

NOVEMBER 18, 1978 IN JONESTOWN:
STATISTICAL EFFECTS OF A MICRO-
DEMOGRAPHIC EVENT

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DEMOGRAPHIC STATISTICS. Most demographic statistics are derived from macro-demographic research. The comparison and analysis of changes in size, composition and distribution of national, state, and city populations have had greater usefulness than the study of smaller groups and areas (Thomlinson, 1976:7). Consequently, many demographers have been more concerned with the collective and longitudinal effects of population dynamics than with single events taking place at one point in time. Periodic census-taking, life tables, cohort analyses, and other data-gathering and projective methodologies implement this macrodemographic approach.

These techniques for the structuring and quantification of social data have imputed a scientific legitimacy and authority to demography not always enjoyed by other social sciences. Demographic data, unlike most that the sociologist analyzes, are collected and quantified by government agencies. National census-taking and registers of vital statistics, despite intrinsic problems with complete and systematic enumeration, are widely accepted and assumed to generate valid and reliable information (Petersen, 1965:2).

Demography would not truly exist without statistics . . . Statistics is not its only tool, but it is in many ways a precious instrument. Demography is indebted to the development and progress of statistics for a large part of its own development and progress (Laundry, 1945:28-29).

It is not surprising that we who teach demography and conduct demographic research and analyses may be overconfident in our statistical data. It is the purpose of this paper to extend a caution that we dare not lose our sensitivity to the possible impact of single microdemographic events

that, when taken together, comprise the data with which we so often work.

A DEMOGRAPHIC EVENT. The world was stunned on November 18, 1978 over reports from Jonestown, the People's Temple commune in a remote corner of the South American Country of Guyana. Bit by bit the fact emerged that 911 American men, women, and children had died together under strange and horrifying circumstances.

Subsequent investigations have revealed that the violent tragedy was neither accidental nor altogether spontaneous. Death drills had been a common practice among cult members. Reverend Jim Jones, their leader, had code-named his ultimate contingency plan "The White Knight." Others have given the incident less romantic names. First reports from Guyanese troops rushed to the scene referred to it as "mass suicide." A few disenchanted defectors for the People's Temple called it "mass murder." At this time, American State Department and Congressional investigations are still incomplete and inconclusive. The final and definitive explanation of the Jonestown incident may never be known since few actual witnesses survived and the jungle moves swiftly to reclaim the Jonestown clearing (United Press International, 1978).

Nevertheless, this brief report has relevance to those involved in demographic research and analyses. For we are not concerned here with the religious, legal, and ideological etiology and implications of the Jonestown tragedy. Rather, our focus is on the 911 Jonestown deaths of November 18, 1978 as a vivid and contemporary example of statistical chaos inflicted by a single demographic event.

A DEMOGRAPHIC DILEMMA. The underlying demographic issue regarding the Jonestown tragedy is whether to include the 911 deaths in the 1978 statistical records of the United States or Guyana. Although the deceased persons were all American citizens, there is considerable evidence that their residence at the Jonestown settlement was to have been permanent. In support of this point, recent investigations have revealed that before they immigrated to Guyana, cult

members were required to turn over all personal property to Reverend Jones. In addition, it was Jones' aversion to U.S. scrutiny of his operations that primarily motivated the move to Guyana. Finally, it was the decision of several cult members to depart with U.S. Congressman Leo Ryan on November 18 that apparently precipitated the wholesale death of Jonestown residents (United Press International, 1978). The statistical impact and complexity of the Jonestown event may be dramatically illustrated by projecting it into three analytical operations commonly employed by demographers.

CRUDE DEATH RATE. The simplest measure of mortality is the crude death rate (C.D.R.) which gives us the rate at which people in a country are dying. The crude death rate of Guyana is 7.6 which is the number of deaths occurring per year (1968) per 1,000 population (United Nations Statistical Yearbook, 1976:70). If the comparatively small Guyanan population of 774,000 must absorb the 911 Jonestown deaths for statistical purposes, the nation's C.D.R. for 1978 would soar to 8.8. If the 911 Jonestown deaths are included in the 1978 mortality statistics of the United States, there would be very little increase in the Crude Death Rate due to a national population of nearly 212 million (United Nations Statistical Yearbook, 1976:69).

