwide coverage are:

1. The emphasis placed by the Nixon administration on foreign affairs and peacemaking, highlighted by reconciliation with China, and
2. The managed winding-down of U.S. military activities in Southeast Asia, coupled with close scrutiny by the press of U.S. involvement there.

Since neither of these factors would necessarily be expected to be as heavily reported in the United Kingdom, TOL event coverage might well be expected to be less changeable than NYT coverage over the period under examination.

Table 2 tends to lend substance to these explanations. Here, worldwide values for the relations indicator are displayed for the same time intervals as in Table 1. Note that there is an improving trend in worldwide relations as derived from NYT reports, beginning in 1972. (The relations index is increasingly less negative.) On the other hand, worldwide relations, as derived from the TOL, are virtually constant except for the second half of 1973 when the Yom Kippur war took place and the Arab oil embargo began. The latter episode had much more immediate and traumatic effects on the United Kingdom and its foreign relations than on the United States.

The difference between worldwide relations values also appears in the table. This index shows the relatively greater negative perspective of the TOL during and subsequent to events during the last half of 1973.

The overall implications of these two displays are that from the U.S. point of view (NYT):

- The period under examination was one where expanded attention to and activity in "peacemaking" in foreign affairs resulted in a continuing reduction in worldwide hostility--notwithstanding the occurrence of war in the Middle East.

TABLE 2
Worldwide Event Relations, Mid-1971 to Mid-1974

Time Interval	Worldwide Relations			Key International Episodes
	NYT	TOL	NYT minus TOL	
1971, 2nd half	-.34	-.24	-.10	UK joins Common Market India-Pakistan War
1972, 1st half	-.41	-.29	-.12	Nixon visits Peking & Moscow
1972, 2nd half	-.34	-.27	-.07	
1973, 1st half	-.25	-.25	0	Truce in S.E. Asia E. German-W. German Treaty
1973, 2nd half	-.20	-.40	+.20	Yom Kippur War Arab Oil Embargo
1974, 1st half	-.08	-.27	+.19	
Average, 36 months	-.27	-.29	+.02	

From the U.K. point of view (TOL):

- Nothing sufficiently atypical characterized this period or resulted in more than marginal variation in attention to foreign affairs or in the quality of foreign affairs, except the impact of the Yom Kippur war and the associated oil embargo.

What Are the Foci of U.S. and U.K. Geographic Attention and Interests as Conveyed by NYT and TOL?

The question of national interest or attention can best be addressed in terms of the geographic distribution of a country's worldwide actions relative to its own location. Both the United States and United Kingdom are acknowledged world powers, or at least in the case of the United Kingdom, internationalistic in interest. Table 3 displays the distributions of actions of both countries toward the world divided into four major geographic aggregates plus organizations (such as NATO, U.N., etc.), as reported by their own media. The table clearly shows the major differences in attention of the two countries. During the period of interest, the United Kingdom directed about two-thirds of its actions toward Asia and various international organizations. These differences are apparently dominated by geographic factors, including the location of the U.N. in New York.

Table 4 provides a more detailed view of the same information. At this greater level of target detail, it is seen that predominance is not geographically based but is also a function of strategic and historical **factors**. For example, in Europe, which is the predominant interest of the United Kingdom, the United States nevertheless directs more than twice as much of its total attention to the Soviet Union than does the United Kingdom. On the other hand, in Asia, which is the predominant interest of the United States, the United Kingdom directs about twice as much attention to its former colonies than does the United States. Only with respect to China and the Middle East is the relative attention of the United States and the United Kingdom about the same.

TABLE 3
Aggregate Distribution of U.S. and U.K. Actions,
Mid-1971 to Mid-1974

TARGET	Percent of total actions	
	U.S., in <u>NYT</u>	U.K. in <u>TOL</u>
Western Hemisphere, include U.S.	4.6	6.5
Europe, include U.K.	18.3	48.5 ^a
Africa	9.5	18.6 ^a
Asia	40.1 ^a	13.1
Organizations	27.4 ^a	13.1
TOTAL	99.9	99.8

^a Predominant in attention

TABLE 4
Distribution of U.S. and U.K. Actions to 15 Target Groups,
Mid-1971 to Mid-1974

TARGET	Percent of total actions	
	U.S., in <u>NYT</u>	U.K., in <u>TOL</u>
Western Hemisphere		
U.S.	---	4.4
North and Central America	2.7 ^a	1.2
South America	1.9 ^a	.9
Europe		
U.K.	.9	---
USSR	8.5 ^a	3.6
Other Europe	8.9	44.9 ^a
Africa		
Middle East	7.6	7.2
North Africa	.9	1.7 ^a
All other Africa	1.0	9.7 ^a
Asia		
China	2.0	2.1
Japan	2.4 ^a	.9
India, Pakistan	2.2	4.1 ^a
S.E. Asia	30.6 ^a	.9
All other Asia	2.9	5.1 ^a
Organizations	27.4 ^a	13.1
TOTAL	99.9	99.8

^a Predominant in attention

The United States and United Kingdom might be considered more closely akin in viewpoint than most countries because of their common heritage and culture and similar economic and political philosophies. But in foreign affairs their interests appear to be dominated by geography plus historical and strategic factors. The implications of these two displays are that from the U.S. point of view:

- S.E. Asia, the Soviet Union, and the Middle East were paramount foci of its interest during the period in question, along with participation in international organizations.

From the U.K. point of view:

- Europe transcends all other interests in importance, with moderate attention paid to the Middle East and ex-colonial Africa as well.

These distributions define very different sets of prioritized interests as between the United States and United Kingdom.

What are the Comparative Interests of the United States and the United Kingdom in Other Actor Countries as Conveyed by the NYT and TOL?

Another aspect of the attention and interest of the two countries, besides the distributions of their own actions, is their attention to the actions of other countries. Table 5 presents information which permits comparison between the United States and the United Kingdom in this aspect of international attention during the 36 months under examination.

Table 5 was constructed by listing the 25 highest ranking countries in the NYT relative to number of actions they reportedly initiated. The percentage of total NYT reported actions attributed to each actor is also shown. In the last two columns of Table 5 the corresponding ranks and percentages for each country in the TOL are shown where the country is also among the leading 25 actors in the TOL. Those countries in the TOL's leading 25 which are not common to the NYT list are appended at the bottom of the table.

TABLE 5
Leading Actor Countries as Viewed by U.S. and U.K.,
Mid-1971 to Mid-1974

Actor Country	<u>NYT</u>		<u>TOL</u>	
	Rank	% of total actions reported	Rank	% of total actions reported
USA	1	19.8	1	10.1
Vietnam/North	2	9.1	5	5.4
Vietnam/South	3	6.1	6	4.6
Soviet Union	4	5.8	3	5.6
Israel	5	5.1	4	5.5
United Arab Republic	6	3.3	7	3.8
China People's Republic	7	2.7	9	3.1
United Kingdom	8	2.0	2	7.6
Cambodia	9	2.0	18	1.1
India	10	2.0	10	3.0
Japan	11	1.9	17	1.2
France	12	1.8	11	2.9
Pakistan	13	1.6	12	2.3
Germany/Fed. Republic	14	1.6	8	3.2
Syria	15	1.6	13	2.1
Canada	16	1.1		
Laos	17	1.0		
Lebanon	18	.8		
Libya	19	.8	16	1.3
Saudi Arabia	20	.7		
Korea/South	21	.7		
Jordan	22	.7	22	.8
Australia	23	.6	20	.9
Chile	24	.6		
Germany/Dem. Republic	25	.6	21	.8
Uganda			14	2.0
Iceland			15	1.8
Malta			19	.9
Zambia			23	.7
Iraq			24	.7
Italy			25	.7
Total	25	75.6	25	68.3

This table shows great similarity between the NYT and TOL as follows:

- Nineteen of the 25 leading NYT actors are also among the leading 25 TOL actors.
- The leading 25 actors in each source (16% of all actors) are responsible for 75% of all actions reported by the NYT and 68% by the TOL.
- The 19 actors common to both lists consist exclusively of countries which are the world's leading powers and/or were involved in active conflict during the period of interest.

Therefore, most of the actions reported by both sources are concentrated in a relatively small fraction of all potential actors, and these actors are essentially the same for both sources.

Additional relevant points are:

- The leading actor in both sources is the United States.
- TOL reports of U.K. actions rank second in that source to the United States.
- Of the six NYT actors not among the 25 leading TOL actors:
 - Two are Western Hemispheric countries (Canada and Chile);
 - Two are Asian (Laos and South Korea); and
 - Two are Middle Eastern (Saudi Arabia and Lebanon).
- Of the six TOL actors not among the leading 25 NYT actors:
 - Two are African (Uganda and Zambia);
 - Three are European (Iceland, Malta, and Italy); and
 - One is Middle Eastern (Iraq).

The geographic locations of these non-common actors correspond generally to the differences in geographic focus noted earlier relative to U.S. and U.K. initiated actions.

The implication of this display is that while the United States and the United Kingdom differ in their interests and in the allocation of their own attention on geographic, historical, and strategic grounds, they are similarly attentive with respect to other actors, particularly the powerful and the conflictful.

What Are the Comparative Interests of the United States and United Kingdom in the Interaction Between Pairs of Countries as Conveyed by the NYT and TOL?

A third aspect of the international interests of two countries is the country pairs whose interactions draw their attention. Table 6 identifies the 25 country pairs in the NYT and TOL which were highest ranking during the time period under examination in terms of interaction (that is, total actions reported between each pair). The table was constructed in a manner identical to Table 5.

Table 6, like Table 5, shows similarity in the attention of the NYT and TOL as follows:

1. Eighteen of the 25 leading NYT pairs are also common to TOL.
2. The leading 25 pairs in each source (about 1% of all possible pairs) account for about 35% of all actions reported in both sources.
3. The 18 pairs common to both lists consist exclusively of pairs of major powers, pairs experiencing conflict, and major power interaction with individual members of conflict pairs.

Therefore, as was the case for leading actors (Table 5), interest in both sources is concentrated on relatively few pairs, common to both sources.

TABLE 6

Twenty Five Country Pairs Highest Ranking in Total Interaction, NYT and TOL
(Mid-1971 to Mid-1974)

Country Pair	<u>NYT</u>		<u>TOL</u>	
	Rank	% of total actions reported	Rank	% of total actions reported
Vietnam/South - Vietnam/North	1	7.86	1	5.48
USA - Vietnam/North	2	6.88	2	4.04
USA - Soviet Union	3	3.55	7	2.04
Cambodia - Vietnam/North	4	2.71	8	1.79
Israel - United Arab Republic	5	1.74	6	2.36
Pakistan - India	6	1.68	3	2.87
Israel - Syria	7	1.64	4	2.46
USA - Vietnam/South	8	1.17	21	.57
USA - Israel	9	1.14	9	1.04
USA - Japan	10	1.08	24	.51
USA - China People's Republic	11	1.07	13	.83
USA - United Arab Republic	12	.88	15	.71
USSR - China's People's Republic	13	.73	10	.85
USA - Cambodia	14	.59		
USA - Germany/Fed. Republic	15	.57		
USA - India	16	.53	23	.54
USA - France	17	.49		
USA - Canada	18	.48		
USSR - United Arab Republic	19	.47	14	.82
USA - United Kingdom	20	.45	18	.60
Israel - Lebanon	21	.43	25	.49
Korea/South - Korea/North	22	.43		
United Kingdom - Ireland	23	.42		
Germany/Fed. Rep. - Germany/Dem. Rep.	24	.35	12	.84
USA - Thailand	25	.34		
United Kingdom - Iceland			5	2.36
United Kingdom - Malta			11	.84
United Kingdom - USSR			16	.65
United Kingdom - France			17	.63
United Kingdom - Germany/Fed. Republic			19	.60
United Arab Republic - Libya			20	.58
France - Germany/Fed. Republic			22	.57
TOTAL	25	35.3	25	35.1

Additional relevant points are:

1. Eight of the 18 leading pairs common to both sources include the United States as a pair member.
2. Of the seven NYT pairs not among the leading 25 in the TOL:
 - Five include the United States as a pair member,
 - One is an Asian pair (KON-KOS), and
 - One is a U.K. pair (UK-IRE).
3. Of the seven TOL pairs not among the leading 25 in the NYT:
 - Five include the United Kingdom as a pair member,
 - One is a Middle East pair (UAR-LBY), and
 - One is a European pair (FRN-GMW).

