Studies on mass communication and national development and studies of press freedom were reviewed to construct a macro-level theoretical model of press freedom development including seven key concepts: availability of resources, urbanism, educational level, mass media development, accountability of governors, stress on government, and government control of the press. The causal linkages suggested in this model were tested with data from 137 countries collected at four different times (1950, 1960, 1965, and 1966). Heise's path analytic causal model was used to infer the directions and signs of the causal influences among the key concepts. The results indicated consistent moderate support across time periods and regions for two of the seven predicted causal relations: increased mass media development resulted in greater accountability of governors and increased accountability of governors led to less government control of the press. (Author/BB)
THE PRESS AND GOVERNMENT RESTRICTION:
A CROSS-NATIONAL STUDY OVER TIME

By

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Freedom of expression, and particularly freedom of the press, has been widely discussed and debated by philosophers, lawmakers, journalists and laymen for centuries. Arguments about press freedom generally revolve around two major issues: (1) what is it, and (2) how much of it can be tolerated.

In Western countries, the importance of press freedom (usually defined as freedom from government controls) has been emphasized since the publication of John Milton's *Aeropagitica* in 1644, and is still being stressed today. The commonly expressed rationale for a minimum of restraints on freedom of expression is that the truth of any matter may be approached most closely only by allowing the free competition of various ideas. The Hutchins Commission summed up this argument in 1947:

Civilized society is a working system of ideas. It lives and changes by the consumption of ideas. Therefore it must make sure that as many as possible of the ideas which its members have are available for its examination. It must guarantee freedom of expression, to the end that all adventitious hindrances to the flow of ideas shall be removed. . . . Valuable ideas may be put forth first in forms that are crude, indefensible, or even dangerous. They need the chance to develop through free criticism as well as the chance to survive on the basis of their ultimate worth. Hence the man who publishes ideas requires special protection.1

Even the Soviet definition of press freedom, as set forth by Lenin and elaborated by Stalin and Khrushchev, emphasizes the desirability of the free flow of ideas, if only formally. In 1917, Lenin wrote:
"Freedom of the press" of a bourgeois society consists in freedom of the rich systematically, unceasingly and daily in the millions of copies to deceive, corrupt and fool the exploited and oppressed masses of the people, the poor. It is asked, is it possible to fight this howling evil and how? The means is state monopoly of private advertising in newspapers. . . . They will say: But this is destruction of freedom of the press. Not true. This would enlarge and restore freedom of the press. For freedom of the press signifies: all opinions of all citizens may be stated.2

However, as Hopkins has pointed out, a fundamental flaw in the Soviet conception of press freedom is that while the press is free from those abuses arising from private ownership, it has become subject to an authoritarian political party under Lenin, Stalin and Khrushchev. Under this party supervision, the flow of ideas has become more restricted than in countries where control is exercised by wealthy individuals or corporations.3 In addition, it seems likely that both Milon and Lenin had the same thing in mind when they wrote on freedom of expression—the belief in such freedom for their ideas, but not for those of Catholics or Capitalists.

Although there is by no means agreement on a precise definition of press freedom, there seems to be a realization that such freedom varies across time and across nations of the world. In the last 15 years, several scholars have suggested that this variation may be systematically related to changes in other variables, such as stress on government, accountability of a nation's governors to those governed, rate of population increase, legislative-executive structure of a nation, daily newspaper circulation, level and rate of social-economic development, heterogeneity of a society, and religion of an area.4

Although these various scholars have suggested correlational relationships between the above variables and the amount of control o
the press, all have scrupulously avoided trying to determine possible causal links among such variables. Raymond Nixon, in his 1960 article, cites Daniel Lerner on this very point:

... a communication system is both index and agent of change in a total social system. This avoids the genetic problem of causality, about which we can only speculate, in order to stress correlation hypotheses which can be tested.5

And in his 1965 article on press freedom, Nixon discusses the positive correlations he found between press freedom and three other variables (income per capita, percent of adults literate, and daily newspaper circulation per 100 population), and then concludes:

It is not intended to imply that there is a causal relationship between any of these four variables and press freedom, but simply that there is a close relationship and an interaction between them. In other words, the higher the level of socio-economic development in a country, the greater the likelihood that press freedom will exist; the lower the level of development, the greater the chance that press control will be found.6

Although Lerner, Nixon, Lowenstein and others prefer not to talk about causal relationships among the variables they study, their conclusions usually imply such relations.

The purpose of this study is to go beyond the correlational analyses of earlier studies to an analysis of the causal relationships among some of the variables thought to be related to press freedom (defined as freedom from government controls). The data used here were collected at four points in time--1950, 1960, 1965 and 1966. A structural model was devised to help specify a pattern of relationships which hopefully corresponds to actual causal processes in the real world.7 This study was undertaken in the belief that creating and testing such a model is the next step toward building theory in an area comprised mainly of isolated empirical generalizations.
THE MODEL

In addition to those studies arguing that press freedom is systematically related to various social, economic and political indicators, several scholars interested in mass communication and national development have suggested patterns of relations among some of the variables found to be related to press freedom. This section attempts to bring together these two areas of study (press freedom and national development) in one theoretical model of press freedom development.

Anthropologist Meggers argues that increased resources of a society, primarily increased food production, result in increased population size and concentration, and vice-versa, and that increased population size and concentration, along with other factors, produces an increased sociopolitical and technological cultural level.8

Lerner, starting with increased population size and concentration, his measure of urbanism, maintained that "urbanization has tended to increase literacy; rising literacy has tended to increase media exposure; increasing media exposure has 'gone with' wider economic participation (per capita income) and political participation (voting)."9 Lerner writes that this same basic model "reappears in virtually all modernizing societies on all continents of the world, regardless of variations in race, color, creed . . . ."10 and later he argues that democratic government comes late historically "and typically appears as a crowning institution of the participant society."11 In short, Lerner's model suggests these causal relations:
Schramm also maintains that mass media development "runs parallel to the development of other institutions of modern society, such as schools and industry, and is closely related to some of the indices of general social and economic growth, such as literacy, per capita income, and urbanization." However, he declines to specify any causal relations among these variables. In fact, in an earlier work, he argues that "whether information creates some of the other structures and forms of society, or the other structures and forms of society create a certain stage of communication development, is a futile argument." 