SUICIDE RATE. It is likely that we will never know, with any degree of certainty, exactly how many of the Jonestown residents actually committed suicide, how many were forced to commit suicide, or how many were killed by others. Federal investigators and insurance companies will be a long time reconstructing their meager information into motivational categories for the 911 deaths. Meanwhile, those who must compile and summarize the 1978 demographic data for Guyana and the United States will have to arbitrarily consign the 911 deaths to specific statistical categories.

A Suicide Rate reports the rate at which people in a country commit suicide in a given year. For example, Guyana's 1969 Suicide Rate of 37.2 means that 37.2 suicides

per 100,000 population occurred in Guyana in 1969. (United Nations Demographic Yearbook, 1976:402). This very high rate of suicide could be inflated to an astonishing 1978 rate of 154.9 for Guyana if the 911 Jonestown deaths are included with suicide statistics from the rest of the country. Thus, the Jonestown event of November 18, 1978, if statistically recorded in the usual way, would give Guyana the highest Suicide Rate of any country, in any year, since such data have been recorded!

Even if the 911 Jonestown deaths are included in the total number of suicides reported for the United States in 1978, the U.S. Suicide Rate would be inflated from the last available figure of 12.7 (United Nations Demographic Yearbook, 1976:402) to about 13.1 suicides per 100,000 population. This would be a significant increase, considering that we are computing the proportional increase of American suicides in a huge national population based on the events of just one day!

Furthermore, most of the Jonestown residents were Black Americans. Consequently, if just 75 percent of them were added to the annual suicide total for American "Black and other nonwhites" (Statistical Abstract of the United States, 1977:174), their race-specific Suicide Rate for 1978 would suddenly rise from the present 10.6 to an incredible 14.1! Again, the statistical chaos precipitated by the demographic happening at Jonestown is underscored.

HOMICIDE RATE. Guyana, formerly British Guiana, did not gain independence from Great Britain and membership in the United Nations until 1966. As a new nation, Guyana has not fully developed its techniques for collecting demographic data. The few statistics from Guyana that are reported to the United Nations do not include homicide rates.

On the other hand, complete and longitudinal data on a multitude of variables are available for the United States. For example, the mean U.S. Homicide Rate for 1973, 1974, and 1975 is 10 per 100,000 population (Statistical Abstract of the United States, 1977:71). In other words, an average

of 10 out of every 100,000 Americans during those years were victims of homicide. If, somehow, it was authoritatively determined that 800 of the Jonestown residents were murdered, and using the 1975 U.S. population for hypothetical computational purposes, the addition of the 800 Jonestown victims immediately raises our Homicide Rate to 10.37. Thus, again we have demonstrated how a single demographic event, occurring on one day, can artificially inflate and invalidate demographic statistics.

CONCLUSION. At the least, the single demographic event of November 18, 1978 at Jonestown, Guyana will require an explanatory footnote for many years to come in the demographic records of Guyana, the United States, and the United Nations.

At the most, this event has reinforced the point previously made by many thoughtful scholars that suicide and homicide data should not be included in demographic studies or statistics. In general, they have argued that cross-cultural differences in law-enforcement and criteria for defining suicide and homicide drastically affect the accuracy and significance of available data (Barrachough, 1972; Sainsbury, 1972; Wilkins, 1967).

Finally, it is our hope that the Guyanan tragedy has illustrated the impact of micro-demographic events and their possible effect on the validity of macrodemographic statistical summaries.

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MYTHS AND REALITIES OF DIRTY BOOK BUYERS

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INTRODUCTION

In spite of the growing debate regarding the legal status of obscenity in the United States, the President's Commission on Obscenity and Pornography (1970) could not find a single empirical study reporting on the characteristics of people who purchased erotic materials. Responding to this lack of information, the Commission funded a few pilot studies of the patrons of adult bookstores and theaters. The results of these studies were published in the Technical Reports of the Commission (1971) and represent the "observation" technique of data collection. The research reported here sought to confirm, with survey data, the findings published in the Technical Reports of the Commission (1971) regarding the consumers of pornography.

The paucity of hard data regarding the consumer of pornography is primarily the result of the research techniques used. Five studies of consumers are presented in Volume IV of the Technical Reports of the President's Commission on Obscenity and Pornography (Finkelstein, Kutschinsky, Massey, Nawy, and Winick). All gathered their data from the observation of customers in "Adult Book Stores." In addition, Massey interviewed six owners of such stores and used post cards inserted in customer packages as a mail-back means of gathering data. Observers in each instance gathered approximately the same kinds of information: age, ethnicity, sex, socioeconomic class, appearance, costume, and whether alone or with companions.