These findings suggest that both sources are particularly sensitive to international activity involving the United States. They also suggest that where differences in attention exist these differences are largely parochial, that is, the NYT concentrates attention on additional U.S. pairs, and the TOL concentrates attention on U.K. pairs.

The implications here are similar to those of Table 5. While the United States and United Kingdom differ in the distribution of their own actions, they are similarly attentive to the interactions of conflictful pairs, major power pairs, and major power involvement with conflict pair members. Beyond these common foci, the United States and United Kingdom tend to concentrate on their own interactions with other countries.

How Do the United States and United Kingdom View the Quality of Their Own and Each Other's Actions Toward Other Countries as Conveyed by the NYT and TOL?

All prior research questions dealt with selected frequencies and distributions of NYT and TOL reported events as a means to compare U.S. and

U.K. attention to and interest in foreign affairs. The above question and subsequent ones deal with the friendly to hostile quality of reported events as a means to compare U.S. and U.K. views regarding each other, other country pairs, and other individual countries.

Since the United States and United Kingdom are regarded as having a "special relationship" based on, among other things, a "commonality of interest," it might be expected that in most instances the views of the two countries of their actions toward other countries and of the actions of other countries toward themselves would be similar.

Tables 7 through 10 provide information bearing on this expectation. Tables 7 and 8 display the policy styles of the United States and United Kingdom, respectively, toward selected targets as derived from actions reported in both the NYT and TOL. Tables 9 and 10 display the policy styles of selected actors toward the United States and United Kingdom, respectively, as derived from the two sources. The various targets in Tables 7 and 8, and actors in Tables 9 and 10 are those which were reported in the TOL as directing to or receiving from the United States and United Kingdom a total of 15 or more events over the 36-month time period of interest.

In each table the actors or targets are listed in the order of most positive to most negative policy style as derived from the NYT. The corresponding policy style value derived from the TOL is shown. Finally, the difference in policy styles (NYT minus TOL) appears. The latter index illustrates the disparity between the views conveyed by the two sources. Positive differences in this index indicate a more positive view in the TOL than in the NYT; negative differences indicate a more negative view in the TOL than the NYT. Positive or negative differences less than .2 suggest no significant difference in view, or correspondence.

Table 7 displays the policy style values of the United States toward 19 targets. If the NYT were truly indicative of U.S. policy (that is, if

TABLE 7
Policy Style of U.S. to Selected Targets,
Mid-1971 to Mid-1974

Target	Policy Style		
	<u>NYT</u>	<u>TOL</u>	<u>NYT - TOL</u>
Cambodia	.65	.57	+.08
Jordan	.50	.59	-.09
North Atlantic Treaty Organization	.46	.04	+.42
Israel	.34	.18	+.16
China People's Rep.	.29	.33	-.04
Germany/Fed. Republic	.28	.05	+.23
United Arab Republic	.27	.34	-.07
Vietnam/South	.26	.31	-.05
USSR	.24	.05	+.19
Japan	.21	.36	-.15
United Kingdom	.13	.08	+.05
Any Other Multilateral Group	.12	.09	+.03
Syria	0	-.06	+.06
France	-.07	.37	-.44
European Economic Com- munity	-.08	-.17	+.09
United Nations (only)	-.15	-.16	+.01
India	-.17	-.36	+.19
Vietnam/North	-.71	-.73	+.02
Vietcong	-.77	-.70	-.07

TABLE 8
Policy Style of U.K. to Selected Targets,
Mid-1971 to Mid-1974

Target	Policy Style		
	<u>NYT</u>	<u>TOL</u>	<u>NYT - TOL</u>
Germany/Fed. Republic	.57	.17	+.40
France	.44	.04	+.40
China People's Rep.	.27	.31	-.04
USA	.15	0	+.15
Any Other Multilateral Group	.08	.20	-.12
European Economic Group	0	.04	-.04
Rhodesia	0	-.26	+.26
United Arab Republic	0	.50	-.50
Pakistan	0	.55	-.55
Ireland	-.09	-.55	+.46
USSR	-.15	-.24	+.09
Israel	-.18	0	-.18
Malta	-.23	-.31	+.08
United Nations (only)	-.26	-.33	+.07
Iceland	-.67	-.56	-.11
Uganda	-.90	-.78	-.12
Libya	-.90	-.62	-.28

TABLE 9
Policy Style of Selected Actors Toward U.S.,
Mid-1971 to Mid-1974

Actor	Policy Style		
	<u>NYT</u>	<u>TOL</u>	<u>NYT - TOL</u>
Germany/Fed. Republic	.31	.12	+.19
Israel	.22	.12	+.10
Japan	.22	.69	-.47
United Kingdom	.15	0	+.15
European Economic Community	.05	0	+.05
USSR	-.07	-.23	+.16
Saudi Arabia	-.09	.08	-.17
Any Other Multilateral Group	-.09	-.22	+.13
Syria	-.19	-.11	-.08
United Arab Republic	-.26	-.45	+.19
Vietnam/South	-.32	-.30	-.02
France	-.39	-.31	-.08
China People's Rep.	-.42	-.48	+.06
India	-.51	-.84	+.33
Vietcong	-.73	-.54	-.19
Vietnam/North	-.77	-.56	-.21

TABLE 10
Policy Style of Selected Actors Toward U.K.,
Mid-1971 to Mid-1974

Actor	Policy Style		
	<u>NYT</u>	<u>TOL</u>	<u>NYT - TOL</u>
China People's Republic	.35	.32	+.03
Germany/Fed. Republic	.24	.27	-.03
France	.20	.22	-.02
USA	.13	.08	+.05
Ireland	-.07	-.44	+.37
United Arab Republic	-.15	.25	-.40
Malta	-.17	-.24	+.07
Rhodesia	-.24	-.40	+.16
USSR	-.53	-.56	+.03
Israel	-.67	-.69	+.02
Uganda	-.70	-.55	-.15
Iceland	-.75	-.62	-.13

it were in effect a spokesman for U.S. governmental policy) then the values listed under the NYT would be interpretable as official "signals" to the targets. In this case the TOL plays the role of observer. Its style values would reflect its observations of U.S. signals toward the targets. In Table 7, then, it might be reasonably assumed that NYT-based style values are more authoritative than TOL-based styles and, therefore, the difference in style reflects misinterpretation by the TOL (or U.K.) of U.S. intent. Tables 8 through 10 are subject to similar interpretation.

Table 11 summarized an analysis of the policy style value differences in Tables 7 through 10. The table shows the total number of cases in each analysis, those where views between the United States and the United Kingdom correspond and those where misinterpretation is evident.

The percentage distribution at the bottom of the table reveals that similar views are held in 77% of the total cases. Further, it reveals that, where misinterpretation is present, either in the NYT or TOL, it tends to be large.

It is these latter cases, where apparent misinterpretation is large, that are of particular interest as a finding of multiple data stream analysis. In such instances, the assumption is that different views are held by the United States and United Kingdom of the same phenomenon and that these views will be the realities which prompt or alter future actions. In multiple data stream analysis, explanations of such cases may and should be sought both through further disaggregation of the data and by review and analysis of the the English language event descriptions. An example of such more exhaustive analysis appears in the evaluation of the U.S.-U.K. pair in the following section.

The implications of the foregoing, however, are that the United States and United Kingdom do show, for the most part, similar views of the quality of actions each is initiating and receiving in its international affairs. There are exceptions, however, and where they exist they suggest misinterpretation of the signals being transmitted or received by the other.

TABLE 11
Correspondence and Misinterpretation Between NYT and TOL

Table	Policy Style of	Number of Cases					
		Total	Correspondence ^a	Misinterpretation			Large ^c
				by <u>NYT</u>		by <u>TOL</u>	
				Moderate ^b	Large ^c	Moderate ^b	Large ^c
7	U.S. to selected targets	19	16			1	2
8	U.K. to selected targets	17	10	2	5		
9	Selected actors to U.S.	16	13			1	2
10	Selected actors to U.K.	12	10	0	2		
	TOTAL	64	49	2	7	2	4
	PERCENT	100	77	3	11	3	6

^a Difference in policy styles = <.2

^b Difference in policy styles = .2 to .3

^c Difference in policy styles = >.3

What Are the U.S. and U.K. Views of Their Own Interaction as Conveyed by the NYT and TOL?

The analyses reported here are concerned with the policy styles of the United States and United Kingdom toward each other as conveyed by the NYT and TOL. The initial question investigated was whether the two sources perceive each directed dyad (U.K.→U.S./ U.S.→U.K.) similarly or not. Four style time series plots were constructed, each showing the NYT and TOL policy styles of one actor toward the other during nine quarterly periods. The graphs, shown in Figure 1, reveal that one source some times leads the other in its perception of a nation's policy style.

The specific leads in the data are these:

1. The NYT policy style for U.K.→U.S. leads the TOL policy style for the same dyad during the first five time periods;
2. The TOL policy style for U.S.→U.K. leads the NYT policy style for the same dyad during the last five periods.

The visual impression of leads was confirmed by comparing the styles conveyed by the two sources in the same time period and of leads in one period. Table 12 reveals that:

1. The absolute differences in NYT and TOL reporting of U.S.→U.K. style are less when the TOL leads the NYT by one period than are the differences in the same period. Thus, for this dyad the TOL at time $t-1$ is a better predictor than the TOL at time t .
2. The absolute differences in NYT and TOL reporting of U.K.→U.S. style are less when NYT leads the TOL by one period than are the differences in the same period. Thus, for this dyad the NYT at time $t-1$ is a better predictor than the NYT at time t .

This confirms the visual impression of the leads. The impression that in the U.S.→U.K. dyad the TOL's lead is more prominent during the last five periods is confirmed in a similar fashion, as is the impression that in

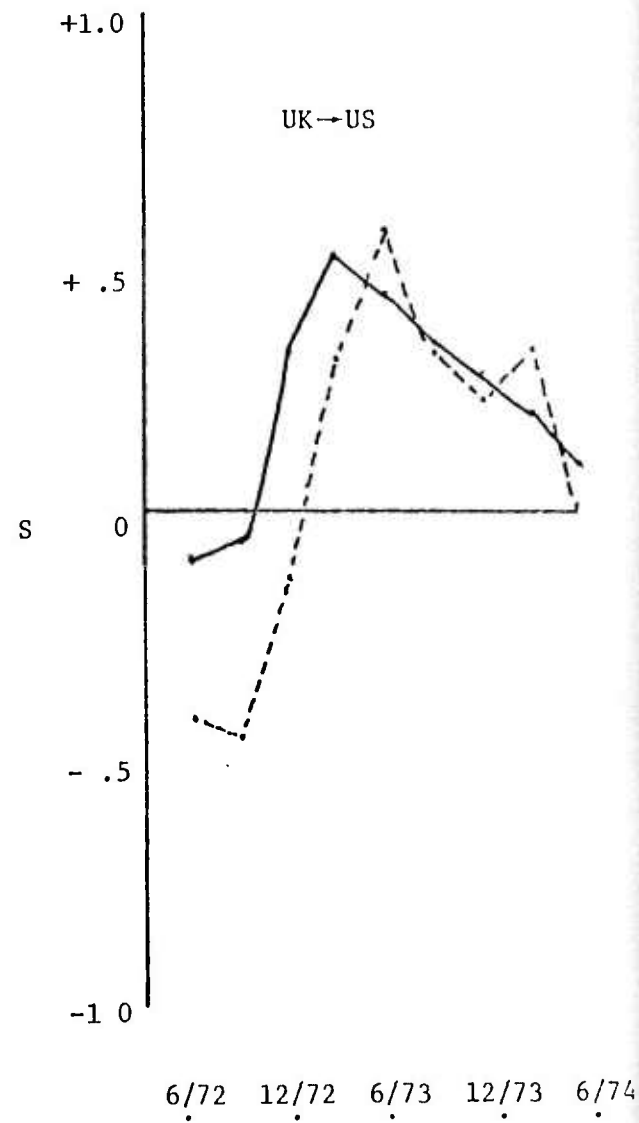
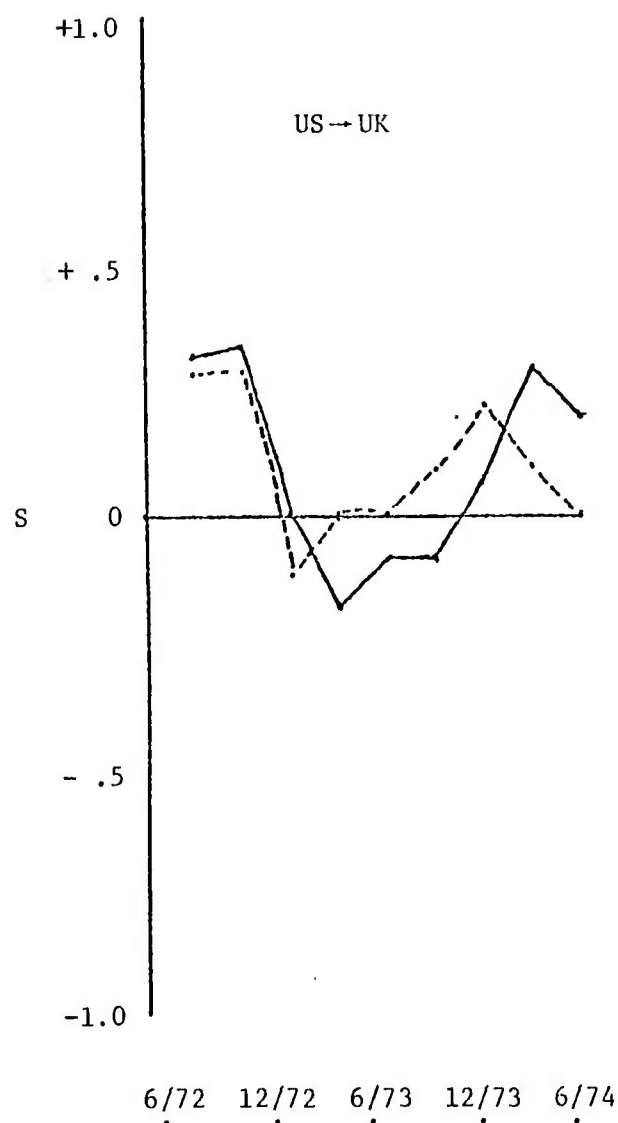