Three years later, in spite of these words, Schramm and Ruggles attempted to isolate some causal relationships among these variables using cross-lagged correlation on data collected in 1950-51 and in 1960-61 from 23 less developed countries. They found that urbanization, literacy, gross national product and mass media development seem to be related in different ways in different developing regions of the world.

In the same year as the Schramm-Ruggles study (1967), political scientists McCrone and Cnudde proposed the following model of democratic political development:

Urbanization → Education → Communications → Democratic Political Development

This model was partially confirmed using the Simon-Blalock technique of comparing actual and predicted correlations for causal inference, and fully confirmed by computation of path coefficients from the original correlation coefficients.
Rogers argues that literacy, mass media exposure and
metropoliteness (individual urbanism) are antecedent variables in
urbanization process and that through the intervening variables of
maturity, achievement motivation, and fatalism, they lead to
metropoliteness, political knowledge and aspirations.16

Bishop found, through the Simon-Blalock technique for causal
inference, that among his Peruvian respondents greater media use led
to increased political knowledge, which in turn led to an increased
democratic political orientation, or support for democracy.17 Thus,
on a more micro-level, his results support the findings of Lerner,
and MacCleave and Chudde, that increased mass communication development
leads to increased political participation or democratic political
development.

Although the studies cited above have concentrated only on
patterns of mass media development and development of political
participation, it is not difficult to carry them one step further
constructing a model of press freedom development. In 1952, Sieber
suggested that "the more direct the accountability of the governor to
the masses, the greater the freedom of the press."18 He also
suggested that "the area of freedom contracts and the enforcement
of controls increases as the stresses on the stability of the govern-
ment and of the structure of society increase."19

Considering these studies and several others, the following
micro-level model of press freedom development is proposed:
In this model, the primary exogenous variable is availability of resources. In accordance with Meggers' theory, greater availability of resources lead to increased population size and concentration, and vice versa, and an increased population size and concentration leads to a higher sociopolitical and technological cultural level (and presumably to greater urbanism as defined in this study). Increased urbanism (or urbanization) leads to an increase in educational level, in accordance with the models of Lerner and McCrone, and an increase in education leads to greater mass media development.

In keeping with the models of Lerner, McCrone and Cnudde, Rogers and Bishop, increased media development leads to increased political knowledge, support for participatory government, and political participation and thus higher accountability of governors.

Greater accountability of governors leads to less government control of the press (or more press freedom) and increased stress on government leads to more government control of the press (or less freedom) in accordance with Siebert's hypotheses.

In addition, greater availability of resources leads to less stress on government, in accordance with Adelman and Morris' finding of a positive relation between per capita gross national product and political stability, and Terrell's finding of a moderately strong...
relationship between level of economic development of a
and political instability.\textsuperscript{21} This relationship is also
consistent with Schumpeter's observation that increased economic
development is likely to result in greater political stability and
a slower rate of social change, which "provides the conditions under
which greater press freedom is feasible..."\textsuperscript{22}

THE VARIABLES

1. Press Freedom. After an extensive review of various
vagaries of press freedom, mostly British and American, it was found
that the concept seems to be defined in three basically different
manner: (1) as the relative absence of governmental restraints on the
media; (2) as the relative absence of governmental and all other
restraints on the media; and (3) as not only the absence of restraints
on the media, but also the presence of those conditions necessary to
permit the dissemination of a diversity of ideas and opinions to a
relatively large audience, such as an enforced right of access to
newspapers and radio stations.\textsuperscript{23}

In the first two definitions, press freedom is clearly
declared by, in the words of Clark and Blankenburg, as "a negative.

In the third, it is seen as the ability to

The study, press freedom is defined and measured in terms
of the relative absence of governmental restraint.\textsuperscript{24} There are several reasons for choosing this definition:

First, all the studies reviewed indicate that the relative absence
for the existence of press freedom; (2) because this study includes relatively developed and underdeveloped countries of the world, any measure of press freedom used must include some aspect of the concept by which all countries may be evaluated (and studies of some countries have not even begun to consider the more subtle problems of non-governmental pressures and the degree of access to the media) and (3) all of the worldwide evaluations of press freedom except Lowenstein's 1966 study have been based on the degree of government control over the mass media, and 15 out of 23 of Lowenstein's indicators of press independence are measures of amount of government restriction, according to Kee's factor analytic study.

For these reasons, this is a study of government control of the press. It does not take into account restrictions other than those initiated by the government of a country, and it does not take account of the actual free flow or diversity of opinions and ideas within the mass media of a country, although an inverse correlation is expected between the degree of government control and such diversity.

The amount of press freedom in 1950 is measured in this study using Schramm and Carter's Guttman scale of extent of government control over the media. The items in this scale include government ownership of newspapers, economic pressures by government on mass media, political ownership, restrictions on free criticism of government policies, and government ownership of broadcasting facilities. Scores on this scale range from "0" (very little control) to "5" (very great control).
Nixon's first study of world press freedom, based on data of 1960, is used as a measure of government control of the press in 1965. This scale includes six classifications, and scores range from "1" (very little or no government control) to "6" (complete government control).26

Government control of the press in 1965 is based on Nixon's study, which includes data from 1964-65 and an expanded 9-point scale of government control of the press. Scores on this scale range from "1" (very little or no government control) to "9" (complete government control).27 In both studies, Nixon employed the International Press Institute's definition of a free press system—one ranked by the absence of government censorship or control—and in both studies he used expert judges to rate the various countries.