The data were not reported in a uniform way by the five researchers, so that simple comparisons and summarizations are not possible. For example, Kutschinsky (1971: 270) reported age data for 128 customers as percentages of the 128 divided among 9 five year span categories (20-24, 25-29, etc.) and a 65+ category. Winick (1971:232) reported age data as the mean percent in each of four categories 19-27,

28-40, 41-60, and 61+ of persons observed patronizing several book stores. Finkelstein (1971: 119) reports age in three categories, persons in their 20's, those in their 30's, and those 40 and over, in numbers in each category. Nawy (1971: 171-172) interviewed owners of bookstores and asked them to estimate the percentage of their customers who fell within four age categories, 19-25, 26-35, 36-45, and 45+. Massey reported age for observed customers (1971: 53) as percentage of those observed by six categories: under 18, 19-25, 25-35, 35-45, 45-55, and over 55 and for post-card returnees as the number responding to each of the six slightly different categories (no doubt changed for self-reporting): 18 and under, 19-25, 26-35, 36-45, and 55 and over. Massey (1971: 38) also asked six owners of bookstores what percentage of their customers were over age 30. Keeping in mind these variations in the reporting of the data and the imprecision it imposes upon any attempt to summarize the data, one can pull together a reasonably coherent profile of the consumer of pornography.

The average age of the customers of "Adult Book Stores" falls within the 30's and 40's categories. The vast majority are Caucasian, from a low of 70% reported by Mawy's interview data (1971: 171-172) to a high of 95% reported by Finkelstein (1971- 119). And, with a few exceptions, those who bought in the shops observed were male. These middle-aged, male, caucasians are generally middle and upper middle class. Observers dealt with several factors in assessing class--appearance, and clothing being the basic criteria. Using these factors, Winick (1971: 237) estimated that 44% of the customers were lower class, 47% middle class, and 9% upper-middle class. Finkelstein (1971: 119) simply reported by manner of dress--with the majority attired in coat and tie, 51.1%; the next largest category was "casual" dress, with 38%; then work clothes, 7.3%; "dishelved," 3.2% and military uniform .4%. Massey (1971: 53-55), also reported his data in terms of type of dress, and concluded (1971: 54): "These data reinforce the importance of the white-collar occupation class as primary purchasers of sex-oriented materials."

Massey gathered marital data in two ways: using the returned post cards, and observing whether or not customers wore a wedding band. He found that of the 44 who filled out this portion of the post card, 52% were married, 7% re-married, 14% single-divorced, and 27% never married. Through observation (1971: 55-56), he discovered that 26.1% of the customers wore wedding rings. If jeweler's estimates, as he cites, are correct in saying that 50% of married men wear wedding rings, then a majority of customers are married men.

Massey's post cards yield data on three additional characteristics: education, income and specific occupation (1971: 61-62). None of the respondents indicated less than 12 years of education completed, with a mean of 16 years. The modal income category was \$10,000 - \$15,000. Occupations were heavily weighted toward the business-professional end of the continuum: e.g., accountant, engineer, musician, lawyer, teacher, salesman, banker, air force, retired, farmer, construction worker, labor relations.

Taken together, these studies suggest that consumers of pornography are middle-aged, middle class, married, Caucasian males with high status occupations and above average income. These data would seem to satisfy the requirements for information if the assumptions of the observation technique are accepted. Social scientists in general, and the authors in particular were reluctant to settle for what might be considered "soft" data. It is worthy of note that all the above mentioned investigators reported a great degree of difficulty in obtaining the cooperation of the customers in adult bookstores. The response rates in the studies involving interviews or surveys were all below 50 percent. It is at least possible that these low response rates introduced an undetermined bias into the reported results. However, since the demographic data generated by the interview and survey techniques have been similar to those reported by the observation technique, the data reported have been accepted as fairly representative.

METHODOLOGY. The methodology sections of reports dealing with survey data generally concentrate on the design of the

instrument, sampling procedures, number of cases, and similar technical issues. However, since difficulty in obtaining the cooperation of the subjects in question has been utilized by previous investigators to justify the choice of the observation technique and the failure of other techniques to produce abundant data, the authors feel that the methods used to obtain the cooperation of subjects in adult bookstores deserve some exposure first.