Figure 1. Policy Style in the U.K.-U.S. Dyad, Mid-1971 to Mid-1974

TABLE 12
Source Differences in U.K.-U.S. Style

Dyad	Mean Absolute Difference	
	$ \underline{TOL}_t - \underline{NYT}_t $	$ \underline{TOL}_{t-1} - \underline{NYT}_t $
US → UK	.15	.10
UK → US	Mean Absolute Difference	
	$ \underline{NYT}_t - \underline{TOL}_t $	$ \underline{NYT}_{t-1} - \underline{TOL}_t $
UK → US	.20	.12

TABLE 13
Effects of Lagging

Improvements or Worsening in <u>TOL</u> 's Prediction of <u>NYT</u> by Lagging <u>TOL</u> One Period		
Dyad	First Five Periods	Remaining Periods
US → UK	Improvement (average $ \underline{TOL} - \underline{NYT} $ difference decreases .10 by lagging <u>TOL</u>)	Worsening (average $ \underline{TOL} - \underline{NYT} $ difference increases .01 by lagging <u>TOL</u>)
Improvements or Worsening in <u>NYT</u> 's Prediction of <u>TOL</u> by Lagging <u>NYT</u> One Period		
Dyad	First Five Periods	Remaining Periods
UK → US	Improvement (average $ \underline{TOL} - \underline{NYT} $ difference decreases .18 by lagging <u>NYT</u>)	Worsening (average $ \underline{TOL} - \underline{NYT} $ difference increases .04 by lagging <u>NYT</u>)

the U.K.->U.S. dyad NYT's lead is more prominent during the first periods. Table 13 shows that in the U.S.->U.K. dyad, predictions of the NYT by the TOL_{t-1} during the last five periods are better than predictions by the TOL_t, while in the remaining periods the TOL lag is not effective in improving predictions of the NYT_t. Table 13 also shows that in the U.K.->U.S. dyad, predictions of the TOL_t by the NYT_{t-1} during the first five periods are better than predictions by the NYT_t, while in the remaining periods the NYT lag is not effective in improving predictions of the TOL_t.

The above observations can be summarized thusly: In some periods, the target's perceptions of an actor's policy style lead the actor's perceptions. Visual inspection of Figure 1 and Table 12 show that, with the exception of the lead phenomenon, the view of U.K.-U.S. interaction conveyed by the two sources is quite similar over time.

The implications of the U.K.-U.S. dyad analysis thus far are that:

- The two nations did not perceive their interactions very differently, but that
- At times one nation's perceptions of the other's style anticipated the other's view, suggesting that
- MDS analysis may be helpful in predicting some nations' perceptions of others' policies. But a caution is in order to the effect that
- One nation's ability or tendency to anticipate another's perceptions appears to be transitory.

These observations are intriguing because they initially seem counter-intuitive, and because they constitute phenomena of potential interest to government personnel. They are contrary to the intuitive expectation that a target's perception of an actor's style would follow, not lead, the actor's perception. They are potentially interesting to government personnel who would find an ability to forecast style perceptions by means of MDS analysis useful. The analysis therefore turned to a closer examination of the content and explanation of the observed leads.

In What Subjects Are Leads Contained?

Having observed that the lead phenomenon is transitory--present at some times but not at others--we considered possible reasons for its impermanence. We have previously observed that the prominence of different subjects in the affairs of two states varies over time. We reasoned that this variation could contribute to the lead's impermanence. If certain subjects are more responsible for the leads than others, then the coming and going of subject emphases in U.K.-U.S. interaction could contribute to the transitory nature of the leads. We therefore examined the data to determine whether some subjects are more responsible than others for the observed leads. Each event was coded for the subject with which it was associated on the basis of short discipative abstracts of the events. The abstracts are routinely generated along with the numeric event codes referred to earlier. The subjects upon which the analyses ultimately focused were those for which adequate data were present: defense, economic affairs, energy and the Middle East, and general relations.

The result of these analyses showed that certain subjects are more responsible than others for the observed leads. Specifically, the defense subject is most responsible for the NYT lead in the U.K.→U.S. dyad while the economic affairs subject is most responsible for the TOL lead in the US→UK dyad. The method used to determine the responsibility of a subject for a lead was to extract from the data events dealing with the subject, then to recompute the styles, and then to recompute the average absolute difference between the leading source at $t-1$ and the other source at t . If this difference was greater than the difference when the subject was still in the data, we concluded that the subject had made a contribution to the lead. The degree of its contribution depends on how much the source differences increase when the subject is removed from the data. There is also the possibility of a "negative contribution" to the lag, as when after removing a subject the lag is even more prominent. Table 14 shows the effect of removing the four subjects from each dyad. Larger positive values in Table 14 indicate greater responsibility for leads.

TABLE 14
Contribution of Subjects to Source Leads

	Contribution of Subject to <u>NYT</u> Lead ^a U.K.→U.S.	Contribution of Subject to <u>TOL</u> Lead ^a U.S.→U.K.
Defense	+0.06	+0.02
Economic Affairs	-.01	+.17
Energy	-.01	+.01
General Relations	0	+.01

^a Larger positive values indicate larger contributions.

Implications of these findings are that:

- While one nation's view of the other's policy style may lead--and therefore be a predictor of--the other's view on some subjects, the tendency to lead does not necessarily apply to all subjects. This suggests that
- The policy use of any observed lead should be sensitive to the possibility that the lead is due to specific subjects, and that the lead may quickly disappear if interaction on the responsible subjects is discontinued.

Having found that leads in policy style are due in varying degrees to different subjects, we next turned to the task of exploring explanations of the leads. Since different subjects are responsible in varying degrees for leads, we used subjects as cases and attempted to relate subject leads to other explanatory variables.

Are Policy Style Leads Related to Emphasis Leads?

An explanation for why a given subject may contribute to one source's lead in the perception of a nation's style is that the source may lead the other in its emphasis (concern or weighting) of the subject. Overall style is a weighted sum of subject-specific styles where weighting is on the basis of each subject's share of the total number of events. Thus, to the extent that source A's weighting of a subject follows source B's weighting--and if relatively similar subject-specific styles are being reported by both sources--the subject will make a contribution to source B's overall style. lead over source A.

We have examined our data to determine whether the subject-specific styles reported by the two sources are relatively similar or not. Eight cases were used in the analysis: each of the four subjects for each of the two directed dyads. The styles conveyed by the two sources for the entire period covered were calculated and correlated across the eight cases. The product-moment correlation of +.85 confirms that the subject-specific styles of the two sources are related in a positive way. The

scatter-plot of these eight cases is shown in Figure 2. The assumption of relatively similar subject-specific styles being met, it remained to examine whether the contribution of a subject to a source's style lead is related to the source's lead in subject emphasis.

In the analyses designed to examine this question we used those subjects on which both sources had some reports in more than three of the nine time periods in the data. We restricted the analyses to these subjects because even a subject on which an emphasis lead is present could not be expected to contribute significantly to the overall style lead if that subject were active for a third or less of the time period covered in the study. This restriction leaves five cases for the analysis, not enough to support conclusive results but adequate for an initial examination of the explanation. The development in emphases by the two sources in these five subjects is shown in Figures 3 through 7. Figures 3, 4, and 5 show subject emphases in the U.K.→U.S. dyad; Figures 6 and 7 show emphases in the U.S.→U.K. dyad.

An emphasis lead is apparent to the extent that one source's emphasis lags behind, then "catches up" to, the other's emphasis. In the U.K.→U.S. dyad, such a "catch up" occurs most prominently in the defense subject (Figure 3) where the TOL emphasis lags behind but then catches up to the NYT emphasis. In the U.S.→U.K. dyad it is most prominent in the economic affairs subject (Figure 6) where the TOL emphasis clearly portends the future of the NYT emphasis. Thus we find the stronger emphasis leads to be the NYT in the defense subject in the U.K.→U.S. dyad, and the TOL in the economic affairs subject in the U.S.→U.K. dyad. How do these emphasis leads relate to the style leads discussed earlier? Referring back to Figure 2 we find that in the U.K.→U.S. dyad, the defense subject makes the greatest contribution toward the NYT style lead, while in the U.S.→U.K. dyad the economic affairs subject makes the greatest contribution toward the TOL style lead. The relationship between style and emphasis leads is, then, very clear: the subject most responsible for the source's style lead is the subject on which the source's emphasis is in the lead.