Press freedom in 1966 is gauged by Kent's assignment of factor scores to 91 countries of the world.28 These scores are based on 15 of M. Weinstein's 23 criteria for measuring press independence and control ability. These 15 items loaded on one factor, indicating a one-dimensional concept of government pressures on the press. Kent's factor scores were recoded into nine approximately equal segments, varying from "1" (very little government control) to "9" (very great government control).

In general, these scales were chosen because they are the most widely used among international communication experts, and because they were based on a greater number of countries (from 78 to 114) than do the more recent international studies of press freedom such as those carried out by the Associated Press, the International Press Institute and the American Press Association.
2. **Accountability of Governors.** After a review of some of the literature on democratization and political participation, accountability of governors in a given country was defined, briefly as executive and legislative dependence on public support and voting behavior.29

The indicators of the concept of accountability of governors came from Banks' *Cross-Polity Time-Series Data* and were selected via a principal-factor solution (with iterations) using Varimax rotation. The four indicators are: (1) type of selection of the effective executive (direct election, indirect election, or nonelective); (2) effectiveness of the legislature (effective, partially effective, ineffective, none); (3) competitiveness of the legislative nominating process (competitive, partially competitive, largely noncompetitive, no legislature); and (4) an aggregate competition index score based not only on the effectiveness of the legislature and the competitiveness of the nominating process, but also on the existence of competing factions within a legislature and the existence of recognized competing political parties.30 (See Table 1 for the indicators of each key concept and the factor loadings for each year of data collection.)

**TABLE 1 ABOUT HERE**

These four variables all loaded rather highly (.50 to .90) on a single factor in each of the four separate analyses, and when added together as an index yielded reliability scores of .94, .94, .92 and .92 for the years 1950, 1960, 1965 and 1966. Validity scores were
## TABLE 1
MEASUREMENT OF CONCEPTS

<table>
<thead>
<tr>
<th>Concept</th>
<th>Empirical Indicators (from Banks, Taylor and /teen)</th>
<th>1950</th>
<th>1960</th>
<th>1965</th>
<th>1966</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountability of Governors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Selection of Effective Executive</td>
<td></td>
<td>.71</td>
<td>.62</td>
<td>.50</td>
<td>.62</td>
</tr>
<tr>
<td>b. Effectiveness of Legislature</td>
<td></td>
<td>.69</td>
<td>.69</td>
<td>.74</td>
<td>.62</td>
</tr>
<tr>
<td>c. Competitiveness of Legislative Nominating Process</td>
<td></td>
<td>.90</td>
<td>.88</td>
<td>.90</td>
<td>.84</td>
</tr>
<tr>
<td>d. Competition Index Score</td>
<td></td>
<td>.79</td>
<td>.84</td>
<td>.89</td>
<td>.79</td>
</tr>
<tr>
<td>Press on Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Number of Revolutions</td>
<td></td>
<td>--**</td>
<td>.44</td>
<td>.90</td>
<td>.57</td>
</tr>
<tr>
<td>b. Number of Protests Demonstrations</td>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>c. Number of Riots</td>
<td></td>
<td>--</td>
<td>.78</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>d. Number of Armed Attacks</td>
<td></td>
<td>.72</td>
<td>.62</td>
<td>.77</td>
<td>.58</td>
</tr>
<tr>
<td>e. Number of Deaths from Domestic Violence</td>
<td></td>
<td>.71</td>
<td>--</td>
<td>.78</td>
<td>--</td>
</tr>
<tr>
<td>f. Number of Government Responses in Response to Perceived Threats</td>
<td></td>
<td>--</td>
<td>.54</td>
<td>.78</td>
<td>.68</td>
</tr>
<tr>
<td>Media Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Number of Radio Sets Per Capita</td>
<td></td>
<td>.98</td>
<td>.92</td>
<td>.77</td>
<td>.77</td>
</tr>
<tr>
<td>b. Newspaper Circulation Per Capita</td>
<td></td>
<td>.91</td>
<td>.96</td>
<td>.71</td>
<td>.71</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Primary and Secondary School Enrollment Per Capita</td>
<td></td>
<td>.95</td>
<td>.90</td>
<td>.92</td>
<td>.92</td>
</tr>
<tr>
<td>b. Total School Enrollment Per Capita</td>
<td></td>
<td>.84</td>
<td>.80</td>
<td>.92</td>
<td>.81</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Male Per Capita</td>
<td></td>
<td>.96</td>
<td>.85</td>
<td>.75</td>
<td>.92</td>
</tr>
<tr>
<td>b. Telephones Per Capita</td>
<td></td>
<td>.91</td>
<td>.90</td>
<td>.82</td>
<td>.99</td>
</tr>
<tr>
<td>c. Highway Vehicles Per Capita</td>
<td></td>
<td>.96</td>
<td>.86</td>
<td>.71</td>
<td>.90</td>
</tr>
<tr>
<td>Finance and Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Gross National Product Per Capita</td>
<td></td>
<td>--</td>
<td>.90</td>
<td>.99</td>
<td>.93</td>
</tr>
<tr>
<td>b. Gross Domestic Product Per Capita</td>
<td></td>
<td>.93</td>
<td>.96</td>
<td>.89</td>
<td>.89</td>
</tr>
<tr>
<td>c. Energy Consumption Per Capita</td>
<td></td>
<td>.93</td>
<td>.92</td>
<td>.92</td>
<td>.88</td>
</tr>
<tr>
<td>d. Revenue Per Capita</td>
<td></td>
<td>.97</td>
<td>.93</td>
<td>.99</td>
<td>.99</td>
</tr>
<tr>
<td>Government Control of Press</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Schramm and Carter's Scale (1950)</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>b. Nixon's Scale (1960)</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>c. Nixon's Scale (1965)</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>d. Lowenstein's Scale (1966)</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>(as modified by Kent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These loadings are based on a principal factor analysis (with iterations) and Varimax rotation, with six factors specified. A separate factor analysis was carried out for each of the four sets of data (1950, 1960, 1965 and 1966).