Although the data presented here were gathered through the use of a self-reporting questionnaire during the months of October through December, 1972, the actual work on the project began in January, 1970. For a period of 13 months, approximately 3 hours per week were spent in the adult bookstore in an attempt to gain the confidence of the manager prior to requesting permission to administer the questionnaire to be developed. During this period of conversation the manager of the bookstore was friendly, helpful, interested in the study, and totally on guard. At the end of the "confidence gaining" period, the authors had not broken through the "us" versus "them" barrier. However, the time spent had not been a total loss. It was now evident that permission to interview would be worthless. What was obviously needed was the active support of the bookstore staff: the manager would have to "administer" the questionnaire.

Any standard text on research methods holds out the promise of rewards to be gained through the application of all the "rules of research) and hard work. Too little is said about the role of fate in the research process. Such will not be the case here. At a time when the towel was being readied to "throw in" fate intervened. The bookstore manager was arrested and large quantities of adult material confiscated. By virtue of a growing reputation as the only local "experts" on pornography not connected with any religious organization, the investigators were contacted by the legal representative of the national corporation owning the local adult bookstore. We had become "us" instead of "them."

What had been an attitude of mistrust became one of almost too much cooperation: the bookstore owners offered to underwrite the complete cost of the proposed

study. To avoid the appearance of bias and remain true to the canons of science, but mostly because the research was already funded, the financial support was declined.

With the cooperation of the manager assured, two forms of a survey instrument were developed. Each form gathered basic demographic and socioeconomic data. In addition, half of the questionnaires gathered data regarding political attitudes and behaviors.

One hundred and fifty-five customers of an adult bookstore were surveyed through a self-reporting questionnaire during the months of October through December, 1972. The questionnaires and a locked box were put on prominent display in the store. The manager asked customers to fill out the questionnaire and leave it in the locked box. The customers were assured, by the manager, of anonymity. All visitors to the bookstore during this period who actually purchased material were asked to respond. There were no refusals. Many of the respondents volunteered further information with the questionnaire indicating a real interest in the study. A frequent suggestion was to "put this in the newspaper so 'they' will know the truth about 'us'." We did, and received a series of negative phone calls from forces of good in the community, as well as many expressions of support and appreciation from consumers of pornography and their families.

FINDINGS. The questionnaire data were similar to that gathered through observation by those who contributed to the technical report of the President's Commission on Obscenity and Pornography. Due to the variable categories used in the technical reports of the Commission, no statistical comparisons were possible. The typical subject had an average of 32 years. The age range of the sample was from 18 years to 66 years. 51.4 percent of the sample were between the ages of 23 and 33 years, while the median age was 30 years.

A typical member of the sample would be classified as married, since 61 percent of the chosen sample were in this category, while only 24 percent were single and 11 percent divorced. This compares favorably

with the estimated 60 percent married reported by Naway (1970). These data are summarized in Table 1.1. Data generated by the present survey not available through observation indicate that the majority of the respondents reside with the wife, as indicated in Table 1.2.

TABLE 1
SOCIAL CHARACTERISTICS OF PORNO BUYERS

	Percent	N = 155
1.1 Family Status		
Single	23.9	
Married	61.3	
Divorced	11.0	
Separated, widower	3.9	
1.2 Residential status		
Live alone	25.8	
Live with parents	7.1	
Live with wife	58.1	
Live with another man	7.1	
Cohabiting with woman	2.6	
1.3 Education in years		
10 or less	1.2	
12	19.4	
13	11.0	
14	18.7	
15	8.4	
16	12.9	
17 or more	28.4	
1.4 Occupations status		
None	9.7	
Unskilled	4.5	
Semi-skilled	11.6	
Sales	13.5	
Clerical	7.7	
Managerial	15.5	
Professional	33.5	

Concerning the annual income of the usual subject, the average income was \$11,313. The yearly salaries ranged from \$500 to \$78,000, with the most often reported income being \$10,000 (12.3%). 82 subjects (52.7%) claimed salaries between \$8,000 and \$15,000.

The total family income of the subjects was, on the average, \$13,296. This value ranged from \$900 to \$99,000. The yearly incomes for the families clustered around \$10,000 (11%) as being the usual income

reported. The data indicate also that 52.6 percent of the sample claimed a total family income between \$9,000 and \$20,000 a year, with the median income being \$10,843. These data support the notion of the consumer of pornography as a member of the middle class economically.

