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Politics under the Microscope: Observational Methods in Political Research

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ABSTRACT. Behavioral political science has not utilized observational methods and lacks the field research tradition found in other behavioral sciences. This paper explores the potential contribution of observational methods to behavioral studies in political science and illustrates their application with data developed around oral argument in the United States Supreme Court and the first Reagan–Mondale television debate in 1984.

If not unique, political science is unusual in the distance it maintains from its subject matter. In the natural sciences, geologists spend a good deal of time looking at rocks, astronomers watch the stars and laboratory biologists examine tissue. In the behavioral sciences, primatologists spend time in the field observing primates, anthropologists spend time in the field observing culture, and psychologists observe behavior in clinical, laboratory and field settings. Over the course of a career, the typical political scientist spends little if any time actually observing political behavior. Judicial scholars spend little time in the courtroom, students of legislatures spend little time in committee rooms or the galleries of a legislative body, and specialists in local government are rarely found in the audience of councils, boards and commissions. At best, most scholars in this discipline may watch a few hours of "live" politics in their subject area over the course of a career. Such limited viewing time is reflected in the paucity of systematic, nonparticipant observational research in political science. Of course, some "participant" observation occurs in the discipline and, no doubt, such experience is educational for participants—possibly, even offering a rich source of hypotheses. Participant observation, however, is subjective, and limited in its perspective on events by the sensory and cognitive capabilities of the individual, and cannot possibly meet scientific standards for validity, reliability and replicability. In short, observational studies are exceptional in political science,[1] and when political scientists speak of conducting field research, they are typically talking about interviewing politicians in their offices. Richard Fenno (1986: 14) addressed this characteristic of the discipline speaking as President of the American Political Science Association:

> Observation-based research is a rarity in the *American Political Science Review*. There are many reasons for this; and each of them may be valid in its own terms. But the question is a disciplinary one. How much value do we place on observation as a research mode? How much legitimacy do we wish to bestow on observation based

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> research? Have we tried our very best to teach observation and failed? Or have we made a standing decision against its claims of added value to us?

What, if anything, is political science missing by its apparently paradigmatic exclusion of observational research? Although this is not the forum for a subfield by subfield review of this question, a suggestion is offered in the field of public law and judicial decision-making. Searches of legal and social science bibliographic databases reveal only one published behavioral study dealing in any way with oral argument in appellate court decision-making in the United States (McFeeley and Ault, 1979) and only one more in the comparative literature (G. Schubert, 1985). This omission stands in direct contrast to the well-documented perceptions of US Supreme Court Justices (Harlan, 1985) and other federal appellate court judges, as well as lawyers arguing cases in the federal courts, that oral argument plays a very important role in appellate court decision-making (Marvell, 1978; Wasby, 1981).[2] The potential functions and significance of oral argument are explored by Wasby et al. (1976) and Shapiro (1984). The omission of research on oral argument appears more remarkable, given that the audiotape-recordings and printed transcripts of arguments for the Supreme Court offer scholars a rich, longitudinal database on the attitudes and concerns of Justices on many important policy issues over the past quarter century.

Oral argument in appellate courts illustrates but one of the myriad face-to-face settings in which political decision-making occurs and that political science tends to ignore. Politics in the modern world remain largely a face-to-face activity. In municipal councils, boards and commissions, legislative committees and subcommittees, judicial conferences, advisory group and task-force meetings, much of political decision-making involves interpersonal, face-to-face exchange. Where decisions are formalized through voting, votes record the outcome of an interaction process. Without denigrating the importance of voting studies, the potential of observational research is to look within the political process in a systematic fashion at the political behavior that precedes the formal stage of decision. It offers the opportunity to record behavioral observations of persuasion and competition, bargaining and negotiation, conflict resolution and consensus formation. Certainly, traditional methods of interviewing and survey research are usefully applied to understanding process questions. However, such methods are subject to various well-known limitations, as Wahlke pointed out a decade ago in his (1979) critique of "pre-behavioralism" in the discipline. What direct observation offers is the possibility, on the one hand, of developing more comprehensive, more precise and sometimes more objective measurement of political phenomena in some traditional areas of concern, while, on the other, it holds out the promise of opening up new and unexplored contexts for learning about politics.

An Observational Approach

Contributions of Observational Studies

Observational field methods permit studies that are distinguishable from traditional behavioral methods in political science in three key respects. First, such methods involve direct observation and measurement of actual behavior occurring or recorded live. Second, observation may proceed under naturalistic conditions. Third, human behavior is broadly conceived to include nonverbal and paralinguistic as well as

verbal dimensions of communication. The first point does not preclude interviews to assess the understanding or perceptions of actors, but does imply direct measurement of communications. The second point does not reject the value of experimental research; however, it does indicate the importance of studying behavior where and how it actually occurs. Among other values, naturalistic studies embrace the naturally occurring range of variability in behavior, the natural frequency or incidence of behaviors, and the social and physical context within which behavior takes place. The naturalistic setting is ideally modified only by the observer effect and the observer effect may be minimized by habituation of the subjects to the observation system through longitudinal research designs. The third point is that political behavior may be conceived to include words, mode of expression, and other forms of message exchange. The behavior of a judge in open court or a presidential candidate on television might, therefore, encompass words, properties of voice and speech performance, facial expression, even gesticulation, posture and other bodily movement. Although studies reveal a good deal of redundancy across the alternative verbal and nonverbal channels of communications, nonverbal channels may be more important in political communication because of the various formal and informal constraints on verbal behavior in political interactions—politicians, judges and diplomats are not free to speak their minds. Studies of nonverbal communication in political science include Frank (1977), Hermann (1977), G. Schubert (1985) and Wiegele et al. (1985).

Problems of Observational Research in Political Science

Of course, there are problems that help explain the underdevelopment of observational research in political science. One obvious limitation for observational methods is access: what cannot be viewed directly or otherwise recorded lies beyond the application of observational methods. Observational research on the social behavior of almost any species faces problems of access. Field biologists confront access problems from migratory species, those that live underground or in treetops, and those that are difficult or impossible to find in the wild. Problems of access challenge the ingenuity of researchers and their measurement techniques. So too in human politics; while no doubt there are arenas of politics that will impede or completely deny access, the a priori notion that all substantive politics occur behind closed doors—in those proverbial smoke-filled back rooms—is simply without foundation. At least in the United States, the passage of "open meetings" and "sunshine" laws, and the broadcasting and televising of political events over the past decade has created a facilitative climate for observational studies. However, even where raw data fall within the public domain, adherence to norms of confidentiality should help to limit politicians' fears about access to their proceedings by political scientists.