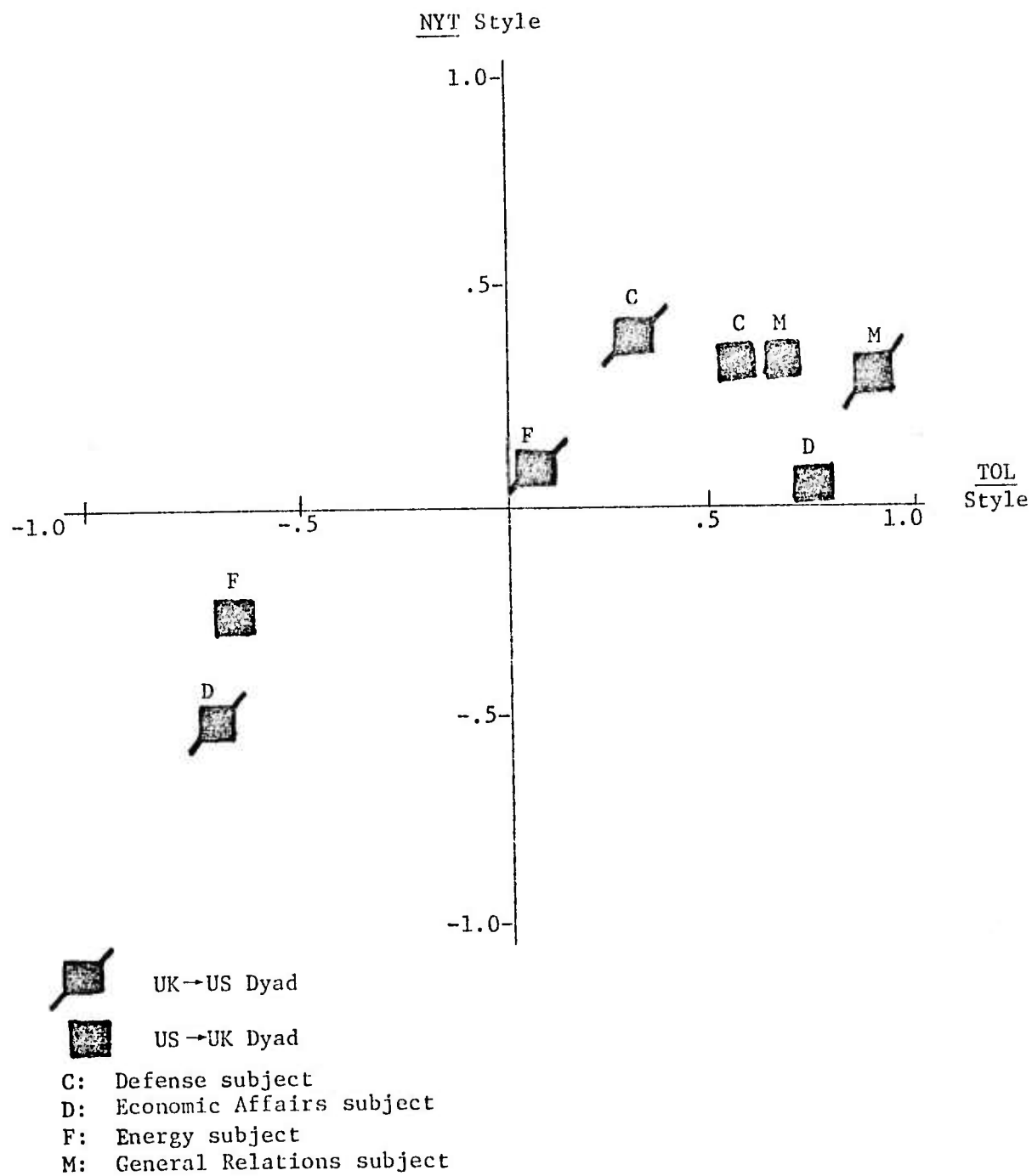


Figure 2. NYT and TOL Style on Eight Dyad-Subjects.

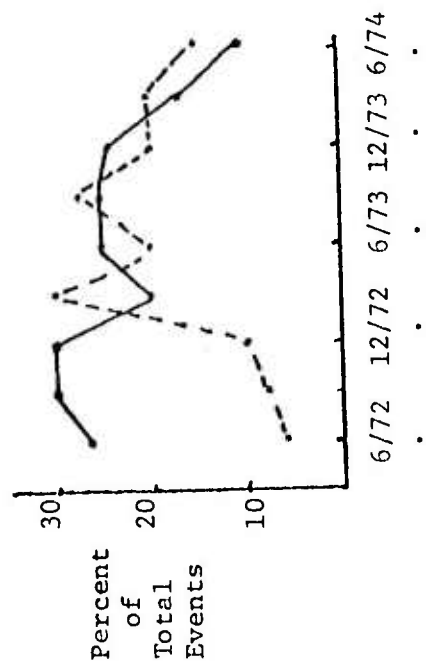


Figure 3. Emphases on Defense for U.K.→U.S. Dyad

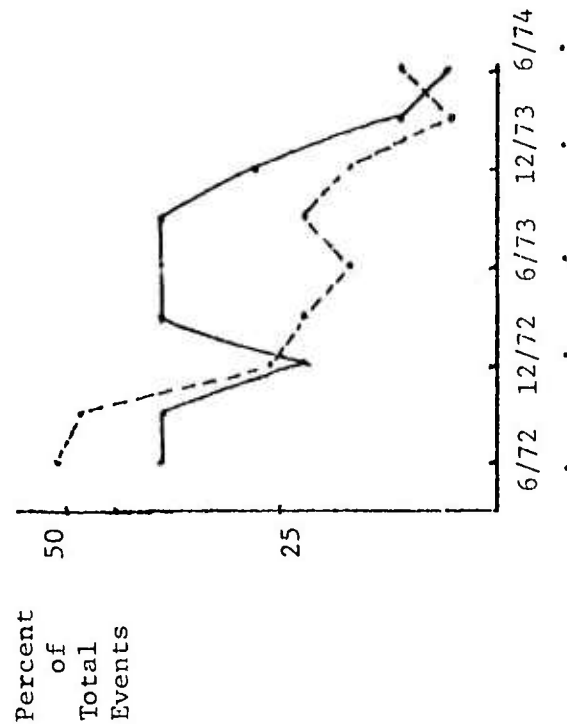


Figure 4. Emphases on Economics for U.K.→U.S. Dyad

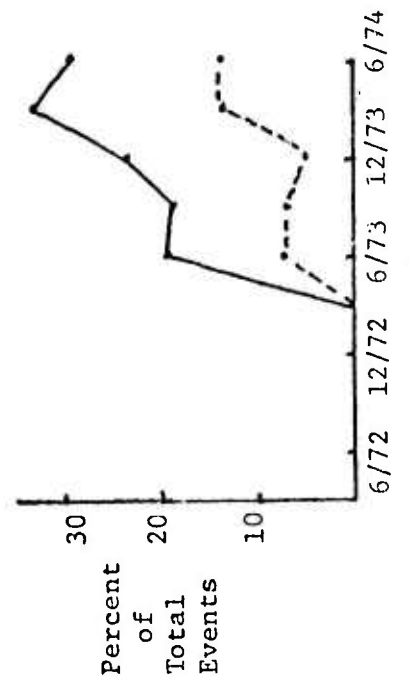


Figure 5. Emphases on General Relations for U.K.→U.S. Dyad

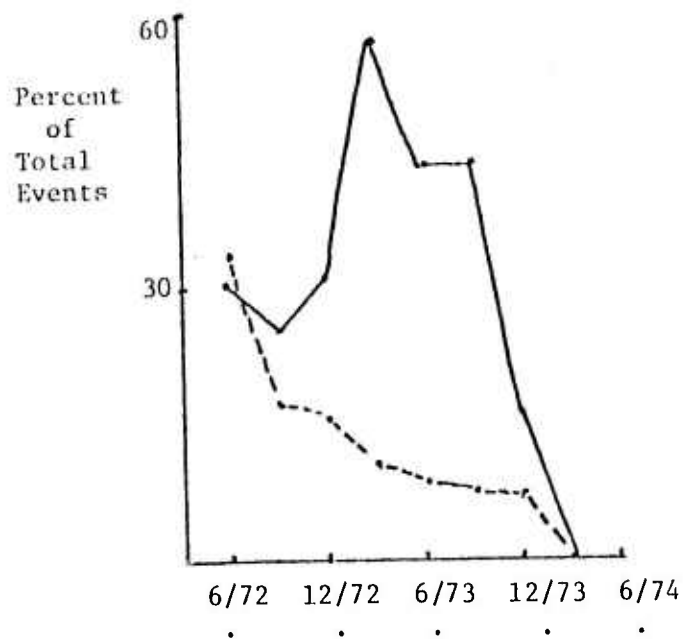


Figure 6. Emphases on Economic Affairs for U.S.→U.K. Dyad

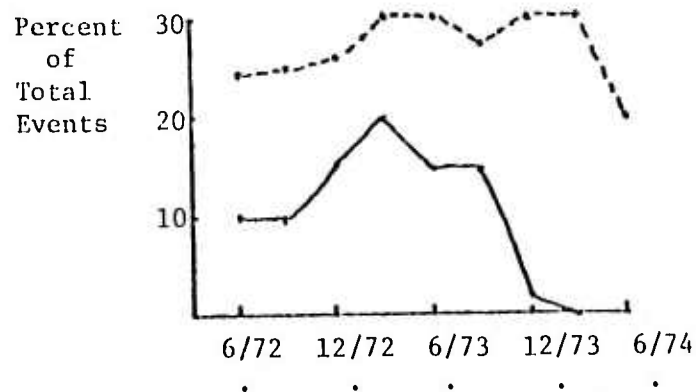


Figure 7. Emphases on Defense for US → UK Dyad

The main implication of these findings seems to be that:

- A nation tends to anticipate correctly another's view of the quality of their affairs when it correctly anticipates the relative attention that will be given to different subjects.

This implication is quite plausible, since different subjects are characterized by different qualities of behavior. For example, one could go far in predicting the future quality of US-Soviet relations if the subjects on which attention will be focused could be predicted, for the quality of each nation's behavior varies across subjects such as emigration, the Middle East, China, economic relations, and so forth. The foregoing demonstrates a potential application of MDS analysis in the identification of subject emphasis leads and therefore in the forecasting of nations' views of the quality of their behavior, as these are conveyed by news sources.

The discovery that emphasis leads are associated with style leads provoked an additional question: How is it that one source comes to anticipate the emphases of another? More specifically, how is it that the target nation's view of the actor's emphases happens to precede the actor's own view of its emphases, which is the case in our data? The following section reports on an explanation that was advanced and examined.

Are Emphasis Leads Associated with Differential Coverage of Bureaucratic Actors?

It seems very likely that the upper echelons of foreign policy bureaucracy--including the head of government--would initiate trends in the focus of policy actions, which trends subsequently would be realized at lower levels of bureaucracy. This has the implication that if two sources are reporting the policy statements and actions of a nation, the source deriving a greater proportion of its reports from the higher bureaucratic levels would lead--in subject emphasis--a source deriving a

higher proportion of its reports from the lower levels. We examined this implication by asking whether, in our data, the subjects on which a source has an emphasis lead are also characterized by that source focusing its attention on higher bureaucratic levels more than the source that it leads.

From the previous section it is known that the two greatest emphasis leads out of the five dyad-subject combinations considered are: (1) NYT leads TOL in the defense subject in the U.K.→U.S. dyad; and (2) TOL leads NYT in the economic affairs subject in the U.S.→U.K. dyad. Therefore, we would expect, according to the implication above, that:

1. In the U.K.→U.S. dyad, the NYT reports a greater percentage of defense events from higher bureaucratic levels than the percentage TOL reports; and
2. In the U.S.→U.K. dyad, the TOL reports a greater percentage of economic affairs events from higher bureaucratic levels than the percentage NYT reports.

We considered the President, his foreign policy adviser and cabinet members to comprise upper levels for the United States, and the Prime Minister and his ministers and secretaries to constitute upper levels for the United Kingdom. Lower level actors in each case include undersecretaries, representatives to talks and negotiations, and so forth.

Table 15 shows that the two expectations are borne out by the data. The table shows that the two greatest cases of emphasis lead are also cases in which the leading source reported a greater percentage of events from the higher bureaucratic levels.

We would also expect the percentages to differ between the two sources less on the remaining three dyad-subjects discussed in the previous sections, for emphasis leads were less noticeable in these three cases. Table 16 shows that there were some differences, and one of these (defense in the U.S.→U.K. dyad) was greater than one of the differences in Table 15, while the other two differences, as expected, were less.

TABLE 15
Source Emphases on Higher Bureaucratic Levels

Dyad	Subject	Percent of Events from Higher Levels	
		<u>NYT</u>	<u>TOL</u>
U.S.→U.K.	Economic Affairs	44	80
U.K.→U.S.	Defense	82	60

TABLE 16
Source Emphases on Higher Bureaucratic Levels

Dyad	Subject	Percent of Events from Higher Levels	
		<u>NYT</u>	<u>TOL</u>
U.S.→U.K.	Defense	100	72
U.K.→U.S.	Economic Affairs	84	66
U.K.→U.S.	General Relations	75	70

Thus, one case out of the five is contrary to the idea that one source will lead another's subject emphasis to the extent that its attention is focused relatively more upon higher bureaucratic levels. Considering, however, that four out of five cases were consistent with the idea, we can say there is an imperfect tendency in the expected direction of the relationship. Such a tendency is adequate at this state of multiple data stream research to suggest further explorations along these lines.

The main implication of the foregoing is that:

- A nation increases its chances of correctly anticipating another's view of subject emphases by focusing its attention on the other's high level foreign policy actors.

How Do the United States and United Kingdom View the Quality of Interaction Between Other Pairs of Countries as Conveyed by the NYT and TOL?

This question is different from those posed previously in an important respect. Here, the United States and United Kingdom are both observers rather than participants in the interaction. The opportunity exists, therefore, to compare U.S. and U.K. observations of signals omitted elsewhere, and to see how similar and different are their resulting views across time.