As can be seen from Table 1.3 the sample norm is, or at one time has been enrolled in college, since just 19.4 percent completed only high school, and 79 percent have had some college experience, with 28.4 percent continuing their education after graduation from college.

In this sample, 33.5 percent had professions such as doctors, lawyers, teachers, engineers, etc. Managers and proprietors composed 15.5 percent of the sample. Those having skilled (foremen, craftsmen), semi-skilled (machine operators, delivery men), and unskilled and service jobs (porters, laborers) comprised 20.0 percent of those sampled. These data are summarized in Table 1.4 and tend to support the profile suggested in the Technical Reports of the Commission.

In summary: 61% of the customers surveyed through this research were married; modal income was \$10,000, mean educational level was 14+ years (modal frequency 17+ years of schooling completed), 49% were in business and professional occupations, sales and clerical workers made up 21% of the sample, skilled workers comprised 12% of sample, and semi-skilled and unskilled workers 9%; and all were male. No data were gathered on ethnicity.

Compared to the population in the Metropolitan area which the bookstore is located, the surveyed sample is: older, better educated by three years, of higher incomes working in high-status jobs, and approximately the same proportion married.

CONCLUSION. What is striking about the data now available concerning consumers of pornography is the agreement found regarding his demographic and socioeconomic characteristics regardless of how or where these data are gathered. It appears that observation is a viable technique for gathering most of these data, particularly when difficulties prevent the collection of survey or interview data. Note, however, that the survey generates data which cannot be

gathered through any other technique. The present investigators are convinced that it is worth any reasonable effort to obtain survey data. Even an unreasonable effort may pay off if fate intervenes.

A cautionary note: the profile of the consumer of pornography presented in the Technical Reports of the Commission and confirmed in this report can only apply to patrons of public adult bookstores. Pornography is expensive, particularly if purchased in adult bookstores. Consumers appear to belong to the middle class primarily because the lower economic class members can't afford to shop there (there are alternatives) and the wealthy can afford to shop by mail. In other words, the profile of the consumer of pornography as opposed to the public consumer of pornography has not been developed yet. Given the difficulties of the problem, it may never be.

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VERBAL FLUX IN DYADIC CONVERSATION

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INTRODUCTION. The purpose of this paper is to demonstrate the application of various measures and mensurable properties to natural dyadic conversation. The term "verbal flux" refers to dynamic stream characteristics of the conversational process, as it progresses in real time. Such measurement techniques provide a means for sociologists to get hard data in micro-social processes, and to apply and test dynamic theories. The source data for this research was 74 tape recorded five-minute conversations between dyadic pairs of college students. They were instructed to talk to each other about anything of mutual interest for about five minutes, and that the researchers would later use this material to trace out the way people talked. For a more extended treatment of this research, see Allen and Guy (1978).

Psychologists have been much concerned with speech process, vocabulary development, and word association. Ruesch (1957, 1961) and Laffal (1965) have reviewed processes and problems in psychiatric therapy. Goldman-Eisler carried out detailed analysis and measurements of pauses on oral interview speech (1968). Pittenger and his associates produced a detailed analysis of the behavior on one psychiatric patient in a single five-minute interview (1960). From Chapple's early work in measuring duration of speech and silence, sociologists have developed new information on group processes. Bossard and Boll stressed the importance of verbal interaction in the socialization process for children (1964). Bales analyzed verbal behavior in considerable detail on the interaction process in task-orientated groups (1952). Hertzler has provided a general review of language from the sociological perspective.

PROPERTIES OF VERBAL FLUX. The stream of speech generated between two persons in conversation has four properties which vary in fairly orderly patterns. First, the speech stream appears in a sequence of

cycles. The first cycle begins when the first partner starts emitting one series of verbal acts, and ends when the second partner completes his verbal response. The verbal acts which a speaker may emit include assertions, questions, supports in the form of simple affirmation or negations, interjections, laughs, and fragmentation. Assertions and questions are verbal information carriers by virtue of the order and relations among the syllables which they contain. Supports seem to help the flow of conversation although they make up a rather small portion of the output. Laughter, fragmentation, and interjections appear to have fairly low value for transporting detailed information but they, like the supports, may have a positive function in maintaining the flow of speech.