A second major problem confronting the application of observational methods in political research is cost. Such research does require substantial investment of labor and often depends upon the use of equipment that requires capital expenditure. Although observational research will appear expensive compared to the equipment costs with which political scientists are familiar, costs are marginal compared to other disciplines.

More problematical for political scientists are the labor expenses and professional costs. Longitudinal research on a single group may entail several dozen hours of

direct observation. The development and analysis of quantitative data describing the raw observations can be even more time-consuming. One professional implication involves scholarly productivity. In contrast to the investment in a secondary, computer-based statistical analysis of a data file acquired from a data bank such as the ICPSR to yield one published article, the investment in an original piece of published observational research will be much greater and publication much slower to materialize. Moreover, if academic tenure, promotion and merit decisions in political science remain tied to simple-minded quantitative measures of scholarly productivity, there is little doubt that opportunities for observational research will continue to be ignored within the discipline. Fundamentally, any substantial movement toward observational studies will require, as Fenno (1986) suggests, a basic reassessment of disciplinary priorities and that is unlikely to happen soon.

Conducting Observational Research

Notwithstanding other obstacles, technological changes in the environment of social research place observational studies within the reach of political scientists. In the early 1960s, Barber (1966) conducted observational research on local government boards, applying Bales' (1950) Interaction Process Analysis (IPA). IPA requires classifying a verbal behavior as one of 12 discrete categories. Event codes were entered on a modified strip chart recorder. Because the equipment was not readily transportable to a number of different field locations and would have been quite obtrusive if it had been, groups were brought into a laboratory setting to work at standardized tasks during observation. Thus, through the 1960s, 1970s, even into the early 1980s, systematic field research applying such schemes as Bales' IPA was awkward to conduct, to say the least. Of course, paper-and-pencil coding techniques provided an alternative for field-based observation, but these are even more labor intensive and only the most hardy political scientists ventured into the field with them. In general, both the recording of direct observations and the subsequent extraction of quantitative information from them for statistical analysis have been laborious processes that impeded the application of observational methods in social research.

Recording Behavioral Events

Modern technologies for recording observations in the field offer various improvements to the research process. In general, the process of observation may involve "live" coding, that requires scoring or coding events as they actually occur, or recording political events and proceedings on audio- and videotape for subsequent coding in the laboratory.

The laboratory-based strip chart recorders and the paper-and-pencil techniques, associated with Bales' IPA, are now unnecessary. Microprocessor-based event data recorders are available that fit in the palm of the observer's hand. Such equipment offers a permanent memory for storing data, ROM and RAM database software, and capabilities for generating descriptive statistical reports and/or full communication with other computers (i.e. for data transfer). Although this type of equipment costs thousands of dollars, it is also possible to custom-program a simple pocket computer, priced at a couple of hundred dollars, to solve less complex "live" coding tasks. Using event recorders, the observer predefines key-stroke codes to represent the behavioral

events and other factors through the software. During an observation session, codes are entered and stored in the memory of the machine, generally along with machine-generated data on time of occurrence for the key strokes. After a coding session, data are printed and/or transferred electronically to another computer for permanent storage, further processing and statistical analysis. The only inherent limitation on what can be coded involves the observer's attention span. Of course, sampling processes for observation may be defined (e.g. 5 minutes on and 5 minutes off) (Barner-Barry, 1986), or multiple observers may be deployed. In my experience studying small-group debate, one observer can produce accurate and complete data on the identities of speakers and targets/recipients of verbal behaviour for meetings of up to 3 hours in length.

Audio and video recording dramatically increase the possibilities for data collection. In general, audio recording is better than no retrievable record of proceedings, but video recording is easily worth the additional effort and cost. Even if the videotape is never coded directly, it provides an extremely valuable guide for subsequent checking of who said what to whom, and when. The advent of home video-recording equipment provides relatively inexpensive and quite portable videotaping capability. Some cameras designed for home use have professional quality pickup tubes and, equipped with a wide-angle lens, provide an image quite adequate for research purposes—even under natural lighting conditions. Video cameras are undergoing substantial miniaturization and, in the near future, pocket or palm-sized cameras may be available. The possibility of videotaping under natural light with very miniature cameras should reduce the concerns of both researchers and subjects about the impact of obtrusive video equipment on normal group function. It may also be noted here that the audio track of a videotape, if used with an appropriate microphone, yields a high-quality audio recording.

The question of obtrusiveness, whether or not the video camera interferes with the group behavior, is certainly an important consideration. The issue is commonly raised, for instance, when state government bodies address proposals to videotape court proceedings. Evaluation studies of experiments in state courts consistently reveal such fears to be largely groundless. On bringing a video camera into a small municipal council meeting-room, I have found—and have been told by group members—that, after a couple of sessions, the camera becomes part of the environment and members generally ignore it. What is perhaps critical on this question is whether the camera is being used by a social scientist or the news media. Social scientists, who take the effort to explain their purposes, assure confidentiality, and tape entire meetings, meeting after meeting, are not so threatening. News reporters, who bring in bulky professional equipment, set it up in the aisles, turn on floodlights, and have technicians scurrying around, do interrupt events. Certainly, the social scientist causes an observer effect, but in most instances it is likely to be small. Effects upon behavior are minimized by including a habituation period in the research design. My own procedure was first to observe a group meeting with no equipment, second to audiotape proceedings for the next four months, and only then to introduce the video equipment; (with the prior consent of individual members).

It should also be noted that an increasing variety of political events and group proceedings are already being videotaped in the United States and other countries. The vast majority of states allow some videotaping of their courts. Most common is videotaping of appellate court proceedings, although many are extending such policy to include trial courts as well. Many city councils in larger communities televise their

proceedings and, despite the theatrics, some useful political data may leak out in this manner. Cameras are allowed increasingly into legislative chambers and committee rooms, and we are all too well aware that electoral politics increasingly occur through television. In short, a wealth of raw material is being generated on videotape that could be exploited by political scientists using observational techniques.