Eight cases were selected for examination. These cases consist of pairs of countries having a current or past history of local conflict and/or periodic crisis. For all these cases it is of interest to examine the overall correspondence between views separately emanating from the NYT and TOL. In addition, for certain of the cases, where overall correspondence is low or when the views differ in other respects it is of interest to seek interpretation.

Figure 8 presents plotted time series of relations between each of the eight country pairs, as derived from both the NYT and TOL. Relations (R)

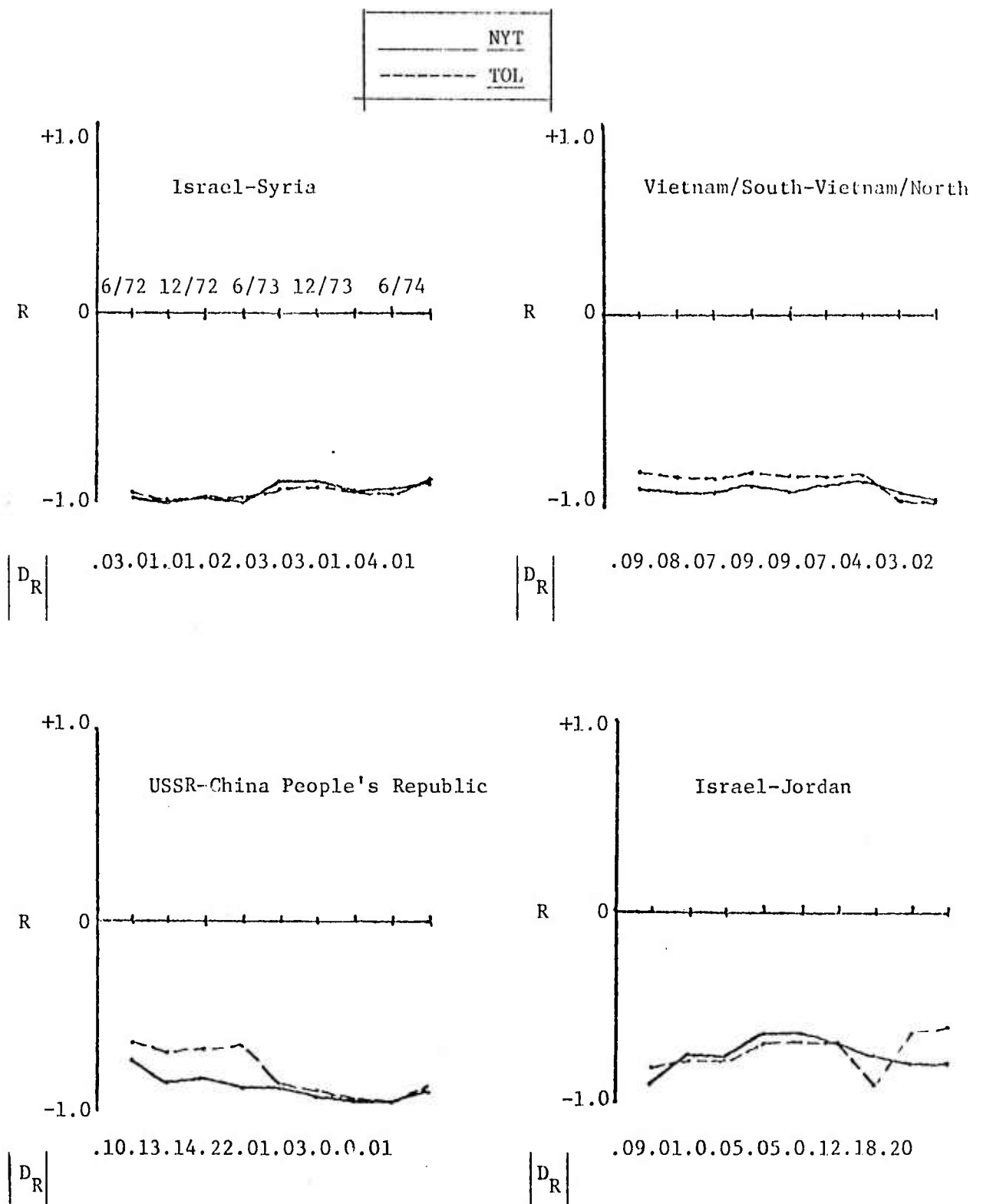


Figure 8. Relations and Differences in Relations for Selected Pairs, Mid-1971 to Mid-1974

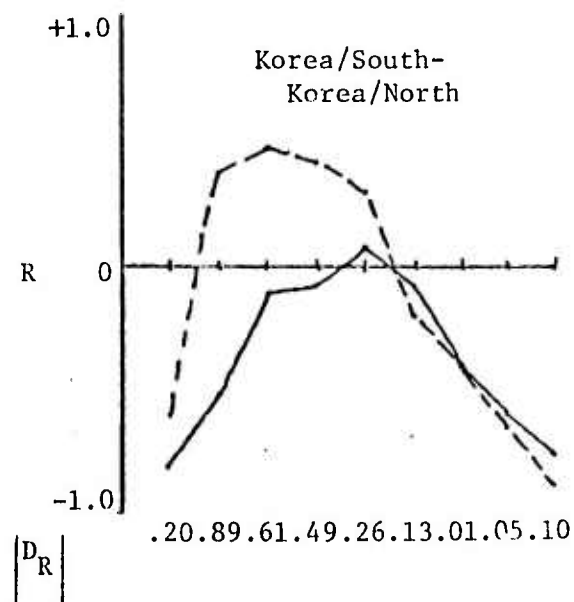
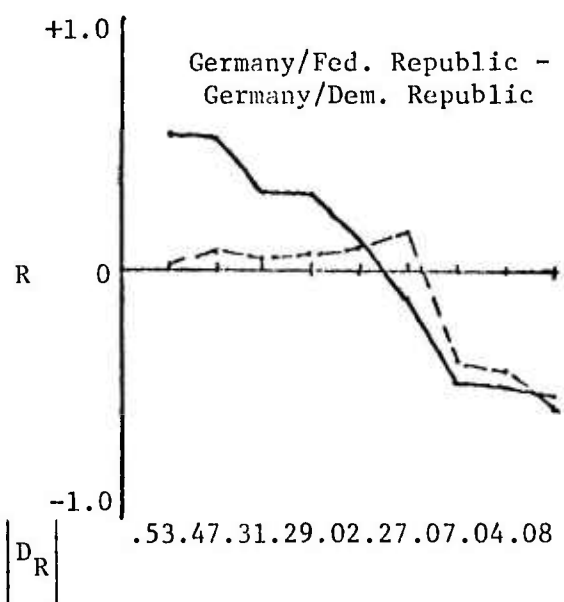
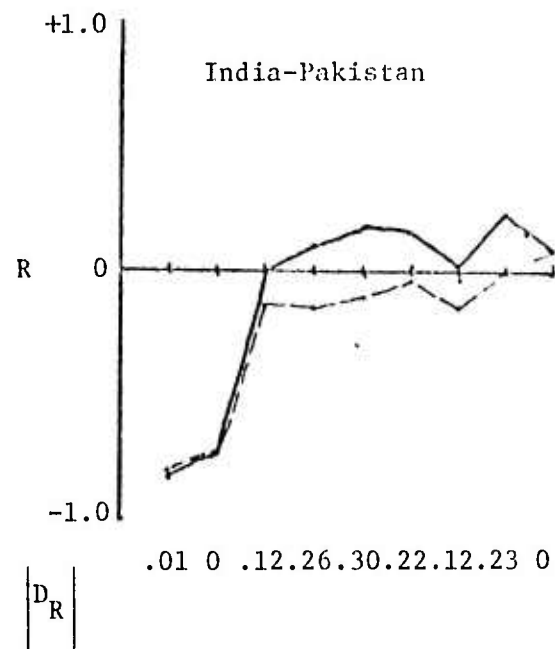
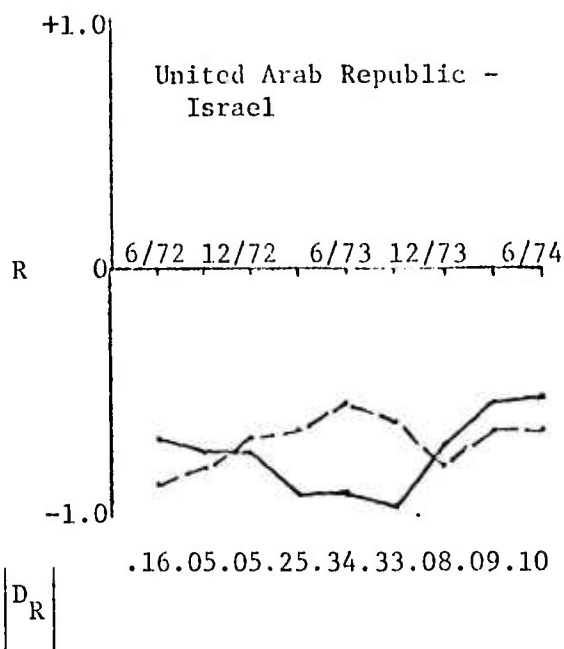
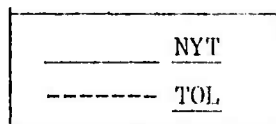


Figure 8. (Cont'd) Relations and Differences in Relations for Selected Pairs, Mid-1971 to Mid-1974

values appearing in the displays are computed every three months for the previous 12-month time period. For example, the first R value in each curve (at 6/72) is based on events reported from mid-1971 through mid-1972, the second R value is based on events reported from October 1971 through September 1972, and so on.

Correspondence between the two sources is suggested by the absolute difference in R values at each point in time ($|D_R|$). These values appear below each graphic display. A measure of the overall correspondence in views between the two sources is the mean of $|D_R|$. These values are presented in Table 17, where the pairs are ranked from most correspondence to least correspondence. The maximum $|D_R|$ is 2.0. Based on this statistic alone it would appear that there is good correspondence between the NYT and TOL in six of the eight cases. But it is clear from inspecting the graphical displays and the individual values of $|D_R|$ that correspondence varies considerably within cases. For example, in the case UAR-ISR there is important lack of correspondence during the 9-month period prior to the last quarter of 1973 when the Yom Kippur war occurred. In this case, in retrospect, the NYT was a better predictor of the likelihood of conflict occurring. On the other hand, in the case of KOS-KON, close correspondence exists in the latter stages of the time series. But in this instance TOL was an earlier harbinger of the attempt at reconciliation between this pair. The same is true with respect to GMW-GME, where treaty preparations in the early part of the period were viewed more positively by the NYT than TOL. Both source views converge later into close correspondence.

What is suggested here is that correspondence in observation is neither necessarily continuous nor desirable. In multiple data stream analysis, temporary incongruence in views takes on importance in signalling differences in interpretation of international affairs.

The implications of this analysis then for the United States are that two (or more) views based on separate observations of foreign affairs can provide signals of changes underway or in prospect that might be absent or

TABLE 17

Overall Correspondence Between NYT and TOL in Their Views of
Interaction Between Eight Selected Country Pairs

Country Pair	Overall Correspondence in View $\bar{D}_R$
Israel-Syria	.02
Vietnam/South - Vietnam/North	.07
USSR-China	.07
People's Rep.	.08
Israel-Jordan	.14
Pakistan-India	.16
United Arab Rep.- Israel	.23
Germany/Fed. Rep.- Germany/Dem. Rep.	.30
Korea/South - Korea/North	

ignored as components of a single view. Therefore, continuous monitoring of multiple data streams for selected country pairs can prompt timely searches for and examination of explanations when incongruence between views occurs.

Since our assumption is that two countries which observe and interpret international interactions differently (for example, as in the UAR-ISR or KOS-KON cases) may be expected to behave differently, then a further implication exists. That is, the likelihood of mutual attention to and similar actions toward a situation by the United States and United Kingdom is diminished to the extent that their views of the urgency of and inherent quality of the situation differ. Multiple data stream analysis can alert the analyst to the basis for differences in view and help to potential for agreement or joint action in the situation.

What Are the Alignments of the United States and United Kingdom Toward Selected Other Countries and Conflict Pairs as Conveyed by the NYT and TOL?