A cycle in which each of the two partners have injected assertions and/or questions is called a responsive cycle. A cycle in which only one partner emits assertive material, and the other emits only non-assertive material, such as supports, laughs, or fragmentation, is called a narrative cycle. A cycle in which both partners emit only non-assertive material is called a null cycle. The responsive cycle is more balanced and is effective in maintaining a tighter bond of verbal action between partners. Each is active in developing the sequence of speech and each must edit and integrate his own and his partner's outputs in a somewhat unpredictable and uncertain sequence of action. Responsive cycles require close coordination of thought and action between actors. The narrative cycle is of greater value in transferring extensive and complex information from the one who has it to the one who lacks it.

Assertions and questions vary in amplitude or length of syllable string. They also vary in the extent to which an unbroken series of assertions are banded together without other kinds of verbal acts intervening between them. Variation in the amplitude of assertions and questions is suggestive of the quality of the verbal contact, as when we contrast extremely short assertions of one or two syllables to elaborate and grammatically developed sentences of 20 to 30 syllables. The sequence of assertions in

FIGURE 1: NARRATIVE AND RESPONSIVE FLUX PATTERNS

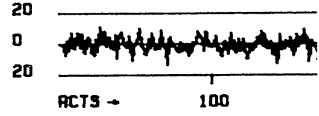
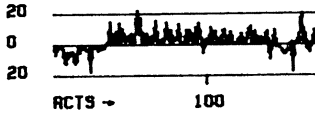
Vertical scale, inches per syllable: Small .01 Large .04
 Horizontal scale, inches per verbal act: .01 .04

Narrative Pattern

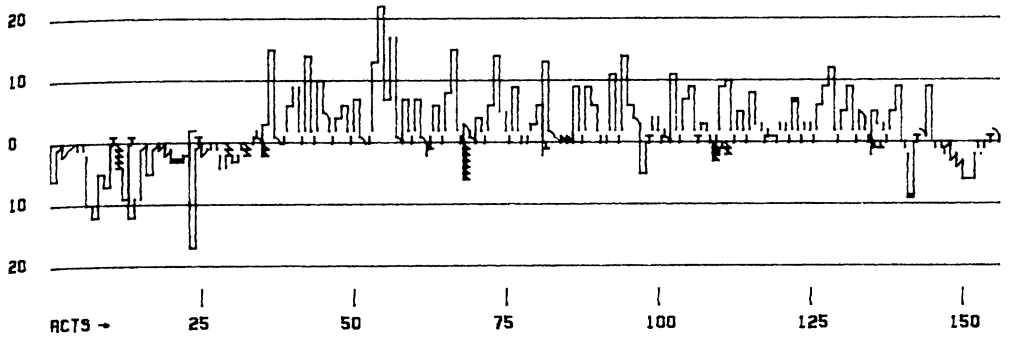
Responsive Pattern

Syllogram 19

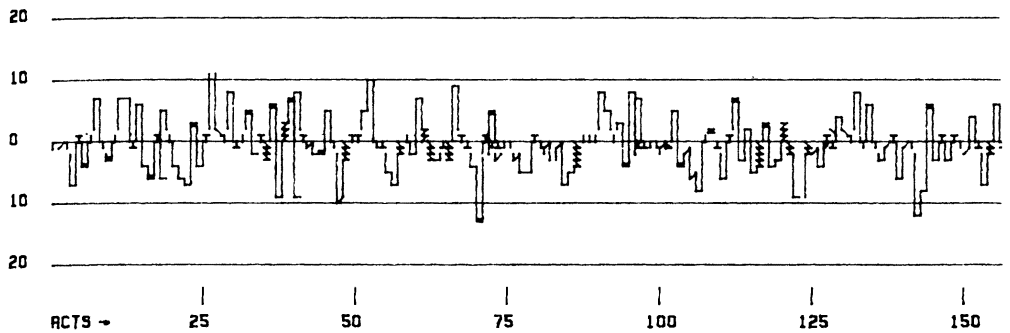
Syllogram 65



SYLLOGRAM 19 ACTORS 19 29 M-M



SYLLOGRAM 65 ACTORS 31 36 M-F



Legend for Large Scale Syllograms

Assertion completed:

Support, Affirm, or Deny:

Assertion interrupted:

Fragmented syllable string:

Question:

Laughter. Eg, "Ha-ha-ha!":

an unbroken series is referred to as clustering. The clustering measure permits identification of the pattern of single assertions preceded and followed by a low information bearing element, and sets of two, three, or more assertions in uninterrupted sequence. The extent of clustering of assertions indicates the degree of organization of the verbal output and is probably related to the density of information emitted, provided the amplitude is not too low.