**Indicates that the factor loading was not clearly high on one factor, so the indicator was not used in the scale.
.87, .89, .88, and .83, and invalidity scores were .18, .14, .15 and .23.31

3. **Stress on Government.** Several writers, including Siebert, have suggested a systematic relationship between press freedom and amount of stress on government. Although most have not explicitly defined what they mean by stress, they do provide some clues.32

In general, stress is usually conceived of as a condition resulting from rapid change or from events which threaten the established pattern of life of a society or government. Political scientist Easton defined stress on a political system as "a condition that occurs when disturbances, external or internal in origin, threaten to displace the essential variables of a political system beyond their normal range and toward some critical limit."33 Shaw and Bishop defined societal stress as external or internal pressures—war, economic or political disruptions, and/or rapid social change—impinging upon a particular national society.34

Considering these and other treatments of stress, the concept is defined in this study as any period of great demands on, or significantly lessened support for, the existing government, as indicated by any relatively rapid changes or disruptions to the established patterns of social interactions between the governors and the governed.

Stress is measured in terms of one indicator from Banks, number of revolutions, and five indicators from Taylor and Hudson's World Handbook of Political and Social Indicators—number of protest demonstrations, number of riots, number of armed attacks, number of
deaths from domestic violence, and number of government sanctions in
response to perceived threats.\textsuperscript{35}

Two of these variables, armed attacks and deaths from domestic
violence, loaded highly (.72 and .71) on one factor in the 1950
analysis; four variables—revolutions, riots, armed attacks and
government sanctions—loaded moderately well (.44 to .75) in the 1960
analysis; four—revolutions, armed attacks, deaths and government
sanctions—loaded highly (.75 to .90) on a single factor in the 1965
analysis; and four variables—revolutions, riots, armed attacks and
government sanctions—loaded moderately well (.53 to .68) on one
factor in the 1966 analysis. (See Table 1.)

When added together in an index, the reliability scores for
the four years were .70, .73, .91, and .71. The validity scores were
.84, .92, and .83, and the invalidity coefficients were .06, .06,
.02.

4. Mass Media Development. In general, the level of mass
media development in a country has been defined and measured in past
studies in terms of daily newspaper circulation and number of radio
receivers per capita. Although some scholars have included number of
theater seats, number of television receivers, number of books and
magazines per capita as indicators, daily newspaper
circulation and number of radio receivers have been the most widely
used.\textsuperscript{42}

Semrau and Ruggles, who used these indicators in their study
of mass media development, point out that newspaper circulation and
radio statistics are "the figures most widely available and most readily
comparable, and it is easy to demonstrate that they correlate closely with the growth of transmitting systems (e.g., newspapers and broadcasting stations) and with availability of media material and equipment (e.g., newsprint, printing presses, electronic equipment, electric mains, etc.).

In this study, mass media development is defined as the level of availability of mass communication products per person in any given country. This definition does not include consideration of the type or quality of information conveyed by the media, but does indicate the general availability of such information.

Two indicators from Banks were used to measure the level of media development—number of radio sets per capita and newspaper circulation per capita. These variables loaded highly (.71 to .89) on a single factor in each of the four analyses. (See Table.) The reliability scores for the index were .92, .93, .91 and .88 in 1950, 1960, 1965 and 1966 respectively. The validity coefficients were .87, .92, .82 and .86, and the invalidity scores were .15, .08, .23 and .15.

5. Level of Education. Education has been used in various studies of mass communication and development as a key variable in the process of social, economic, and political development. Various measures of education and explanations of its role in national development have been proposed.

While some scholars have defined level of education in terms of literacy, others have clearly distinguished between the two
concepts. Of those who go beyond the dichotomous measure of literacy in assessing level of education, most rely on the percent of population enrolled in differing levels of schools.40

In this study, level of education is defined as the relative effort a society is exerting toward educating its population at a given time. Therefore, school enrollment ratios are used as indicators. In particular, two indicators from Banks are used—primary and secondary school enrollment per capita, and total school enrollment per capita.41 These variables loaded highly (.80 to .92) on one factor in all four analyses, and yielded high reliability scores (.96, .94, .96 and .93). (See Table 1.) Validity scores also high (.85, .80, .92 and .82), but invalidity scores were also fairly high (.25, .30, .11 and .26).

6. Urbanism. Several writers interested in the subject of urbanism and economic development have defined urbanism, or urbanization, in terms of population migration to cities and the concentration of people within cities. However, in an extensive review of the literature on urbanism and urbanization, Shaw detected two basically different processes of urbanism—one of concentration and one of radiation:

The one emphasizes the occupancy, by an increasing number of people, of areas that are put to distinctive uses characterized as urban. The other focuses on the impact of the assumed distinctive culture of such settlements on its own inhabitants and/or on those in outlying areas.42

Shaw distinguished urbanization from industrialization and argued that "It is the quantity and the variety of communication, I submit, not the fact of industrialization that are the major criteria
of urbanism. He defined urbanism as "a continuing public participation in multiple and diverse but interconnected institutionalized information networks, producing cumulatively, an extensive range of frequent, heterogeneous messages." And urbanization was defined as "the increasing urbanism of a human organism or of a social system."

Shaw suggested that one way of operationally defining urbanism would be to employ "such available data as volume of mail, number of phone calls, with due attention being paid to 'the necessity for contextual operational definitions'..." Several other writers have also suggested that degree of urbanism is related to amount of participation in multiple communication networks, including Frey in a 1963 study of political development and communications in Turkey, and Rogers in his book on modernization among peasants.