Regardless of the source of the recording, similar processes may be applied to coding videotapes of political events. Quite complex systematic quantitative data may be developed by utilizing the microcomputer-based event data recorders described above. Although the attention of one observer is quite limited, when coding live, a videotape can be replayed any number of times. Different behaviors and/or different actors may be coded in each pass through the tape and reliability can be very objectively assessed by multiple coders. Some event recorders will write a digital time base on the audio track of a (duplicate or the original) videotape. In this type of application where subsequent coding sessions allow multiple passes through the videotape, the data on each event code are stored along with their time of occurrence in the proceedings, in tenths of a second. A resulting file might consist of several sets of records, one set per pass, and each record would contain fields for the event and a field for the time of occurrence. Transferred to a larger computer, the several sets would be merged and sorted on the basis of time to yield a single, sequential data file describing the incidence of a complex set of observed behaviors. Indeed, using time as the common basis of reference, event codes for nonverbal facial expression, data on properties of a speaker's voice, and data on the verbal content of an utterance could be integrated into a single, multichannel database, organized at the level of the comment, speaking turn, or even a discrete word to described political communication—whether in an appellate court or on a legislative subcommittee.

Looking ahead again into the not-too-distant future, computing technology may also greatly facilitate the integrated analysis of verbal and nonverbal behavior. Specifically, speech recognition software, already available in rudimentary forms, should soon yield automated development of written transcriptions for the verbal content of proceedings from audio tape-recordings. Optical scanners are already available to scan printed text, recognize characters and convert a page of text into a computer wordprocessing or text-base file. Digital audio-recording technology will provide the capability to retrieve and filter speech to enhance computer recovery of spoken words. Certainly, the labor costs of manual transcription have limited research on political conversation. We may soon confront cheap and efficient access to written transcripts from audio recordings of spoken communications. While this should prove an obvious boon to more traditionally conceived qualitative research, work in psycholinguistics on speech behavior is proceeding apace to provide behavioral scientists with the theoretical basis to extract a wealth of psychobiological data on the cognitive states of political actors.

Finally, developments in the technology of voice analysis are reducing the cost and increasing quality and precision in the generation of acoustic data on paralinguistic properties of speech. A vast range of human emotions and affective states are conveyed through properties of voice (Scherer, 1986). Initial efforts have been made by political scientists to exploit this source of data to measure psychophysiological stress in the behavior of political elites (Wiegele et al., 1985). Equipment and software are now available, within the range of political science research grant budgets, that will extract pitch, intensity, variability and perturbation (voice stress) data from prerecorded speech and, interfaced with a microcomputer that digitizes the analog signal, provide summary statistical profiles of speech segments. Audio recordings of

press conferences, speeches, judicial comments and small-group debate can all be processed through this equipment to yield data on relevant properties of voice quality in the measurement of affect variables.

In sum, many of the problems that beset and hindered observational research efforts in the 1960s and 1970s are being resolved or minimized by advances in audio/video-recording and computer technology. Other behavioral science disciplines are taking advantage of new technologies to conduct increasingly rigorous observational studies in naturalistic settings. The possibilities are increasingly open for political scientists to explore the potential benefits offered by observational studies of political behavior. The development of mainframe computer technology in the 1950s and 1960s played a major role in facilitating the acceptance and use of survey research methods. It will come as no big surprise if microchip technology similarly transforms the concept and conduct of political science research to include observational methods, as it is already doing in the other behavioral sciences.

Research applications

There are at least two areas in which observational methods promise substantial payoffs to political scientists. First, they offer the potential for more comprehensive measurement of concepts frequently employed in political theory and research: individual participation in groups, leadership behavior, coalition formation, and processes of conflict and compromise are all subject to direct observation and measurement. Second, such methods open up possibilities for unobtrusive, remote assessment of affective states associated with political behavior: expression of psychophysiological arousal, anxiety and stress may be measured through observational techniques. As research progresses on nonverbal communication in psycholinguistics and human ethology, more complex conditions of anger and rage, fear and disgust, joy and elation, happiness and sadness may become subject to assessment as well. The understanding of political attitudes and the bases of political behavior may be substantially enhanced through measurement of the affective properties associated with political stimuli (Conover and Feldman, 1986). The following examples are designed to illustrate some of these possibilities for observational research methods in political science.

Oral Argument on the United States Supreme Court

To explore the feasibility of a broad-based study of oral argument in Supreme Court decision-making, a pilot study was conducted of the argument in *Roth* v. *United States* (Schubert, 1987). The Roth case, decided in 1957, was the first in a series of Court cases that elaborated national policy on obscenity. The 6:3 decision held that obscenity was not a form of speech falling under the protection of the First Amendment to the Constitution; Justices Douglas, Black and Harlan were in the minority.

Data were developed for the study by preparing written transcripts of the text, as wordprocessing files, of all verbal behavior during the hour-long argument period from an audiotape-recording and preliminary published transcripts. Properties of the verbal events that occurred during the argument were coded in the written transcript at the point of occurrence. Computer programs were written to read the text and the embedded codes for behavioral events and to produce a summary set of aggregated