Alignment is an important and complex concept in foreign affairs. In the context of event data, alignment may be represented by:

1. The similarity between two countries in the friendly to hostile quality of their behavior toward other countries. For example, by assessing how similar in quality are the separate actions of the United States and the United Kingdom toward China, the informal alignment of the United States and the United Kingdom relative to China may be inferred.
2. The similarity of the behavior of one country toward two other countries. For example, by assessing how similar are the actions of United Kingdom toward the United States and Soviet Union, the relative alignment of the United Kingdom to each may be inferred.

These concepts are susceptible to more meaningful measurement and interpretation with multiple data streams than with a single source of data. With multiple data streams it is possible to use an indigenous source to represent a country's own behavior; for example, the TOL may represent signals of U.K. behavior and NYT signals of U.S. behavior. With only a

single source, the NYT for example, the alignment concept can be measured only by combining (U.S.) behavior with observed (U.K.) behavior. This type of combination, however, might be expected to yield the U.S. view of alignment. By contrasting single and multiple source measurements, it is possible to identify cases where similarities and differences appear to exist between implied U.S. and U.K. impressions of alignment.

Table 18 presents scores indicating the degree of alignment between the United States and United Kingdom toward 21 target countries. The alignment score is the arithmetic difference between the policy style of the United States and United Kingdom toward each target. In the table, the United Kingdom style value is subtracted from the U.S. value in all cases. Therefore, positive alignment scores indicate that U.K. behavior toward the target is more positive than U.S. behavior. Negative scores indicate the opposite. The maximum range of this indicator of alignment is ± 2.0 (for example, a score achieved when one actor's policy style is $+1.0$ and the other's is -1.0 toward a target). Given the generally mutual and supportive interests of the United States and United Kingdom it might be expected that relatively low scores (close alignment) would predominate.

Table 18 presents one to three alignment scores for each target, depending on whether the data were sufficient for the necessary calculations. The column "signalled views" reflects the policy styles of each indigenous source toward the target, that is, the style of U.S.→Target calculated from NYT data minus the style of U.S.→Target calculated from TOL data. The "U.S. view" and "U.K. view" scores are based on policy style values for single sources, NYT and TOL, respectively. The targets are ranked in the table from those toward whom the signalled view of U.S.-U.K. alignment is closest to those toward which it is most distant. In the table, the signalled view of alignments between the United States and United Kingdom is generally as expected, that is, the scores tend to be relatively low. The ordering of targets in terms of closeness of alignment between the United States and United Kingdom appears to be intuitively proper as well.

TABLE 18

Three Views of Alignment of U.S. and U.K. Toward
Selected Target Countries, Mid-1971 to Mid-1974

Target Country	Signalled View	U.S. View	U.K. View
Jordan	0		-.09
China People's Rep.	.02	-.02	-.02
Poland	.03		.33
Italy	-.05		-.17
Japan	-.06	.01	-.21
Greece	-.10		-.10
France	.11	.51	-.33
Germany/Fed. Rep.	-.11	.29	.12
Pakistan	.11		
Iran	-.15		.15
Chile	.17		.16
United Arab Rep.	.23	-.09	
Iraq	-.25		
Saudi Arabia	-.25		-.24
Germany/Dem. Rep.	.27		
Australia	.31	-.59	
Indonesia	.33		
Israel	-.34	-.52	-.18
India	.44		.63
USSR	-.48	-.39	-.29
Turkey	-1.03		

Note: Positive scores indicate that U.K. behavior toward the target is more positive than U.S. behavior.

Negative scores indicate that U.K. behavior toward the target is more negative than U.S. behavior.

Of more interest, from the standpoint of multiple data stream analysis, are the differences among the scores for certain cases. For example, close U.S.-U.K. alignment is signalled toward France, with the United Kingdom slightly more positive than the United States (.11). The U.S. view, however, shows the United Kingdom considerably more positive toward France (.55), while the U.K. view is the opposite, with the United States significantly more positive (.33). Also, for example, in the case of Israel, the U.K. view is that it is not much more negative (-.18) than the U.S. view (-.52) or the signalled view (-.34). Finally, in the case of the Soviet Union, neither the U.S. view nor the U.K. view match the signalled degree of relative U.K. negativity.

The implications of this kind of analysis, assuming once more that the NYT and TOL are appropriate surrogates for official views, and that such views are precursory to later behavior, are that multiple observations--from different points of view--can provide insight and inferences relative to prospective behavior which are not inherent in any single set of observations.

A second aspect of the alignment concept deals with the degree to which one country differentiates between two (or more) others. For example, in cold war rhetoric it became conventional to attempt to categorize countries as being aligned with the United States, or with the Soviet Union, or being "neutrals."

This notion may be measured by employing the policy styles of a country toward two other countries which themselves are central to some issue arena. In Table 19 the alignments of the United Kingdom relative to eight pairs of countries which represent distinct issue arenas are shown. The policy style of the United Kingdom to each pair member based on the TOL is displayed in the first column of the table. The second column displays the alignment score, which, in this instance, is the absolute arithmetic difference between the U.K. style values to each pair member. The pairs are listed in the table from the lowest alignment score to the highest. A

TABLE 19

U.K. View of Its Alignment in Selected Issue Arenas

Issue Arena Country Pairs	Policy Style of U.K. Target, from <u>TOL</u>	Alignment of U.K. in Issue Arena
France	.04	.13
Germany/Fed. Republic	.17	
Germany/Fed. Republic	.17	.17
Germany/Dem. Republic	0	
India	.27	.28
Pakistan	.55	
Iran	0	.33
Iraq	.33	
Greece	.22	.47
Turkey	-.25	
United Arab Republic	.50	.50
Israel	0	
Jordan	.50	.50
Israel	0	
USSR	-.24	.55
China People's Republic	.31	

low score means that the United Kingdom, in its own view (TOL), does not differentiate significantly between the pair, or implicitly in the issue arena. Higher scores indicate that differentiation does exist, that is, that the United Kingdom is more closely aligned with one of the pair than the other. The maximum possible score for this index is 2.0. References to the policy style values in the table indicate with which country U.K. alignment exists and the nature of the alignment.

For example, in the case of USSR-CPR, the United Kingdom views itself supportive of CPR ($S=.31$) and opposing USSR ($S=-.24$) for an alignment score for this pair of .55. For UAR-ISR, the alignment score is virtually as high (.50), but is qualitatively different. In this case the United Kingdom views itself as supportive of UAR ($S=.50$) and neutral toward ISR ($S=0$). At the other extreme, FRN-GMW is a case in which the United Kingdom shows little differentiation in behavior between the pair members (.1), that is, it does not align significantly with either pair member, while being essentially neutral toward FRN ($S=.04$) and mildly supportive of GMW ($S=.17$).

The implication of this analysis, of course, is that if a media source can be used as surrogate for governmental position, then a source indigenous to any country can be used to locate its country's alignment position relative to significant world issues. Furthermore, given sufficiently long streams of data from multiple sources, there is no reason why trends and changes in these alignment postures cannot be represented in addition to the static 36-month illustrations employed here.

APPENDIX A

Multiple Data Stream Comparisons:
A Literature Survey and Evaluation

INTRODUCTION

Intersource comparison and multiple source analysis have been important means by which students of event data have explicated, summarized, and polemicized on the behavior of nations in the international arena. By comparing and suggesting combinations of various sources they have attempted to mitigate problems that have been associated with the use of single sources (that is, national biases, limited coverage, unrepresentative data). Multiple source use is expected to increase the sheer volume of more comprehensive, less biased data. For purposes of analysis, multiple sources are expected to counter the ambiguities one tends to find in single sources, validate data by multiple observations, and provide a basis for more comprehensive and reliable conclusions on behavior in the international arena.

The general thrust of multiple data source research has been toward the objectives of increased comprehensiveness, validation of observations, and bias reduction. These objectives have been assumed to be desirable. For example, it has been assumed that resulting combined data collections would more accurately represent the "true" state of international behavior and, under analysis, would more likely yield reliable insights into the future.

While we are sympathetic to such research objectives, we choose to pursue multiple source comparisons with a different strategy to enhance the same analytic goal. This strategy is one of treating the insufficiencies and parochialism of individual sources as purposeful and valuable. We assume that similarities and differences in the representation of international behavior by different national sources offer a basis for understanding the similarities and differences in the interests and perspectives of different nations, as operationalized by their media. In this strategy, source incompleteness reflects priorities of attention and

interests, and source bias reflects purposeful viewpoints. Instead of seeking the "true" state of international behavior, we will seek and compare perceived states of behavior as reported by different media. We term this approach multiple data stream research.

In order to develop techniques through which international behavior as represented in multiple media can be analyzed, summarized, and used in the forecasting of defense related phenomena, it is wise to take advantage of lessons learned about the problems existing in the use of such sources. Therefore we have undertaken a survey of the existing literature on multi-source comparisons. In this paper, we seek to document the major thrust of such studies, their principal methods and conclusions, and to determine the significance of their findings to our pending analysis.

PURPOSES OF STUDIES; CHARACTERISTICS OF INTERACTION DATA

The purposes of analyzing event interaction data as they are gleaned from multiple sources are varied: to assess the effects of differential coverage on political conclusions of analyses (Hoggard, 1970; Doran, et al., 1973; Burrowes, 1973); to compare the attention of different sources to particular arenas, conflicts, and nations (Hill and Fenn, 1972; V. Moore, et al., 1974; Azar, et al., 1972; McClelland and Young, 1970); to compare coverage of wars between two nations by multiple sources (Smith, 1969); to discover whether one gains more information on international behavior from using more than one source; and, along these lines, to analyze whether more information necessarily means more representative information and thus more reliable conclusions. The papers surveyed in the literature on multiple source comparisons seek to answer these and other questions.

Before reviewing these papers, however, it is important to review the notion of event-interactions, to suggest how this notion may vary with different kinds of sources, and how this variation may affect multiple source comparisons and analyses. Event interaction data reflect the flow of actions and responses (or behavior) between nations. Based on the assumption that there are, as McClelland and Hoggard (1969: 712) hold, "continuities and regularities in the international political behaviors of nations...", one must study this behavior in the international system to predict behavior.

McClelland differentiates between event interactions and other international actions and responses, termed transactions. The distinction is two-fold. Event-interactions are sufficiently unusual and/or important enough so that they tend to be dealt with outside normally established international channels. They are, as a result, newsworthy, and tend, when publicly disclosed, to be reported by news media. Interactions can be classified in various ways, that is, by type (threats, visits, comments) or

behavior groups (hostile, friendly, neutral), but they are always of such magnitude and intensity as to evoke official responses of a non-routine nature and disclosure through media reporting.

Transactions, on the other hand, are of a routine character. They do not warrant unusual international and governmental attention; nor do they tend to be given attention by news media. Such routine transactions include regular diplomatic notes and messages, and daily memoranda sent back and forth between embassies. They also include most international non-governmental communication involving private citizens, business organizations, and so forth. Figure-A-1 illustrates these distinctions.

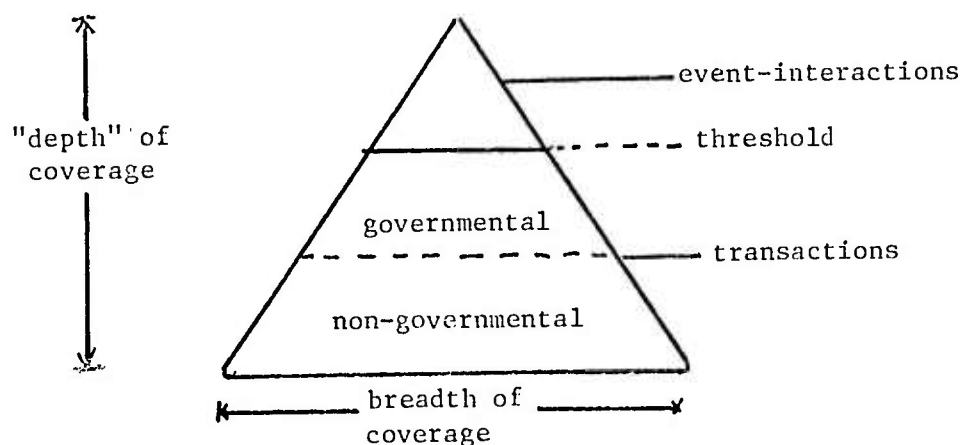


Figure A-1. Distinguishing Interactions from Transactions.