In this study, Shaw’s definition of urbanism is adopted on the grounds that those scholars who define and measure urbanism and urbanization in terms of the concentration of population are really trying to tap the amount of participation in multiple information networks, and that this participation is what chiefly distinguishes the interests, knowledge and attitudes of relatively urban from relatively rural inhabitants.

Urbanism is measured in this study by an index composed of three indicators from ranks: volume of mail per capita, number of telephones per capita, and number of highway vehicles per capita. These variables all loaded highly (.75 to .91) on one factor in each
analysis. (See Table 1.) Reliability coefficients for the index were .95, .94, .94 and .95, and validity scores were .92, .91, .84 and .91 for the four years. Invalidity scores were .11, .11, .23 and .11.

7. Availability of Resources. Resources of a society—human, natural and man-made—have long been thought to have an effect on the life style of its inhabitants and even on its cultural level. In sociological studies of national development, the term "resources" usually refers to the relative supply of material goods available in a society, or as Lerner puts it, "the production, distribution, and consumption of wealth." Lerner, along with several other scholars of various disciplines interested in national development, operationalizes availability of resources chiefly in terms of two indicators—national income and per capita income.

Considering past studies, availability of resources is defined in this study as the relative supply of material goods per person in a country, including such diverse "goods" as food, shelter, clothing, transportation and energy. This variable is measured with an index composed of four indicators from Banks: gross national product per capita, gross domestic product per capita, energy consumption per capita, and revenue per capita. These indicators all loaded highly (.84 to .95) on a single factor in each of the four analyses, and the index formed from adding them together resulted in high reliability scores (.97, .98, .97 and .98) for 1950, 1960, 1965 and 1966. (See Table 1.) Validity scores were also high (.95, .97, .93 and .89), and invalidity coefficients were fairly low (.07, .04, .09 and .19).
METHOD

Although the experiment is the traditional and preferable approach to constructing structural models, since changes in variables are controlled, sociological studies such as this one are rarely amenable to experimental analysis because of ethical and practical problems. The next best strategy, according to Heise, Chaffee and others, is to collect data over time, using a longitudinal study design and cross-lagged correlation or path analysis to analyze relationships among variables.52

The object in such an analysis is not just to find what correlates with what, but rather to specify the network of causal paths that exist between variables and to identify the parameters of causation so that one knows how changes in one variable affect the values of the other variables in the system under consideration.

In this study, the concepts of concern are measured on the national level. This is due to the organization of the available data and is justified, in part, by Fischer's observation that:

There are, of course, many useful particular problems which can and should be conceptualized in terms of the nation-state—mostly political and legal problems, for by definition a nation-state is a political and legal group. But there are many other problems which should be approached differently—problems about religious, economic, social or cultural groups, which rarely coincide with the nation-state.53

Since the amount of government control of the press is both a political and a legal problem, the use of the nation-state as a unit of analysis seems justified in this study.

If one is to analyze relationships among variables at this macro-level, there are basically two approaches available: the
configurative and the cross-national. In the configurative approach, the data from each political system are analyzed separately, noting the relationships between conditions and attributes of a given political system. The cross-national approach differs significantly from the configurative approach in that political systems are analyzed simultaneously. That is, each political system is thought of as a case of the universe of political systems, and data from some samples or from all political systems are analyzed together, rather than each system being analyzed separately.

As Gillespie points out, in comparative politics the configurative approach has been by far the most frequently employed for the task of linking conditions with attributes of political systems. But the advantage of the cross-national approach is that it provides for empirical generalization, whereas the configurative approach does not have the capacity of immediate empirical generalization, since it is an example of a single-case analysis. Of course, in the cross-national approach, fewer variables usually are considered and some of the in-depth analysis of the configurative approach may be lost.

This study adopts the cross-national approach for three basic reasons: (1) this writer is quite interested in developing theoretical propositions which hold across time and space; (2) most of the recent empirical studies of press freedom have been carried out with the cross-national approach, and (3) most of the variables which seem to be related to amount of government control of the press have been measured using the cross-national approach.
As pointed out in the preceding section, the data used in this study come from a variety of sources, including studies of press freedom by Schramm and Carter, Nixon and Lowenstein, and two collections of cross-national data compiled by Banks and by Taylor and Hudson. Reasons for using the press freedom studies were given in the previous section. The Banks and Taylor data were chosen because they are the most comprehensive and up-to-date collections among the 17 sets of cross-national time-series data currently available in the Inter-University Consortium for Political Research Guide for 1973-74. (See Appendix for the 137 countries included in these studies.)

Of course, there are definite problems in working with aggregate cross-national data. Such data can only be taken as rough estimates of the conditions prevailing in any given country at any given time. However, if the purpose of using such data is to identify the patterns of relationships among concepts rather than to determine the precise functional relationships (in mathematical terms), then such data is useful, since Heise has shown that even low reliability measures are not likely to obscure general patterns of relationships.55

In fact, Kaplan, Campbell and Heise have argued that patterns of relationships are a key to explanation and understanding.56 As Kaplan puts it:

Now, there are two accounts of the reasons which provide understanding, and thereby explanation. I call them the pattern model of explanation and the deductive model. Very roughly, we know the reason for something either when we can fit it into a known pattern, or else when we can deduce it from other known truths. . . . The pattern model may more easily fit explanations in early stages of inquiry, and the deductive model explanations in later stages.
According to the pattern model, then, something is explained when it is so related to a set of other elements that together they constitute a unified system. We understand something by identifying it as a specific part in an organized whole. . . . The deductive model has the advantage of being formulated with incomparably greater exactness, but, as its proponents, I am sure, would be the first to agree, precision isn't everything. 57

Kaplan and Heise seem to agree that once one has identified a structure, or pattern, one can begin to explain the variation of the elements within that structure. Heise notes that the kind of linkages necessary for prediction are less restrictive than those needed for explanation. That is, one can predict with simple correlations, but one must know direction for explanation and understanding.