Table 1. *Concepts and Indicators for Judicial Behaviour in Roth Oral Argument*

Concept	Indicator	Measurement	ID[a]	Data source
Arousal	Voice pitch	Mean fO of utterance	fO, ZfO	Electro-acoustic analysis
	Vocal intensity	Mean decibels for utterance	dB, ZdB	Electro-acoustic analysis
	Pitch variation	fO st. dev.	fOstd	Electro-acoustic analysis
	Intensity variation	Decibels st. dev.	dBstd	Electro-acoustic analysis
	Maximum pitch	fO max.	fOMAX, ZfOMAX	Electro-acoustic analysis
	Speech rate	Words per second	SRATE	Audiotape + transcript
Stress/Anxiety				
Voice stress	Pitch perturbation	Instrument calculation	PERT, ZPERT	Electro-acoustic analysis
Creativity	Type–token ratio	Unique words (% total)		Transcript
Uncertainty	Ahh rate	Ahhs (filled pauses) per spoken word		Audiotape + transcript
	Unfilled pauses	Voiced speech (%)		
Speech errors	Disturbance rate	Total errors per spoken word:	SPERR	Audiotape + transcript
		corrections — Mid-sentence correction to form		
		repetitions — single or word set repetitions (the the)		
		stutters		
		word omissions		
		grammar errors		
		noise — Incoherent vocalization		
Qualitative characteristics coded for verbal behaviour				
Form of utterance		Lawyer monologue, question, answer, statement		Transcript
Origination		Introduces new direction to discussion (new/old)		Transcript
Affective content		Positive, Neutral, negative (object/target)		Transcript
Type of utterance		Technical/nontechnical		Transcript
Procedural utterance		Procedural/argument		Transcript
Context of utterance		Presentation/judge–lawyer interaction		Transcript
Leading question		Yes/no		Transcript
Speaker, target of utterance		ID codes		Transcript/audiotape

[a] Data are standardized by Justice, as appropriate, to account for individual differences in voice qualities.
Key: fO = fundamental frequency; dB = decibels.

numerical data for each speaking turn during the argument. The audiotape-recording was also processed through equipment for voice analysis that provided summary statistical data for the acoustic properties of the Justices' speaking turns.

The theoretical objective of the study was to describe patterns of judicial concern in relation to the topical themes and issues arising over the course of the argument. Of course, an understanding of particular concerns of the Justices with a case may provide data to better explain the outcome and opinion of the Court and, also, evidence of attitudes towards issues in the broader sociopolitical environment surrounding the case. Concern was operationalized in terms of component dimensions of *interest* and *anxiety*.

Externally, interest is revealed through patterns of attention. Attention paid to specific issues by the group and/or individual members is one obvious basis for measurement. Internally, interest is manifest in the psychophysiology of attentiveness. Interested individuals are alert individuals and alertness is caused by physiological processes of arousal. Arousal is expressed through the nonverbal behavior of actors and quite clearly through acoustic properties of voice and speech behavior. Specifically, aroused voices are high in pitch, loud in intensity/amplitude, and fast in tempo or speech rate (Scherer, 1986).

Anxiety is a psychophysiological response to stress. Stress reactions affect cognitive and physiological functions. Specifically, when experiencing anxiety while talking, people tend to display an increase in speech disturbances or speech errors and a decrease in cognitive creativity (Hermann, 1977; Siegman, 1978). Physiologically, among other things, the musculature of the vocal folds tightens, causing increased perturbation in voice pitch (or jitter in fundamental frequency). Concepts, indicators and measurement for this study are identified in Table 1.

To relate behavioral events to the thematic or issue content of discussion, the transcript was read and coded for discussion topics. On the whole, shifts in discussion topics are quite evident, for instance when a judge asks a new and different question of counsel relative to a prior line of questioning. The entire argument period was broken up into topical segments and these discussion periods provide one basis for organizing the behavioral data, as illustrated in Table 2. With respect to the concerns expressed by the Court in the Roth argument, it is clear from the allocation of discussion time and the frequency of questions that concern was greatest with respect to the federal power to regulate the mails, the definition of obscenity, and the relevance of the "clear and present danger" test to obscenity. The importance of the latter question is that, if the regulation of obscenity could be regulated under the clear and present danger test, then obscenity would constitute speech protected under the First Amendment, But, if obscenity was not protected speech, then the test had no relevance for obscenity. What occurred during this phase of the Roth argument was fundamentally a debate between Justices Frankfurter and Douglas, conducted through the medium of questions to the government attorney.

Data are presented on arousal in speech by the Justices in Table 3. Scores were standardized by Justice on pitch (ZfO) and intensity (ZdB). These data reveal that the level of arousal increased over the early course of the argument, building to a climax in the discussion of the applicability of the clear and present test. Arousal tapered off as Frankfurter attempted to resolve the issue by arguing that the question of applicability was irrelevant. Table 3 also provides data on arousal and stress/anxiety, broken down by Justice. It is clear that Frankfurter, who was an active participant throughout the argument, was a principal contributor to the groups'

Table 2. *Summary Characteristics of Topical Attention in the Oral Argument of Roth*

Sequential topics	Interaction comments	Average length(s)	Interaction time (min)	Judges involved[a]	Statements, comments (%)	Originations, comments (%)	Negative affect (%)	Leading questions
1. Federal power to regulate mails	31	13.3	6.9	W,H,B,F	6.5	27.6	3.2	3
2. Argument to consider 'context'	11	13.0	2.4	W,F	18.2	55.6	9.1	0
3. Scope of case review	21	9.0	3.2	B,F	28.6	42.1	19.0	1
4. Market for obscene materials	5	18.6	1.6	H,F	16.7	0.0	0.0	0
5. Definition of obscenity	28	9.4	4.4	F,D	26.9	36.8	7.1	0
6. 'Clear and present danger' test	21	15.7	5.5	F,D	9.5	21.1	9.5	4
7. Relevance of 'clear and present' test	39	6.0	3.9	F,D	37.8	16.2	28.2	7
8. Politics of Counsel's argument	11	8.9	1.6	B,F,D	80.0	22.2	54.5	0
9. Validity of statute	4	11.6	0.8	F,D,C	50.0	0.0	25.0	0
10. First Amendment and mail regulation	22	7.9	2.9	F	54.5	19.0	17.4	1
Other	9	10.5	1.6	W,F	78.6			

[a] W = Warren; H = Harlan; B = Burton; F = Frankfurter; D = Douglas (others not participating).