Let the entire triangle represent the universe of international actions and responses. Event-interactions constitute one part of the universe (probably the smaller part) and transactions the balance. It is important to note that the threshold separating interactions from transactions is somewhat arbitrary and may vary from source to source as a function of editorial policy. For example, in serving their constituencies, international financial media will tend to report international economic news in greater "depth" than will conventional international newspapers. The

latter, in turn, may well provide deeper coverage of international political news. Similarly, media of recognized global scope, such as the New York Times (NYT), will tend to report news in greater "breadth" (cover more countries) than will more "provincial" media, such as the Middle East Journal. Finally, it is characteristic of most, if not all, national sources to "tilt" the threshold (introduce biases in worldwide news coverage), in accord with their own prioritized interests coupled with those of their national constituencies. This characteristic is illustrated in Figure A-2.

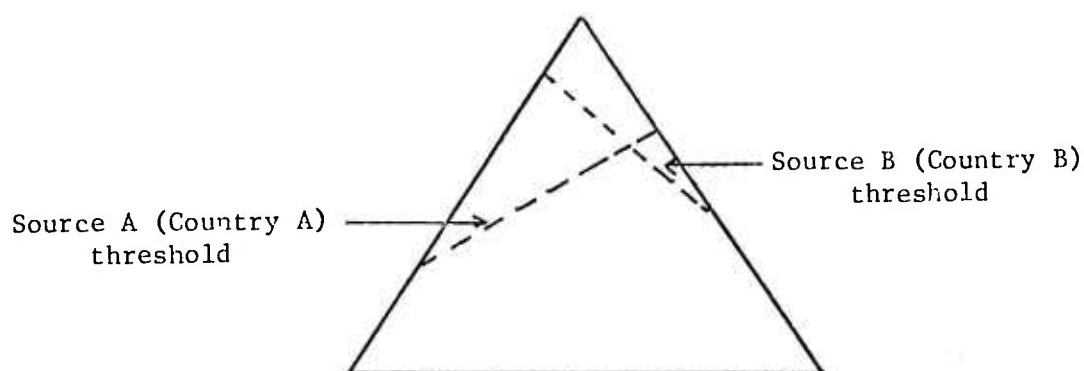


Figure A-2. Varying Thresholds by Source.

Undertaking multiple source comparison, then, especially with the possible objective of combining sources, attention ought to be paid to the characteristics and purposes of the alternative sources. It should also be recognized that the true dimensions and characteristics of the universe of event-interactions has not yet been established. Therefore, dangers exist in assuming either that single sources represent "good" samples of reality or that combined sources are necessarily "improved" samples.

Fortunately, these same conditions and reservations need not apply to the strategy of treating separate sources as representative of distinct points of view. That strategy, in fact, is designed to exploit the informational advantage such source "imperfections" offer.

One of the objectives of using multiple sources is to increase the amount of data available for analysis. But a key question is the location of data in the above diagrams. As will be seen in the examination of the various studies, some sources were found to contain greater amounts of transactional data than others, which resulted in higher data yields. Here the question is "are the additional data valuable and comparable, and for what purposes?" For example, Hoggard's (1972) comparison of the Foreign Relations Indicator Project (FRIP) and the NYT found that FRIP data are of a routine transactional nature, and therefore are not comparable with the interactional data found in the NYT. In fact, Hoggard found a 20:1 frequency ratio of FRIP data to NYT data.

In a study of regional versus global sources, Doran, et al (1975) found that the regional sources have a greater number of events reported--but that most of the increase is transactional rather than interactional. When interactions occur they are more likely to be picked up by the global source. It can be held, then, that their use of regional sources lowered the threshold shown in Figures A-1 and A-2.

The comparison of the Foreign Broadcast Information Service (FBIS) and the NYT by V. Moore, et al. (1974) reveals much routine data in FBIS. Nevertheless, profitable and meaningful analyses can be made as long as one is aware of the existence of such routine data. Smith (1969) reports the same finding from the Indian White Papers, (IWP) as they, too, include much data on routine diplomatic exchanges. Analysis of the data results in findings that are both interesting and valuable.

SURVEY OF LITERATURE ON MULTI-SOURCE COMPARISONS

This survey covers nine papers which report on studies of multiple event data sources for a variety of research purposes. The studies and their principal findings are summarized in this section. The concluding section of this paper evaluates the implications of these findings for the strategy to be employed in our multiple data stream research.

Azar, et al. (1972) compared eight sources of interaction data from January, May, and September of 1956 and 1957. Attention was limited to Egypt (UAR) as the actor. The study was later expanded to a four-year analysis using the same methods of comparison, with Egypt and Israel as actors. The eight sources used included four American, two British, one Russian, and one Swiss, the choices being based on the proposition that this range of sources would more adequately reflect events since they represented several international arenas. In the preliminary study, Azar collected all interaction data on the UAR as an actor, and scaled the events on a five-region scale of violence. The scale ranged from very low violence (e.g., a nation's legislature voting funds to support an international military organization) to very high violence (e.g., nation A launching an offensive against nation B).

Based on a total of 147 events collected with UAR as initiator and rated on the violence scale, the study found that the Middle East Journal (MEJ) and the New York Times Index (NYTI) reported nearly 70% of all the events collected (90% in the four year study). Concentrating their analyses on these two basic sources, Azar, et al. (1973) produced two interesting results. First, even though together they account for 70% of all data reported, joint reporting by the two (events that are covered by both) represents only 10.9% of the total (9.7% in the four-year study). Second, the NYTI reported nearly twice as many events as the MEJ.

Azar, et al., draw several conclusions from this study. An obvious one is that, due to the low overlap in events covered by both sources, the number of events would have been less had the study used only one source. The authors warn that reliance on one source could yield different conclusions than an analysis using both. For example, the NYTI reported more violent events than the MEJ. Thus, an analysis based only on the NYTI would give a different picture of the UAR's behavior as an actor than one based on both sources.

Both the preliminary study and the four-year study lead Azar, et al., to war against utilization of a single source, especially for area studies, and to emphasize that to get a more comprehensive view of UAR as an actor one needs to use at least the two basic sources studied here. They feel that reliance on a single source could generate dissimilar conclusions about UAR's behavior to other nations, and would eliminate a substantial number of events that could be of theoretical and empirical importance in analyses of the data.

Also focusing on the Middle East arena is Robert Burrowes' (1973) study that compares nine sources (including the New York Times (NYT), New York Times Index (NYTI), Times of London (TOL), Deadline Data and Cahiers four actors (Syria, Jordan, Israel, and Egypt). Data for four 2-month periods (January-February 1955, 1956, 1962, and 1967) were chosen to represent two periods of relative calm and low activity and two periods of high conflict and activity. Burrowes finds that the Cahiers de l' Orient Contemporain source produces the largest yield of events and that the Cahiers and the NYTI produce the largest yield of data and with the least duplication.

Burrowes also asks whether sources differ qualitatively in the types of events, actors, and targets they report? Do they yield different interpretations of the "real" world? He finds that they do. Selective attention results in a source paying closer attention to events involving one nation than other nations--that is, if Cahiers and the NYT had been equally attentive to each of the four actor nations, each source would

have yielded a similar percentage of total actions for each nation. However, this is not the case. Cahiers noticeably over-reported on Syria, which happens to be a former French mandate, and under-reported on Israel because Cahiers doesn't recognize the existence of Israel as a state. (The small number of events on Israel reported by Cahiers were found under the heading "Arab-Israel Relations"). On the other hand, the NYT relatively over-reported actions by Israel. Another difference found in reporting by targets is that actors in the NYT, TOL, and Cahiers targeted a disproportionately large number of events to the United States, Britain, and France, respectively. Thus, events targeted to Britain made up 60% of all events targeted in TOL to either the United States, Britain, or France.

Burrowes concludes that the analyst is best advised to use multiple sources in the hope that their combined yields will produce a more accurate composite analysis. However, he sees no assurance that this method will result in combining the strengths rather than the weaknesses of the chosen sources. He also concludes (as do Doran, et al., 1973) that "...sources which vary greatly in 'mix' or distribution of the events they report will produce different results; such sources are obviously not yielding equally representative samples of the unknown universe of external behavior" (Burrowes, 1973: 386).

Doran, et al (1973) compared global versus regional data sources to discover whether political conclusions are dependent upon the nature of the sources from which the data have been derived. The authors challenge the contention by other data collectors that variation in interaction data derived from different sources will not affect the conclusions emanating from a study. For Doran, et al., there are three issues in the study of multiple source comparability: (1) Is information concerning international events reliable across sources? (2) How serious is the disparity between the data drawn from two kinds of sources? (3) Which data source is the most reliable?

In this study Doran, et al., collected data from three regional sources--the Hispanic American Report, Tiempo (Mexico City) and Vision (Panama). Data from these sources were compared with those collected in the study on political instability from two global sources, Deadline Data and Yearbook of the Encyclopedia Britannica (Feierabend and Feierabend, 1966). The relative distributions of events, characteristics within and between the sets, and absolute disparities between the data sets were compared to determine whether any disabling bias is present.

In the comparison of event distribution over time, Doran et al., found some agreement between the two studies on the general nature of instability over time. However, since they found that the regional press reported a significantly larger number of events, the authors hypothesize that the globally oriented press "may be sporadically sensitive to instability events in a given region focusing attention on a country or region when events of (special) significance occur" (Doran, et al., 1973: 180). Once the instability subsides, the global sources turn elsewhere and leave the regional sources to report the day to day developments. One might mention here that data derived by Doran, et al., from regional sources could be said to fall within the McClelland definition of more "routine" or "transactional" data. When these transactional data take on the characteristics of interaction data, they are then picked up by the global sources.

The conclusions of the Doran study sustain other analysts' assertions that disparities between two sources and the use of only one can result in different findings. They support Burrowes' assertion that sources vary in distribution of events and will necessarily produce different results since they are obviously not yielding equally representative samples of external behavior. However, the authors do not conclude that one source is more desirable or more reliable than another. Even though they hold that there is "considerable empirical evidence sustaining the greater reliability of regional sources," (Doran, et al., 1973: 201) the use of global sources in certain cases for designated and specific purposes is not

discredited. However, the authors urge that the analyst systemically compare event distributions to discover whether biases or inaccuracies exist before embarking on the use of different sources in a study of their reliability. Once such variables are recognized and taken into account, the analyst can use multiple sources to gain a more comprehensive and broader view of the international system.

Raymond Smith's (1969) comparison of the NYT and the Indian White Papers (IWP) as sources covering the Sino-Indian border conflict in 1962 concludes that, despite major differences between the two sources, they are both valuable indicators of behavior in this case. Basically using the WEIS system for interaction coding, Smith uses the data to test five propositions set forth by Galtung. These propositions present a "partial explanation of the selection process that intervenes between the actual occurrences of world events" (Smith, 1969: 23) and the resulting images that appear in the media.

The papers discussed previously generally conclude that relying on one data source can be misleading and unreliable, and that using several sources has drawbacks and difficulties because different sources can result in different conclusions. These studies hold that one should consider combining sources to increase comprehensiveness but view the results with caution. Doran, et al., do point out that different types of sources (that is, global versus regional) can be used for different purposes, but it is Smith who is the first to emphasize that it may be valuable to exploit these differences--that two sources may be variant but that both can be good indicators of behavior in different ways.

Specifically, in Smith's study the NYT is found to give more attention to American interests in the Sino-Indian conflict while the IWP clearly reflects Indian bias and propaganda. According to Smith one would expect the NYT to report more aggressive actions initiated by China than by India. Not only do the data bear this out, but the NYT reports China as having committed more aggressive acts overall than even India accused her

example, reporting of violence was found to be patterned almost identically in both the NYT and TOL. But when the sources were analyzed for attention to specific geographic regions, the TOL was found to report more events on Africa and Western Europe than the NYT. The findings also show that each source focused attention on different conflicts: the NYT reported twice as many events on the Arab-Israeli conflict than did the TOL and three times as many on the Vietnam conflict, while the TOL reported more events on the Sino-Soviet relationship than did the NYT and five times as many events on the Nigeria-Biafra war.

These conclusions reemphasize Smith's (1969) argument that such differences in statistical distributions of data do not negate the value of alternative sources. Rather, the different findings reveal salient and exploitable characteristics about the two sources. Multiple sources can and should be utilized for delineating similarities and differences in perceptions of behavior and that indeed this attribute may be beneficial for future analyses.