In view of these observations on the pattern model of explanation, it was decided that path analysis over time would be used to analyze the relationships among the key variables. Basic path coefficients indicate the degree of change in the dependent variable, given a one-unit change in the independent variable, whereas correlation coefficients indicate the degree of covariation between two variables. In other words, a path coefficient represents the direct impact of one variable upon another. 58

In addition to making various assumptions outlined in the preceding footnote, one must also consider sources of extraneous variation in the data when using path analysis over time, including measurement error and the problem of correlated unmeasured variables, or so-called disturbances, which are due to imperfect determination of a dependent variable by one or more independent.
variables. Given the notoriously low reliability of macro-level cross-national statistics, and the high intercorrelations among variables, these are very real problems.

However, Heise has shown that "even though the two-wave model does not yield the actual values of the system parameters when measurements are imprecise, it might give a set of numbers that could be used for causal inference."59 In several simulation studies carried out with randomly generated data, Heise demonstrates that even unreliable measures (those with reliabilities of .50 to .64) "do not eliminate the utility of the two-wave path model for causal inference although errors in measurement do increase the chance of erroneous conclusions."60

As for the assumption that time 2 disturbances be uncorrelated with variables at time 1, Heise points out that "this assumption almost inevitably is violated in longitudinal data."61 However, even using measures with fairly low reliabilities (.50 to .64) and allowing for "noticeable correlations" between time 1 variables and time 2 disturbances, the correlation between estimated values and true values of Heise's path coefficients was .99.62 Heise concludes that "even though the parameter estimates are biased when imprecise measures are used, the relative values of the estimates parallel very closely the relative values of the true parameters, and so the pattern of estimates can be examined to obtain information about the pattern of true parameters."63

With regard to both measurement error and correlated disturbances, Heise argues that "either measurement errors or
disturbance correlations prevent one from obtaining exact estimates of system parameters, but both of these conditions combined do not negate the possibility of making causal inferences of a more qualitative nature.  

Therefore, given that cross-national macro-level data are fairly unreliable and that most variables are notably intercorrelated over the 16-year time period considered here, Heise's path model for two-wave panel analysis still seems to be a useful tool for making causal inferences in this study.

Applying Heise's Model

When dealing with more than two variables over time, Heise points out that it is necessary to carry out a series of multiple regression analyses to obtain the estimates of the path coefficients. Each variable in the model is treated as a dependent variable, and its time 2 value is regressed on the time 1 values of the other variables, including the time 1 value of the dependent variable itself. This procedure is continued until the time 2 values of each variable in the system have been treated as dependent variables in regression analyses. The standardized partial regression coefficients resulting from these analyses are estimates of the path coefficients.

The first step in applying Heise's model, then, is to determine which variables are to be included in the system. The model presented earlier in this paper suggests seven--availability of resources, urbanism, educational level, mass media development, stress on government, accountability of governors and government control of the press. To check on the signs and directions of the direct
influences of these variables upon each other, a series of multiple regression analyses was carried out, taking each time 2 value of each variable as dependent across four differing time periods (1950-66, 1950-60, 1960-66 and 1965-66), first for all countries included in the study and then for each of six regions of the world found to be socially, economically, politically and culturally similar in an earlier study by Farace. This procedure follows Pelz and Lew's recommendation that one obtain more than two waves of data when causal lag periods are unknown, and Shaw's suggestion that regional patterns in communication development may be "more tenable than Lerner's supposedly universally applicable model." Farace's regions (Latin America, North America/Western Europe, North Africa/Middle East, Central and South Africa, Asia, and Communist East Europe) were chosen over more traditional geographic areas because these regions are based on 54 measures of national characteristics, including social, economic, political, communication and cultural indicators, and it seems clear that such characteristics are not always strictly linked to traditional geographic divisions of the world.

FINDINGS AND CONCLUSIONS

In some cases, regression analyses could not be completed for all time periods, due to not enough valid cases or to the computational problem of a negative residual sum of squares which results in meaningless regression coefficients. However, valid coefficients for at least two time periods were obtained for all countries and for each of the six world regions.
For the sake of keeping an already lengthy paper from becoming entirely too long, the 19 path diagrams are not included here, but may be obtained from the writer. The results of these path analyses are summarized in Table 2, which indicates the percent of support for the seven predicted paths in the model for all countries in the study analyzed together and for each of the six regional systems. In addition, this table shows the average percent of support for the theoretical model as a whole (along the bottom) and the average percent of support for each predicted path (along the right side).

### TABLE 2 ABOUT HERE

By looking down the columns of Table 2, one can see that the original model is most consistently supported in the North American/Western European countries and in the Latin American countries. This finding calls attention to the Western backgrounds of most of the scholars reviewed in this study, and suggests that their models and hypotheses may have been influenced by their exposure to Western institutions and Western patterns of national development.

The two most supported individual paths were those from mass media development to accountability of governors and from accountability of governors to government control of the press. There was support in every area except Asia for the positive path from media development to accountability of governors, suggesting that mass communication development may indeed play an important role in the growth of participant forms of government in many areas of the world.
**TABLE 2**

**SUPPORT FOR THE THEORETICAL MODEL (ALL TIME PERIODS)**

<table>
<thead>
<tr>
<th>Predicted Paths</th>
<th>Percent Support</th>
<th>Average Percent Support for Each Path</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Countries</td>
<td>Latin America</td>
</tr>
<tr>
<td></td>
<td>(N = 120)</td>
<td>(N = 14)</td>
</tr>
<tr>
<td>Resources → Urbanism</td>
<td>98a</td>
<td>98a</td>
</tr>
<tr>
<td>Urbanism → Education</td>
<td>98a</td>
<td>98a</td>
</tr>
<tr>
<td>Education → Media Development</td>
<td>98a</td>
<td>98a</td>
</tr>
<tr>
<td>Media Development → Accountability of Governors</td>
<td>98a</td>
<td>98a</td>
</tr>
<tr>
<td>Accountability of Governors → Control of Press</td>
<td>98a</td>
<td>98a</td>
</tr>
<tr>
<td>Resources → Stress</td>
<td>98a</td>
<td>98a</td>
</tr>
<tr>
<td>Stress → Control of Press</td>
<td>98a</td>
<td>98a</td>
</tr>
</tbody>
</table>