Table 3. *Acoustic Properties of Speech by Topic in the Roth Argument*[a]

Sequential topics	All speaking Justices				Justices' variation in pitch (ZfO)[b]					Justices' variation in stress (ZPERT)[b]				
	n	ZfO	ZdB	ZPERT	W	H	B	F	D	W	H	B	F	D
1. Federal power to regulate mails	16	0.19	0.21	−0.32	−0.50	−0.14	0.76	0.29		1.38	−0.40	−0.41	−0.46	
2. Argument to consider 'context'	3	0.24	−0.31	0.12	0.92			−0.11		−0.28			0.32	
3. Scope of case review	9	0.02	−0.27	0.07			−0.76	0.24				0.41	−0.02	
4. Market for obscene materials	3	0.43	0.00	−0.03		0.55		0.38			1.58		−0.84	
5. Definition of obscenity	11	0.44	0.57	−0.25				0.92	0.33				−0.85	−0.11
6. 'Clear and present danger' test	9	0.57	0.58	−0.40				1.12	0.13				−0.66	−0.20
7. Relevance of 'clear and present' test	18	0.01	0.11	−0.16				0.25	−1.21				−0.33	0.67
8. Politics of Counsel's argument	2	−0.82	−0.73	0.16				−0.82					0.16	
9. Validity of statute	1	−1.11	−0.53	−0.53				−1.11					−0.53	
10. First Amendment and mail regulation	11	−1.07	−0.82	0.99				−1.07					0.99	

[a] Data are standardized to Z scores by judge and, thus, reflect variation in individuals' behavior across topics.
[b] W = Warren; H = Harlan; B = Burton; F = Frankfurter; D = Douglas (others not participating).

variance over the argument. The arousal path in the group data reflects Frankfurter's behavior. It is interesting to examine the data on pitch perturbation, indicating the stress/anxiety dimension of concern. For each of the three topics in which Frankfurter displayed elevated concerns, he was engaged in interpersonal exchanges with the defense and government attorneys in which he criticized the quality of their preparation and argument before the Court. In short, the data indicate that where Frankfurter was aroused about issues, he was stressed by involvement in authority interactions.

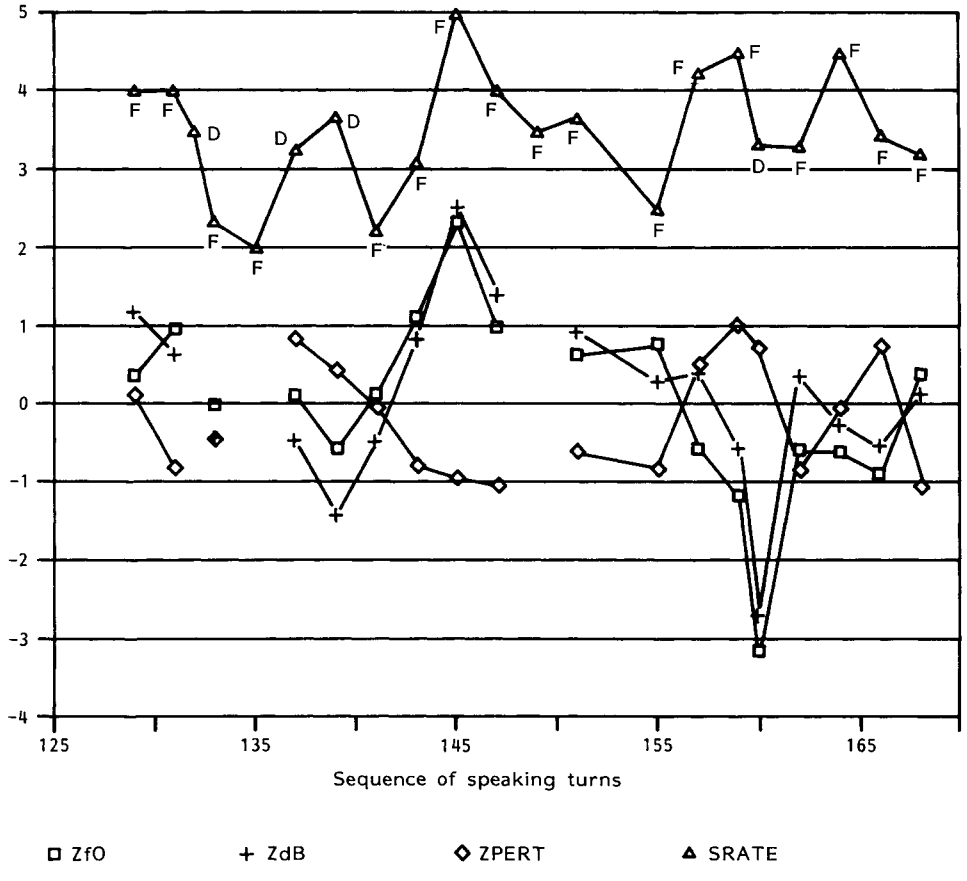

Figure 1. *Relevance of "Clear and Present" Test.*

Data are presented in Figure 1 on the discrete comments of the judges during one of the topical interaction periods. Of particular interest is the apparent arousal sequence in Frankfurter's behavior that begins with speaking turn no. 141 in the plot. Here, a set of questions are put to the attorney that display a pattern of increasing pitch, increasing intensity and increasing speech rate—a statistical picture of vocal arousal. In a separate process, the behavioral database was searched to extract all judicial speaking turns in which arousal indicators had values with standard scores greater

Table 4. *Justices' Speaking Turns with High Vocal Arousal in Roth Argument*[a]