A consistent pattern of increase or decrease in the amplitude of a series of assertions is called *crecence*. It indicates the speaker's tendency to invest increasing energy in a series of outputs within his half-cycle, or the opposite tendency to decrease the length of successive assertions. For this report we will define *crecence* as a continuing increase of three or more syllables from one assertion to the next in a series of at least three assertions, within a half-cycle, or alternatively, a decrease of at least three syllables per assertion over a series of at least three assertions. Non-assertive acts may be interspersed among the assertions without affecting the *crecence* property, as we treat it here.

Finally there is the property of *fluency*, which we define as the proportion of assertions and questions to the total number of acts within the half-cycle. *Fluency* is at a maximum when a half-cycle contains only a series of assertions. *Fluency* is at a minimum when a single assertion is accompanied in a half-cycle by an extended series of non-assertive verbal acts. It is believed that a higher degree of *fluency* facilitates the transfer of information, and that it denotes a more effective use of time.

HYPOTHESIS ON THE PROPERTIES OF CONVERSATION. We have developed a series of hypotheses based on assumptions about the developing nature of the conversational contact. The conversational episode is generally marked by short exploratory assertions in the beginning of the contact and near the end. We have predicted that (1) the mean amplitude of assertions measured in syllable length will be less in the initial and end portions and greater in the middle

portion of a 5-minute conversation episode. (2) Males will manifest greater mean amplitude than females in male-female pairs in conversation. (3) Greater amplitude will be manifested in male-male conversing pairs than in female-female conversing pairs. (4) Males conversing with males will not have higher amplitude than males conversing with females. That is, the sex structure of the dyad will not affect assertion amplitude in the male. (5) Females conversing with males will have a lower mean amplitude than females conversing with female partners. The sex structure of the dyad will affect the assertion amplitude by the female.

We expect (1) that the *crecence* property of the half-cycle will be predominantly positive, based on the tendency of an assertion of a given length to contain information elements which will require elaboration in the following assertion. The ensuing elaboration is therefore likely to be longer than the assertion which gave rise to it. (2) Since *crecence* is more evident if amplitude is greater, we expect that the positive *crecence* will be greater in males participating in male-female dyads, than in the females. However, (3) we expect that positive *crecence* will be evident in all sex structures, and in the middle portions of the conversation.

The clustering property depends on the ability of the speaker to generate uninterrupted sequences of assertions and questions, and we expect a strong inverse relation between the extent of the cluster and its frequency.

FINDINGS. An inspection of the large scale flux vector (Figure 1) indicates the cycling process where the first actor emissions are plotted above the origin and the second actor emissions are plotted below. The contrast between narrative and response cycles is evident. The narrative cycle is marked by a well developed profile only on one side of the origin and a short abbreviated output on the other side. The response cycle is marked by well developed profiles on both sides of the origin. The large scale plot (.04 inches per act on the horizontal axis and .04 inches per syllables on the vertical) is more informative regarding action

TABLE 1
SYLLABIC AMPLITUDE OF
ASSERTIONS*

Dyad Category	Half Cycles	Mean Amplitude	s	t-test t & p
End vs Middle	3690 5234	7.9 8.3	4.8 5.0	-3.32 .001
Male-Male vs Female-female	2119 2139	8.4 8.0	5.2 4.6	2.36 .008
Male vs Female	2567 2099	8.3 7.8	5.0 4.8	3.48 .001
Male vs Male-male	2567 2119	8.3 8.4	5.0 5.2	.74 .266
Female vs Female-female	2099 2139	7.8 8.0	4.8 4.6	1.78 .035
Narrative vs Response	1898 2381	8.0 8.3	4.7 5.0	-2.34 .009

*One tailed t-test.