**AVERAGE PERCENT SUPPORT FOR THE THEORETICAL MODEL**

| 16 | 29 | 46 | 29 | 29 | 29 | 29 |

*Support means that both the sign and the magnitude of each path coefficient (as compared to the magnitude of the return coefficient) support the causal directionality specified in each path of the theoretical model.

a Indicates p < .10
b Indicates p < .05
c Indicates p < .01
In addition, there was some support in every one of the six
regions and in all countries taken together for the negative path
from accountability of governors to government control of the press,
suggesting that even after the effects of the other variables in the
model are taken into account, an increase in accountability of
governors often leads to a decrease in government control of the
press, supporting Siebert's observation that "the more direct the
accountability of the governors to the masses, the greater the
freedom of the press." 68

These findings should be interpreted cautiously, of course,
due to the small number of countries in each region, the limited
time coverage of the data, and the modest supporting percentages.
However, even though the supporting percentages are not especially
high, Galtung has pointed out that between any two variables, there
are nine patterns of possible causal relationships, assuming that
each path can be negative, positive or zero in value. 69 If only the
one pattern out of nine clearly supporting the theoretical model
were chosen, the probability of finding support for the model by
chance, assuming that each of the nine patterns were equally probable,
would be about .11. However, there are three possible patterns out
of the nine which could support an original predicted path, if the
value of the return path were ignored. In this case, the probability
of a predicted path being supported by chance would be about .33.

In Table 2, support for a predicted path means not only that
the sign of the predicted path is correct, but also that the value
of the return path is not equal to or greater than the value of the
predicted path. Thus, the probability of any predicted path being supported by chance falls somewhere between .11 and .33. Taking the midpoint of this interval (.22) as an estimate of the actual probability of a given predicted path being supported by chance in any one analysis, it becomes apparent that the probability of a given path being supported by chance in more than one analysis is considerably less than .22. In fact, the probability of a given path being supported by chance in two independent analyses is about .04, in three analyses about .01 and in four analyses, about .002.

In addition to support for the paths linking media development, accountability of governors and government control of the press, the negative path from resources to stress was supported to some extent in all countries taken together and in every region except Communist East Europe, indicating that in many cases an increase in resources was followed by a decrease in stress, as predicted. The predicted positive path from stress to government control of the press was strongly supported in the North American/Western European countries and in Asia, but received little or no support in the other areas of the world, raising some doubts about the universality of suggestions by Siebert, Field, Stevens, Schramm and others that an increase in stress always leads to an increase in government control of the press.

Little support was found for the first part of Lerner and McCrone's developmental model, which specifies that greater urbanism leads to increased education, which in turn leads to increased mass media growth. This lack of support may be due to the relatively
short time span covered in this study, but further research involving longer time periods is needed to tell if these relations are long-term only or if they simply do not hold true in various areas of the world.

In the Communist countries, strong support was found for Meggers' suggestion that increased resources lead to increased urbanism, and moderate support for this sequence was found in several other areas of the world.

In short, the findings of this study indicate moderate support for some of the causal relations suggested in the theoretical model of press freedom development, especially those linking increases in mass media development to increases in accountability of governors, and increases in accountability of governors to decreases in government control of the press. This support suggests that growth of mass communication is important to the growth of participant forms of government and to greater freedom of expression. It also suggests that an increase in resources, or economic productivity, may lead to less stress on the political system of a country, and less stress may, along with greater accountability of governors, lead to less government control of the media, especially in the North American/Western European and Asian countries of the world.

The results of this study also suggest that path analysis over time may be usefully employed to reveal some non-obvious
relationships among variables which correlational studies would miss, especially if these path analytic techniques are coupled with data collected over longer periods of time.
NOTES


3Hopkins, p. 40.


9Lerner, The Passing of Traditional Society, p. 46.

10Lerner, The Passing of Traditional Society, p. 46.


29 See, for example, Seymour Martin Lipset, "Some Social
Requisites of Democracy," American Political Science Review,
53 (1959), pp. 69-105; W. Phillips Davison, International
Comparative Politics: A Developmental Approach (Boston: Little,
Brown and Company, 1966), pp. 259-60; and John V. Gillespie,
"Introduction: Studies on Democratization," Macro-Quantitative
Analysis, ed. by John V. Gillespie and Betty A. Nesvold (Deveri

30 Banks, Cross-Polity Time-Series Data, pp. 3-55 and 283-97.

31 For a discussion of the meaning of these coefficients
and computational procedures, see David R. Heise and George W.
Bohrnstedt, "Validity, Invalidity, and Reliability," Sociological Methodology 1970, ed. by Edgar F. Borgatta and
104-30. For documentation on a computer program to calculate
these coefficients, see Ervin H. Young, "COMPS," Unpublished
Paper, Institute for Research in Social Science Statistical
Laboratory, Manning Hall, University of North Carolina at

32 See, for example, Marshall Field, Freedom Is More
Than a Word (Chicago: University of Chicago Press, 1945),
p. 109; Donald L. Shaw and Stephen W. Brauer, "Press Freedom
and War Constraints: Case Testing Siebert's Proposition II,"
Journalism Quarterly, 46 (Summer 1969), pp. 251-3; John D.
Stevens, "Press and Community Toleration: Wisconsin in World
War I," Journalism Quarterly, 46 (Summer 1969), pp. 255-9; and

33 David Easton, A Framework for Political Analysis

34 Donald L. Shaw and Michael E. Bishop, "Editorial
Function and Societal Stress," Journalism Quarterly, 49
(Autumn 1972), pp. 582-5.