Speaker	Topic	Argument turn no.	Speech rate	Speech errors	ZfO	ZdB	ZPERT
H	1	9	3.9	0.05	1.32	0.91	–0.38
To carve it down to size, which is my trouble, take a dirty picture. Now do you say it's beyond the purview of Congress to say we will not allow that stuff to be shipped through the mails?							
B	1	15	3.5	0	1.34	0.98	–0.43
The federal government can put no limit on what can be sent by mail?							
F	1	19	2.64	0	0.78	1.26	–0.64
The Webb Kenyan Act has no such absolute non-possumus that you can find in the First Amendment. You say you can't deliver this, but you can say it's all right for you to stop. You can't keep this out, but you say if New York or some fussy state had legislation against obscenity, then the Postmaster General says never mind the First Amendment, you deliver it?							
F	1	21	2.3	0	1.17	1.88	–1.12
the states can tell, and the state can, to that extent, tell the Postmaster General to disregard the First Amendment. Is that it?							
F	1	33	2.25	0	1.47	1.44	–1.12
and you think the First Amendment doesn't limit that?							
W	2	41	2.67	0	1.35	1.64	–1.11
Where do you get that in the questions?							
D	5	79	2	0	0.77	1.28	–1.29
What definition of obscenity do you want us to endorse?							
D	5	89	3.33	0	1.26	0.55	–0.8
The definition of obscenity isn't before the court, I gather. (?)							
F	5	101	5	0.2	1.14	1.24	–1.33
Filthy, filthy—is a different {interruption} course of action, a different—							
D	5	108	3.14	0.05	1.15	0.6	–1.06
The government is not taking the—or is it—that the—that the clear and present danger test has any relevancy here?							
F	6	117	5	0	1.41	1.86	–0.93
Do you agree it must have an effect on conduct?							
F	6	119	3	0.05	1.14	0.96	–0.39
How do we know it doesn't affect conduct in the future? Does anybody know in fact? Has psychology reached that wonderful stage where it can assure us that boys or grown ups or feeble minded or general weak kneed human beings, that certain things said to them, that it doesn't do anything to them? Has psychology reached that—that—certainty of—of determination?							
F	6	125	2.67	0	1.45	1.55	–1.34
otherwise it's clear and present danger too.							
F	7	143	3.08	0	1.11	0.84	–0.77
but I think it does make a difference. It does make a difference and I suggest the government shouldn't be afraid to face this issue. The Congress can violate the Constitution a little bit or the—Constitution doesn't mean that.							
F	7	145	5	0	2.31	2.52	–0.94
it makes all the difference in the world to me.							
F	7	147	4	0	0.98	1.41	–1.03
because I don't think we can violate the constitution a little bit.							

[a] See Table 2 for the identification of "topics," and Table 1 for definition of other variables.

than 1.0 and these are presented in Table 4 along with the text of the spoken words the scores describe. Three of the high arousal turns in the noted sequence in Figure 1 are captured in this list. Frankfurter's "z" scores for pitch and intensity are at their highest value for all his behavior in the oral argument in turn no. 145 where he comments: "it makes all the difference in the world to me". This comment clearly presents a strong verbal expression of affective concern. The reader may also note the apparently affective content in the other high arousal comments in this table. In this pilot study, the data describe a direct correlation between verbal and nonverbal content that illustrates the potential for the remote assessment of affective properties of political behavior through the application of observational research methods.

Table 5. *Justices' Participation in the Roth Argument*

Variables	Warren	Harlan	Burton	Frankfurter	Douglas
Control of the floor					
Turns speaking (no.)	9	5	5	72	21
Time speaking (min)	32	21	21	618	105
Justice turns (%)	7.96	4.42	4.42	63.72	18.58
Justice time (%)	4.00	2.62	2.62	77.15	13.11
Time spoken to (min)	6	57	160	761	205
Justices' involvement					
Justice questions (%)	1.85	9.26	9.26	62.96	16.67
Justice statements (%)	2.17	0.00	0.00	73.91	23.91
Affective turns (%TOT)	0.00	0.00	3.85	76.92	19.23
Leading questions (%TOT)	6.25	6.25	0.00	68.75	18.75
Originations (%TOT)	6.67	3.33	10.00	50.00	30.00
Acoustic properties of Justices' behavior					
Pitch (mean fO)	141.35	121.36	149.25	159.10	157.79
Intensity (mean dB)	52.85	53.35	55.80	58.13	57.97
Pitch variance	57.45	51.17	44.30	58.35	53.12
Intensity variance	5.30	4.49	4.08	5.61	4.66
Pitch perturbation	8.28	5.93	2.28	2.89	4.37

Other data are presented in Table 5 that describe quantitative and qualitative properties of the involvement and participation of the individual Justices in the Roth argument. Here we may observe the overwhelming control Frankfurter exercised in this process and the apparent, but less assertive and ultimately unsuccessful, efforts of Douglas to represent an alternative position in the proceedings. Table 5 also provides summary profiles of acoustic properties of the behavior of the Justices participating in the argument. It is interesting to note the relatively high variability in the voice characteristics of Warren and Frankfurter. Both Justices were known for their oratory skills and it may be no coincidence that variability in voice quality provides an important means by which speakers get and hold others' attention.

The First Reagan–Mondale Debate

Perhaps the first crack in Ronald Reagan's "Teflon presidency" appeared during the first of three televised debates between President Reagan and Walter Mondale during

the 1984 election period. It was widely perceived that Reagan performed poorly during this debate, raising questions about his age and generating the first major public doubts about his capacity to exercise effective leadership. Certainly, a principal goal of candidates in such a debate setting is to convey to television viewers an image of effective leadership or potential leadership. While no doubt a questionable proposition, it might well be argued that the most important impact of debates upon viewers involves their perceptions of candidates' leadership potential—relegating policy issues to secondary importance.

A pilot research project was conceived to explore the communication of leadership qualities by candidates during the first Reagan–Mondale debate. A small seminar of advanced undergraduates in a communications program watched a videotape of the debate during a class session in April 1987. In structure, the debate consisted of a sequence with a major question asked of a candidate by a panelist. The candidate would answer, after which the panelist would ask a supplemental question. This process was then repeated for the second candidate. At this point, both candidates had a rebuttal period. In short, each topical sequence included six total speaking periods for the candidates and there were eight topical sequences in the debate. The debate concluded with closing remarks for each candidate, which Reagan included with his last rebuttal period, providing a total of 49 speech segments for the candidates.

Each of the eight members of the seminar was provided with a coding sheet and they recorded their perception of the candidates' performance during each speaking period with respect to style and substance. They coded their evaluations on a five-step ordinal scale, ranging from very strong to very weak. Q-type principal component analyses were performed on both the style and substance scores. Five of the coders loaded strongly and in similar direction on the first factors. The means of the raw values recorded by these five coders were used to indicate the perceptions of candidate performance with respect to style and substance.

Data were also developed on nonverbal behavior by the candidates. For one data set, arousal, indicated by pitch, was measured as the fundamental frequency in voice, averaged throughout each speaking period. These 49 scores for "extended average F0" were readily generated by the voice analysis system for speaking turns of variable and protracted duration. They match, point for point, the coders' observations on candidates' performance. Because other acoustic data could only be extracted for 9 second speech segments, or less, and because this was a pilot study, additional data were only developed on the 16 rebuttal speaking periods. Within each rebuttal speaking period, behavior was systematically sampled at constant time intervals, with the interval depending on the behavior in question. A complete set of acoustic data on voice characteristics was developed by dividing a speaking turn up into 9 second segments and combining segments for an entire rebuttal turn. Data on facial expression were generated by sampling every 20 seconds through each rebuttal period. The coder would play the videotape for 20 seconds, freeze the image and code relevant characteristics, and then repeat the process. Speech disturbance data were merely counted for each speaking period within the error event categories.