TABLE 2
CRESCENCE STANDARDIZED BY DYAD

Dyad Category	Crescent Cycles	half-N, p	Direction	
			+	-
End	1368	.37	2.6	1.4
Middle	1882	.36	2.8	1.7
Male-male	749	.35	3.2	1.7
Female-female	781	.38	3.1	1.9
Male	942	.37	2.6	1.3
Female	779	.37	3.1	2.0
Narrative	1345	.34	3.0	1.7
Response	1903	.49	3.1	1.8

sequence: the distribution of fragmentation, assertion, support, and interjection. The small scale plot (Figure 2: .01 inches per act and .01 inches per syllable,) represents a lower level of magnification and better indicates cycling regularity, balance, and narrative and response exchange patterns. It provides an economical signature of the pattern of verbal intercourse between any two actors.

The results of the analysis of amplitude (Table 1) show support for the hypothesis that amplitude is greater in the middle portion of the 5-minute conversational contact. The absolute difference is about .5 syllables, and the standard deviation is relatively high, which indicates a broad distribution of assertion lengths. Male pairs show somewhat greater amplitude than female pairs and a greater variability of assertion lengths. Male pairs show somewhat greater amplitude than female pairs and a greater variability of assertion amplitude. In the male-female dyad, males average higher amplitude on about the same scale, but variability of assertion length for both males and females is reduced. The male amplitude mean is not significantly different when the male-male mean is compared to the male amplitude mean in the mixed dyad. However, females talking to other females manifest a higher amplitude in assertions than do the same females talking to males, and hence, the fifth hypothesis on amplitude is supported.

The crescent property (Table 2) is predominantly positive in all comparisons, and the hypothesis is well supported. (There is no support for the proposition that males manifest greater positive crescence, or more extreme levels of crescence than the females. We also fail to find support for the proposition that crescence is greater in the mid-portions of the conversational contact than in the beginning and end. The extent of clustering demonstrates a consistent inverse function of frequency in all comparisons, a finding which is virtually implicit in the concept. (Table 3) It does not appear to vary consistently according to sex the structure of the dyad, or according to the temporal portions of the conversational episode.

None of the hypotheses regarding differences in fluency receive support. No negative interpretations are implied as regards the relation of fluency to structure of the dyad or the relation of temporal segments. Although the attempt to measure fluency was successful, the level of fluency seemed to be almost constant in all comparisons.

TABLE 3
ASSERTION CLUSTERS PER MINUTE

Dyad Category	Minutes	Assertions/Cluster			
		1	2	3	4+
Ends	148	3.5	2.0	1.2	2.2
Middle	222	3.2	1.9	1.1	2.6
Male-Male	90	3.4	1.9	1.1	2.6
Female-female	85	3.1	2.3	1.4	2.5
Male	111	3.2	1.7	1.1	2.5
Female	84	3.8	2.0	1.1	2.2
Narrative	149	3.4	2.1	1.2	2.2
Response	221	3.3	1.9	1.1	2.6

DISCUSSION. The primary finding in this paper concerns the assertion amplitude measure. Amplitude appears to vary systematically in relation to dyad structure and temporal regions. It has the advantage of simplicity both conceptually and empirically. There is good reason to believe that assertion amplitude has a significant fundamental relation to the verbal communication process. It is probably the most useful measure of those discussed here. Amplitude is a substrate variable for the crescence property and it is probably operating within rather definite limits. Factors affecting these limits remain to be examined. Amplitude is potentially a suitable measure for the amount of information exchanged between conversing partners. Clustering could afford an index of the level of concentration of the speaker on what he is saying. Clustering also has implications for the concept of fluency, although we have not attempted to identify the relation.

The property of crescence suggests a measure of elaboration in the assertion sequence. There is probably a generic difference between crescence cycles and cycles which contain assertions of relatively uniform length. The crescence property may indicate an expansion of interest as well as an expansion in the degree detail conveyed. The crescence cycles are predominantly positive, and they appear to enliven the stream of verbal outputs.

Assertions appear predominantly (about

80 percent of the time) in clusters. The clustering is a potential measure of speech integration and of efficiency in delivery. The degree of clustering is probably inversely related to the speaker's familiarity with what he is trying to convey. A person anticipating a verbal confrontation will sometimes rehearse what he plans to say in order to increase his familiarity with the syllable strings he will emit. This should improve delivery, reduce fragmentation, and should be indicated by an increase in the clustering of assertions.

Fluency may not be measured most efficiently in terms of assertions and questions. It is possible that some admixture of supports, laughter, fragmentation, simultaneous speech and interjection lends impetus to the conversational flux, and serves to highlight the assertive content. If this is the case, it will be necessary to search for the limits of the mix, and for the optimal ratio.

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