35 Banks, Cross-Polity Time-Series Data, pp. 283-97;
and Taylor and Hudson, World Handbook, pp. 59-123.

36 See, for example, Lerner, The Passing of Traditional
Society, pp. 53, 60, 86, 415 and 426-7; Nixon, "Factors Related,"
p. 17, and "A Fresh Appraisal," pp. 7-8; Schramm and Carter,
"Scales," p. 3; Wilbur Schramm, Mass Media and National Development
(Stanford, Calif.: Stanford University Press, 1964), pp. 94-5;

38 Banks, Cross-Polity Time-Series Data, pp. 255-82.


41 Banks, Cross-Polity Time-Series Data, pp. 207-26.


43 Shaw, p. 11.

44 Shaw, p. 15.

45 Shaw, p. 10.

46 Shaw, p. 11.


49 Lerner, The Passing of Traditional Society, p. 66.

51 Tanks, Cross-Reliability Time-Series Data, pp. 99-11, and pp. 119-82.


53 See David Hackett Fischer, Historians' Fallacies: Toward a Logic of Historical Thought (New York: Harper & Row, 1970), pp. 236-37, for further discussion of some of the limitations of using the nation-state as a unit of analysis.


Such coefficients are easily calculated by using standard multiple regression techniques, and the path coefficients are estimated by the standardized regression coefficients (betas), providing that one makes the assumptions of linearity, homoscedasticity, noncollinearity, and constancy and equivalence of causal relations. When using path analysis over time, it is also necessary to assume that there are no instantaneous effects in the system, that the lag periods for all relationships are about the same, that the time required to measure the variables at one point in time is less than the causal lag period, and that the time between measurements is about the same as the causal lag period. Heise points out that these assumptions need not be unduly restrictive. See Heise, "Causal Inferences from Panel Data," pp. 10-12.

58 Such coefficients are easily calculated by using standard multiple regression techniques, and the path coefficients are estimated by the standardized regression coefficients (betas), providing that one makes the assumptions of linearity, homoscedasticity, noncollinearity, and constancy and equivalence of causal relations. When using path analysis over time, it is also necessary to assume that there are no instantaneous effects in the system.


64 By inferences of a qualitative nature, Heise is referring to the ability to determine which causal relations in a system are negligible, moderate or large, and the ability to compare the relative strengths of these relationships. See Heise, "Causal Inferences," p. 26.


Johan Galtung, Theory and Methods of Social Research (New York: Columbia University Press, 1967), pp. 469-70. The nine possible patterns of causal relationships between two variables are:

(1) \[ X \leftrightarrow Y \]  
(2) \[ X \rightarrow Y \]  
(3) \[ X \leftarrow Y \]  
(4) \[ X \leftarrow Y \]  
(5) \[ X \leftrightarrow Y \]  
(6) \[ X \leftarrow Y \]  
(7) \[ X \leftarrow Y \]  
(8) \[ X \rightarrow Y \]  
(9) \[ X \leftarrow Y \]
APPENDIX

ALL COUNTRIES INCLUDED IN THE STUDY

1. Afghanistan
2. Albania
3. Algeria
4. Argentina
5. Australia
6. Austria
7. Barbados
8. Belgium
9. Bolivia
10. Botswana
11. Brazil
12. Bulgaria
13. Burma
14. Burundi
15. Cambodia
16. Cameroon
17. Canada
18. Central African Republic
19. Ceylon
20. Chad
21. Chile
22. China
23. Colombia
24. Congo-Brazzaville
25. Congo-Kinshasa
26. Costa Rica
27. Cuba
28. Cyprus
29. Czechoslovakia
30. Dahomey
31. Denmark
32. Dominican Republic
33. Ecuador
34. El Salvador
35. Ethiopia
36. Finland
37. France
38. Gabon
39. The Gambia
40. East Germany

41. West Germany
42. Ghana
43. Greece
44. Guatemala
45. Guinea
46. Guyana
47. Haiti
48. Honduras
49. Hong Kong
50. Hungary
51. Iceland
52. India
53. Indonesia
54. Iran
55. Iraq
56. Ireland
57. Israel
58. Italy
59. Ivory Coast
60. Jamaica
61. Japan
62. Jordan
63. Kenya
64. North Korea
65. South Korea
66. Kuwait
67. Laos
68. Lebanon
69. Lesotho
70. Liberia
71. Libya
72. Luxembourg
73. Madagascar
74. Malawi
75. Malaysia
76. Maldives Islands
77. Mali
78. Malta
79. Mauritania
80. Mexico
81. Mongolia
82. Morocco  
83. Mozambique  
84. Nepal  
85. Netherlands  
86. New Guinea  
87. New Zealand  
88. Nicaragua  
89. Niger  
90. Nigeria  
91. Norway  
92. Pakistan  
93. Panama  
94. Papua  
95. Paraguay  
96. Peru  
97. Philippines  
98. Poland  
99. Portugal  
100. Puerto Rico  
101. Rhodesia  
102. Romania  
103. Rwanda  
104. Saudi Arabia  
105. Senegal  
106. Sierra Leone  
107. Singapore  
108. Somalia  
109. South Africa  
110. Southern Yemen  
111. Soviet Union  
112. Spain  
113. Sudan  
114. Sweden  
115. Switzerland  
116. Syria  
117. Taiwan  
118. Tanzania  
119. Thailand  
120. Togo  
121. Trinidad and Tobago  
122. Tunisia  
123. Turkey  
124. Uganda  
125. United Arab Republic  
126. United Kingdom  
127. United States  
128. Upper Volta  
129. Uruguay  
130. Venezuela  
131. North Vietnam  
132. South Vietnam  
133. Western Samoa  
134. Yemen  
135. Yugoslavia  
136. Zambia  
137. Zanzibar