To illustrate this type of research application, some preliminary findings are reported below for variables based upon acoustic measurements of the candidates' behavior from the audio track of a video recording. A principal components analysis of the acoustic data is presented in Table 6. The raw scores for this analysis involve the measurements at 9 second intervals throughout the rebuttal periods. Three

Table 6. *Principal Components Analysis of Acoustic Properties of Candidates' Rebuttal Statements*

Variables	Rotated factor matrix		
	1 High/Soft	2 Loud/Low	3 Stressed
Pitch (mean fO)	0.86	−0.23	0.02
Pitch variability (fOstd)	0.78	−0.51	0.03
Intensity (mean decibels)	−0.34	0.75	0.34
Intensity variability (dBstd)	−0.60	0.16	0.46
Pitch perturbation	0.18	−0.05	0.86
fOMAX	0.72	0.02	0.23
fOMIN	0.07	0.75	−0.22
Voiced (% time)	−0.33	0.75	0.07

Note. Three components account for 71 per cent of total variances ($n = 102$).

factors were extracted for rotation that account for 71 percent of the total variance. The first factor isolates characteristics of pitch or fundamental frequency (fO). The second factor describes voice intensity or amplitude. Percentage of time voiced, that is without silent or pause periods that often accompany speech disturbances associated with stress/anxiety reactions, also load on this factor. Finally, pitch perturbation, measuring voice stress as an anxiety indicator, defines the third factor.

While data on pitch and intensity are normally quite positively correlated, data in Table 7 reveal that the patterns on the first two factors actually describe very different speaking styles for the two candidates. The data present candidates' deviations from the grand mean on each variable, adjusted for any variance associated with the substantive question or topic of the rebuttal periods through multiple classification analysis.

Table 7. *Acoustic Properties of Reagan and Mondale Rebuttal Speeches*

	Pitch	Intensity	PitchPert	Voiced (%)
Multiple Classification Analysis:[a]				
Grand mean	136.85	51.6	1.76	48.60
Reagan	−8.09	1.03	0.03	1.73
Mondale	8.42	−1.07	−0.03	−1.79
R^2 =	0.34	0.30	0.03	0.15
ANOVA results:	Significance ($p <$)			
Types of effects				
Speaker	0.000	0.000	0.566	0.000
Question	0.000	0.045	0.747	0.393
Speaker[a] question	0.000	0.000	0.001	0.000

[a]Data are deviations from the grand mean adjusted for the effects of question topic.

Table 8. *Candidate Behavior and Evaluation of Performance by Viewers*[a]

	Candidates' behavior by topic (in standard scores)								Viewers' ratings of performance			
	Voice pitch		Voice intensity		Voiced speech		Perturbation		Style		Substance	
Topic	Reagan	Mondale	Reagan	Mondale	Reagan	Mondale	Reagan	Mondale	Reagan	Mondale	Reagan	Mondale
Budget	−0.57	−1.36	0.28	0.77	0.43	−0.27	−0.97	0.82	1.4	1.8	1.6	2.2
Leader	0.26	0.22	0.98	−0.03	1.28	−0.55	−0.35	0.23	2.2	2.2	2.4	1.6
Religion	0.40	0.79	0.97	−1.50	0.90	−1.54	−0.24	−0.75	2.4	2.2	2.0	1.8
New deal	−0.71	−0.28	0.19	−1.41	−0.54	−0.19	−0.41	−0.02	1.8	3.0	1.4	3.2
Abortion	−1.55	−1.33	0.51	0.57	0.63	−0.17	−0.77	1.84	2.4	3.8	2.6	3.2
Taxes	1.85	0.37	−1.01	1.33	−1.27	1.85	0.55	−1.29	2.0	1.6	2.6	2.0
Poverty	0.33	1.58	−1.92	0.27	−1.44	0.87	2.19	−0.82	2.4	3.0	2.6	2.4

[a]Data are for rebuttal speeches only.

During the rebuttal periods, Mondale's speech was characterized by high and variable pitch, but low amplitude or intensity. In contrast to Mondale's soft and high voice, Reagan's speech was loud and low with few pauses or silent periods. ANOVA results reveal that the candidate differences are quite statistically significant on the measures of pitch, intensity and voiced speech. Of course, aging-related changes affect the production of sound by a 75-year-old, and it is not surprising that Reagan displays lower fO and fO variability scores.

In Table 8 acoustic scores for the candidates, standardized for each, are provided for the sequence of question topics. For the first four topics, Reagan's scores show little variability. On the abortion question, one of his strong issues, Reagan's intensity increases, while his pitch plunges and voice stress drops marginally. In contrast, on the issues of taxes and poverty, where his record is most controversial, both pitch and voice stress shoot up, while intensity and voiced speech drop off substantially. If voice stress and voiced speech do in fact capture feelings of anxiety, Reagan was clearly anxious during his comment on poverty, an issue on which he was vulnerable. Given that high intensity was most characteristic of Reagan, it is notable that his scores dropped rather continuously over the course of the debate. Conceivably, his decline in intensity reveals the physically taxing nature of a debate taking its toll and/or, perhaps, some loss in self-confidence as he became aware that the debate was not going well.

Mondale's vocal behavior was a good deal more variable than Reagan's over the rebuttal periods in the debate. Given that Mondale's speech was most characterized by its pitch qualities, it is interesting to observe that his pitch was highest on the religion and poverty questions. As a minister's son and a mainstream Democrat, these were among his stronger positions. By the same token, we might expect that the abortion issue would have been difficult for Mondale and it is consistent, therefore, that his voice stress was quite high for that question. Finally, taxes and poverty, strong suits for Mondale, were accompanied by low stress and heightened vocal arousal. Indeed, during the tax issue discussion, he launched a direct interpersonal verbal challenge to Reagan, moving beyond the rules structuring the debate.