A more complete study comparing the NYT and TOL was completed in 1972 at the WEIS Project by Hill and Fenn (1972). The authors used two sources to compare attention directed to chosen arenas of interaction and to explore attention to specific episodes of conflict in international affairs (that is, the conflict between India and Pakistan, the relationship of Jordan to the Palestinian Liberation Organization (PLO), the Middle East and Vietnam). The time sample was from January 1, 1969, to December 31, 1971, and the methodology paralleled that used in the McClelland and Young study.

Hill and Fenn found that the data from both sources form similar patterns when compared over time. Absolute amounts of reported events differ, but patterns of escalation and de-escalation in crisis periods are clearly distinguishable in both (although the NYT reports significant peaks in crises more extensively than the TOL). The authors found no evidence of a consistent bias across the two sources--the NYT did not view Pakistan

as more hostile to India than the TOL, or vice versa. Thus, the study concludes that event data reported in the NYT and TOL is essentially conflict-indicator data that are consistent and comparable, particularly when the data deal with conflict.

A study was undertaken by Vivian Moore, et al. (1974) to compare Japanese behavior in 1972 as reported by the NYT and the FBIS.¹ The methods of analysis used--comparisons of distributions and frequencies--are based on data coded according to the WEIS procedures. The authors found that the frequency of events across behavior categories in the FBIS is much larger than in the NYT. (Recalling the McClelland distinction between interactions and transactions, however, it is clear that a substantial portion of the higher FBIS frequencies are accounted for by inclusion of more "routine" events. The authors also found that the FBIS records Japan as interacting with more targets than the NYT and with a somewhat more even emphasis across target nations. They concluded that a problem exists in the comparability of these two sources because FBIS yields a much greater number of events than the NYT.

Independent of the higher transactional content of FBIS data, Japan's focus of attention was revised differently by the two sources. For example, FBIS finds Japan focusing most attention (44%) on Asia; and within Asia most interaction is with countries which have Communist regimes. But the same analysis with the NYT as a source finds Japan focusing most attention on the United States (42%) with Asia second (34.9%). However, both sources emphasize Japan's attention with Communist nation". Here one must remember that such differences need not nullify the findings nor discourage use of data sets. Rather, such differences, and similarities as well, can and should be utilized for specific purposes as long as the inherent characteristics of the two sources are duly noted and taken into account.

¹ It should be noted that FBIS is itself a composite report of multiple newspaper and broadcast sources and is therefore not a unique "primary" source in the same sense as, for example, the NYT.

Another conclusion (and one which is also found in Smith's study) is that integration of data from an international source (NYT) and a regional source (FBIS) is required to gain a more complete representation of international relations. Thus, sources within a region may develop a data base with more sensitive indicators of minor activities that precede important changes and that are picked up later by global sources. Evidence from Doran, et al (1973) support the value of including both global and regional sources.

Moore, et al (1974) also compared three dyads involving Japan (Japan and the United States, Japan and the Soviet Union, and Japan and the People's Republic of China) using the policy style and relations indicators. These comparisons suggest that the policy style and relations indicator values derived from FBIS are more positive than the same measures based on the NYT, due in part to the higher transactional event content of FBIS. It was also found that the values of these indicators over time were generally more stable (had less variance) when based on FBIS data than on NYT data.

Hoggard (1972) compared the NYT with the State Department's Foreign Relations Indicator Project (FRIP) and found that the two sources were generally non-comparable because FRIP contains large amounts of transactional data. The project data file is based on cable traffic between the State Department and U.S. missions in seven countries that are not of great interest to American newspapers (for example, Afghanistan, Bulgaria, Norway). These two factors suggest that NYT-derived data are not only under-reported but are likely inadequate for analysis. Thus, Hoggard finds the event yield in FRIP overwhelmingly larger than in the NYT (1046:12 for seven nations). However, he uses this discrepancy to point out that FRIP-type sources enable one to study action-response sequences because of the frequent and detailed interactions such sources provide. On the other hand, it is difficult to find such continuity using public media data in regions and for countries that the media tend to ignore.

Hoggard's analysis of differential source coverage (1970) using the New York Times Index, the Asian Recorder, Deadline Data on World Affairs, and the Indian White Papers to study the 1962 Sino-Indian border war is a more comprehensive comparison undertaken to assess the effects differential source coverage may have on conclusions drawn from the analysis of interaction data over a 14-month time period. Evidence is generated that the sources yield different quantities of interaction data, and that few of the same events were reported across sources. When compared over time, the data showed little or no correspondence among the different sources.

Some of the findings are extreme and may be attributable to the vastly different sources being compared. For example, 23.9% of the data appear in more than one source but only 0.5% (or 10 events) appear in all four sources. Also, 65.3% of the events reported in the NYTI appear only there, and the other sources report from 12.1% to 15.9% of the NYTI data. Hence, Hoggard's findings about the IWP substantiate those reported by Smith (1969). Noting that the IWP contains diplomatic papers which record routine events, Hoggard reports that this source has the highest percentage of unique events.

Hoggard argues that Deadline Data is a poor source since the data it yielded accounted for only 2.4% of the total. Furthermore, he concludes that the NYTI and the Asian Recorder are more complete sources since their reporting accounted for 71.4% of the total interactions yielded. On the other hand, Hoggard reported that only a small proportion of the total interaction consisted of the same events for the different sources. Thus, a comparison over time yields little or no correspondence among the sources. Hoggard concludes that for a complete analysis one needs to use as many sources as possible to acquire more interaction data and insure a larger basis for analysis.

IMPLICATIONS OF RESEARCH FINDINGS

This survey has identified considerations that should be paramount in the approach to, analysis of, and interpretation of findings from multiple sources of event data. The two most basic considerations relate to (1) the inherent characteristics of alternative sources, and (2) the purposes to which data are to be applied. It is clear that "event" data may be, and have been, derived from many types of sources--from newspaper to White Papers, from digests and journals to diplomatic communications. Each of these source types tends to define "events" differently. While all sources report interactions, some are devoid of transitional events while others include, and indeed even emphasize, such events. Furthermore, source types differ significantly, with regard to the global versus regional dimensions of coverage and emphasis.

It is clear that the "goodness" of a data source can and should be evaluated only in terms of the intended uses of the data. If primary interest lies in maximizing the amount of data for research and analysis, then different conclusions are in order with regard to source choices and combinations than if interest lies in exploiting the existing differences between "pure" or unadulterated sources. Thus, enhancing data quantity through multiple sources and/or including transactional data introduces uncertainties on data quality in areas such as comparability, sample bias, and reliability. These uncertainties may easily confound interpretation of some analyses, and may invalidate others entirely. Using sources in their pure form avoids the introduction of such possible pitfalls.

In subsequent multiple data stream research, comparative analysis should be restricted to two sources of the same type, specifically, the daily New York Times (NYT) and the Times of London (TOL). Both of these, of course, are leading, globally oriented newspaper sources indigenous to

primary Western countries. The research will explore the similarities and differences in the perceptions of international behavior that these two sources report and will identify international behaviors which are prioritized and evaluated differently by the two sources.

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APPENDIX B

Alphabetical List of Country and
Organizational Names, with Abbreviations

ALPHABETICAL LIST OF COUNTRY AND ORGANIZATIONAL NAMES, WITH ABBREVIATIONS

<u>COUNTRY</u>	<u>ABBREVIATION</u>	<u>COUNTRY</u>	<u>ABBREVIATION</u>
Afghanistan	AFG	Dahomey	DAH
Albania	ALB	Denmark	DEN
Algeria	ALG	Dominican Republic	DOM
Andorra	AND		
Angola	ANG	Ecuador	EDU
Argentina	ARG	Egypt	EGY
Australia	AUL	El Salvador	ELS
Austria	AUS	Equitorial Guinea	GUE
		(includes Fernando Po)	
Bahrain	BAH	Ethiopia	ETH
Bangladesh	BGD		
Barbados	BAR	Finland	FIN
Belgium	BEL	France	FRN
Berlin/East	EBA	Fiji	FIJ
Berlin/West	WBE		
Bhutan	BHU	Gabon	GAB
Bolivia	BOL	Gambia	GAM
Botswana	BOT	Germany/Dem. Rep.	GME
Brazil	BRA	Germany/Fed. Rep.	GMW
Bulgaria	BUL	Ghana	GHA
Burma	BUR	Greece	GRC
Burundi	BUI	Greneda	GRE
		Guatemala	GUA
Cambodia	CAM	Guinea	GUI
Cameroun	CAO	Guinea-Bissau	GBI
Canada	CAN	Guyana	GUY
Central African	CEN		
Republic		Haiti	HAI
Chad	CHA	Honduras	HON
Chile	CHL	Hungary	HUN
China, People's	CHN		
Republic of		Iceland	ICE
China, Republic of	CHT	India	IND
Columbia	COL	Indonesia	INS
Congo	COP	Iran	IRN
(Brassaville)		Iraq	IRQ
Congo	ZAI	Ireland	IRE
Costa Rica	COS	Israel	ISR
Cuba	CUB	Italy	ITA
Cyprus	CYP	Ivory Coast	IVO
Czechoslovakia	CZE		

<u>COUNTRY</u>	<u>ABBREVIATION</u>
Jamaica	JAM
Japan	JAP
Jordon	JOR
Kenya	KEN
Korea/North	KON
Korea/South	KOS
Kuwait	KUW
LAOS	LAO
Lebanon	LEB
Lesotho	LES
Liberia	LIB
Libya	LBY
Liechtenstein	LIC
Luxemburg	LUX
Malagasy	MAG
Malawi	MAW
Malaysia	MAL
Maldiva	MAD
Mali	MLI
Malta	MLT
Mauritius	MAR
Mauritania	MAU
Mexico	MEX
Monaco	MOC
Mongolia	MON
Morocco	MOR
Mozambique	MOZ
Muscat and Oman	MOM
Nauru	NAU
Nepal	NEP
Netherlands	NTH
New Zealand	NEW
Nicaragua	NIC
Niger	NIR
Nigeria	NIG
Norway	NOR
Pakistan	PAK
Panama	PAN
Papua New Guinea	PNG
Paraguay	PAR
Peru	PER
Philippines	PHI
Poland	POL
Portugal	POR
Qatar	QAT

<u>COUNTRY</u>	<u>ABBREVIATION</u>
Rhodesia	RHO
Rumania	RUM
Rwanda	RWA
San Marino	SAN
Saudi Arabia	SAU
Senegal	SEN
Sierra Leone	SIE
Singapore	SIN
Somalia	SOM
South Africa	SAF
South Yemen	SYE
Spain	SPN
Sri Lanka (Ceylon)	SRI
Sudan	SUD
Swaziland	SWA
Sweden	SWD
Switzerland	SWZ
Syria	SYR
Tanzania	TAZ
Thailand	TAI
Togo	TOG
Trinidad-Tabago	TRI
Tunisia	TUN
Turkey	TUR
Uganda	UGA
USSR	USR
United Arab Emirates	UAE
United Kingdom	UNK
USA	USA
Upper Volta	UPP
Uruguay	URU
Vatican	VAT
Venezuela	VEN
Vietnam/North	VTN
Vietnam/South	VTS
Western Samoa	WSM
Yemen	YEM
Yugoslavia	YUG
Zambia	SAM
<u>Colonies or Protectorates</u>	
Bahamas (BR.)	BAS
Bermuda (BR.)	BER

<u>COUNTRY</u>	<u>ABBREVIATION</u>
British Honduras	BHO
French Guiana	FGU
Hong Kong	HOK
Macao (Portugal)	MAC
Southwest Africa	SAW
Spanish Sahara	SPS

INTERNATIONAL ORGANIZATIONS OR MULTILATERAL GROUPS OF NATIONS

Alliance for Progress	AFP
Organization of American States	OAS
Irish Republic Army	IRA
Warsaw Pact	WAR
North Atlantic Treaty Organization (NATO)	NAT
European Economic Community	EEC
European Free Trade Association	EFT
United Nations (only)	UNO
Organization for African Unity	OAU
Kurds	KUR
Palestine Liberation Organization	PLO
Arab League	ARL
Vietcong	VCG
World Bank (IBRD, IDA)	WBK
International Monetary Fund	IMF
International Terrorist Groups	TER
Southeast Asia Treaty Organization (SEATO)	SEA
International Red Cross	IRC
All Other International Organizations	INT
Any Other Multilateral Group	MLG
Not Stated, Unidentified Target	NSC

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