Data in Table 8 also present the viewer/coders' mean evaluation of the two candidates' rebuttal performance across the question topics. The style scores reveal most dramatically that Mondale's apparent anxiety over the abortion question was mirrored in a negative evaluation of his speech by viewers. The only two points where Mondale was rated superior to Reagan were on the religion question and, later, the question on raising taxes where Mondale aggressively challenged Reagan's position. The two questions where Mondale was clearly the loser included the abortion question and the one preceding it on the viability of New Deal politics and policy. Given a set of viewer/coders in their early 20s, the results certainly hold face validity.

The ratings on substance or content of the rebuttals are not dramatically different from those for style. Reagan still stands far ahead on abortion and the New Deal questions, and is also rated stronger on the budget. However, Mondale received more positive evaluations than Reagan for substance on the questions of leadership, religion, taxes and poverty. Overall, the set of evaluations favored Reagan somewhat on style and Mondale somewhat on substance in their speech performance during the rebuttal periods.

The only acoustic data complete for the entire debate are the scores for pitch. These are not samples, but reflect continuous computation throughout the duration of each speaker's utterance. Given that the style and substance scores are actually ordinal

ranks, nonparametric correlations are reported in Table 9 to describe the association between voice pitch and evaluations of candidates. Coefficients for the debate as a whole are presented first, followed by the conditions for Reagan and Mondale. Recalling that a lower rank describes a more positive evaluation, it is intriguing to observe the reversal in the direction of correlation between Reagan and Mondale. An increase in pitch for Reagan is, albeit quite weakly, associated with a more negative evaluation by viewers. This correlation emerges in a context where his pitch was low to begin with and appeared to increase in tandem with stress/anxiety. Mondale, on the other hand, received significantly more positive evaluations when his pitch increased. In regression analyses not presented, data on pitch accounted for approximately 10 percent of the variance in viewer evaluations of the candidates.

Table 9. *Candidates' Voice Pitch and Viewer Evaluations of Performance: Extended Average fO for All Speech Turns*

Correlations (Tau b)	Both candidates (n = 49)	Reagan (n = 24)	Mondale (n = 25)
Pitch and style rating	0.14	0.05	−0.25*
Pitch and substance rating	0.18*	0.19	−0.18

* $p<=0.05$.

One of the interesting features of these data is the model they describe of individual differences. Reagan spoke with a voice strong in intensity but low in pitch. This pattern was most characteristic of his speech on issues where he had every reason to feel and display an image of confidence. It was also a pattern associated with positive viewer evaluations. In contrast, Mondale spoke with little intensity, but comparatively higher and more variable pitch. Perhaps because his vocal intensity was low, or because his more general projection as a candidate was flat and passive, his communication of arousal and, possibly, confidence through elevated pitch was associated with more positive evaluations (Hall, 1980). In short, the data suggest the hypothesis that different voice patterns may induce positive perceptions for different politicians, but that arousal in general is positively perceived.

These tentative findings may enjoy a measure of face validity if placed in the broader electoral and political context of the 1984 debates. Thus, if Reagan's popular appeal was based partially upon his capacity to reassure his audience (Masters and Sullivan, 1985), these quantitative data describe a reassuring voice quality that is most positively perceived when it is most reassuring. If one of Mondale's greatest problems in the 1984 campaign was to project an image of strength and active leadership capability, this audience appeared to respond positively when in fact he was more active and aroused.

It would be clearly presumptuous to argue with respect to either candidate that voice quality was a unicausal factor in viewer evaluations. It may, however, be justifiable to propose that voice quality provides one channel through which politicians communicate with their public, projecting strength and confidence or "leaking" feelings of anxiety and insecurity.

Summary and Conclusion

This paper does not test hypotheses or report empirical findings. Rather, it was written to explore the concept of direct observational political research, to describe techniques available for systematic measurement through direct observation, and to illustrate how observational methods might be applied in the study of political behavior. In it, I have argued three basic points. First, behavioral political science has not utilized observational methods and lacks the field research tradition found in many other behavioral sciences. Second, in some areas of the discipline, gaps in the development of empirical political theory may persist because observational research is not conducted—I have pointed to the role of oral argument in appellate court decision-making in the US, as an example. Third, even in existing areas of inquiry, observational methods may offer additional insights and untapped databases for the development of theory and the testing of hypotheses.

This potential is not a case of offering old wine in new bottles, nor is it just a proposal to explore the possibilities of new research technologies. The raw database of this discipline consists almost entirely of words, whether they are quantified through content analysis and survey research or analyzed through qualitative methods. Within the broad realm of face-to-face, interpersonal politics, the potential power of observational methods is to complement analysis of the meaning and consequences of words with analysis of the meaning and consequences of speech and communications—including both verbal and nonverbal behavior. Forty years ago, Harold Lasswell (1948: 161) observed:

> . . . much of our existing literature on self-assertion leaves out the vocal pattern. Scientific work on the problem has been held back by the clumsy gadgets that have been available for recording and reproducing the voice in action in concrete life situations. It has been exceedingly difficult to make clear from one situation to the next what intonations are called threatening, commanding, requesting and the like.

Clearly, the merits of such research have been apparent for some time. New technologies offer research tools to better address the fundamental elements of political behavior.

In sum, the prospect of systematic observational research on political behavior responds to Wahlke's (1979) critique of "pre-behavioralism" in political science. Observational research provides a method for putting political behavior under the microscope for thorough, comprehensive, objective and precise measurement, description and explanation. To better understand leadership, we may observe how leaders actually lead; to better understand collective decision-making, we might watch groups actually making decisions; to better understand conflict, we may observe actors in competition and watch as group leaders—sometimes even heads-of-state—negotiate, bargain and fight. Observational methods provide the tools to study real political behavior and place politics on the center stage of political analysis.

Notes

1. Exceptions include: Alger (1969), Barber (1966), Dorff and Steiner (1981), Nardulli et al. (1984), G. Schubert (1985) and Wiegele et al. (1985).
2. Chief Justice Burger devoted 10 minutes of an hour-long session with a group of political scientists to discussion of the importance that he attaches to oral argument during a Short Course on the Supreme Court held in conjunction with the 1984 Annual Meeting of the American Political Science Association.

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