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ABSTRACT

The paper compares aspects of decision making in health and education in the United States and Great Britain from 1890-1970. The major purpose is to demonstrate variety in the degree of centralization within the two policy areas during this period. Centralization is defined as the degree to which all resources of a given type are controlled by one or many decision-making authorities. The document is presented in three sections. Section I reviews social science literature relating to centralization. Section II explains how an interpretation of centralization which emphasizes the structural aspects of decision making contributes to a better understanding of policy formation. Topics discussed include boundaries of a policy area, resource flows, types of decisions and decision makers, and concentration of power. Section III offers case studies of health and educational policy formation in the United States and Great Britain. For each policy area, information is given on sources of revenue, number of decision makers, control over training of professionals, employment, staff decisions, and expenditures. Findings indicate that although the two countries displayed a general tendency toward concentration in decision-making, they had quite different time frames in progress to their 1970 levels. (Author/DB)

THE PROBLEM OF CENTRALIZATION: HEALTH AND EDUCATION POLICIES IN GREAT BRITAIN AND THE UNITED STATES

by

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Centralization has become not only a key variable in social science analysis, but also an important subject of political controversy. Regardless of the research paradigm and irrespective of the social science discipline, centralization has become the focus of much attention. In political debate, the amount of centralization--whether at the local or the national level--is increasingly at stage center. In Great Britain, the debate over devolution has revolved around the question of how much to decentralize the governing of Scotland. The Bretons in France, the Basques in Spain, the French speaking population in Canada are demanding greater autonomy, or more political decentralization of their respective political systems. During the past ten years, there has been much controversy in Nigeria and the Soviet Union, as well as in countries in other parts of Africa and Asia concerning the political system's level of centralization, indicating that the issue of centralization is not a matter of concern only to western societies. Nor is the subject of centralization a temporally defined problem. The debate over centralization has been a critical one in American history, ranging from the debates of the Constitutional Convention in 1787, through the civil war and Reconstruction period, to recent issues involving civil rights and revenue sharing.

There is no consensus among scholars, however, concerning either the meaning of the concept centralization or how to measure it. Therefore, cumulative social science knowledge about centralization has been slow to emerge, even though it is a critical concept which social scientists confront most every day. Responding to this situation, this paper attempts several things. In the first section, it briefly surveys a few uses of the concept in various social science disciplines. In the next, it offers a definition

of the concept and proposes a scheme for its operationalization. And in the third section, it demonstrates how centralization may be operationalized by focusing in some depth on two policy areas over time and in two countries: health and education policies in the United States and Great Britain. We assume that the same method of operationalization could be used for other policy areas--e.g., transportation, housing, etc., or in other countries. By focusing on two policy areas within the same country, we demonstrate that it is somewhat erroneous to speak of country A or B as being centralized. Within a particular country, some policy sectors may be quite centralized and others decentralized.

SOME PREVIOUS DISCUSSIONS OF CENTRALIZATION

Centralization is a critical concept for social scientists regardless of the unit of analysis. For example, scholars focus on centralization when analyzing total societies or total political systems. Others concentrate on centralization when studying parts of political systems: political parties, delivery systems for health, education, transportation, etc. Others study centralization when analyzing such complex organizations such as a corporation, a university, an army, a prison.

Among social scientists, sociologists have made the most use of the concept centralization when studying total societies (Hage, 1972). For example, Marx and Weber, while holding to contrasting views of society, were very much concerned about the increasing tendency for industrialized societies to become centralized and hierarchical (Marx, 1967; Weber, 1958; Zeitz, 1976). True, both Marx and Weber focused much attention on the rigidity and oppression of centralized organizations but a critical concern was how these organizations cause societies to become more centralized. More recently, the French

sociologist, Michael Crozier (1964), has also focused, from still another perspective, on the relationship between the structure of organizations and the level of centralization of a total society.

Political scientists, more than sociologists, have tended to focus on the level of centralization of total political systems. For example, Samuel P. Huntington (1968), in an extremely perceptive essay, explains historically why the American political system has been much more decentralized than those of Western and Northern Europe. Lijphart (1968) and Stein Rokkan (1970) are other political scientists who have attempted to explain, at a theoretical level and with empirical analysis, why certain western political systems vary in their level of centralization.

Economists have also focused their attention on the level of centralization of total political systems. For example, Peacock and Wiseman (1961) have a model demonstrating how increases in the level of economic development cause political systems to become more centralized. Meantime, their views have stimulated other economists to focus on the relationship between changes in the economy and changes in levels of political centralization (Pryor, 1968).

Most of the scholarly discussion of centralization, however, has focused at a level less grandiose than total societies or political systems, though the analysis often has had implications for the level of centralization for the entire society. For example, Michels (1962) and Ostrogorski (1964) were political analysts in the early twentieth century who echoed the concerns of Marx and Weber about centralization, by focusing on political parties and bureaucracies. Like Weber, they were somewhat reluctantly reconciled to the emergence of centralized bureaucratic structures at the expense of decentralized and democratic institutions.

During the past forty years, there have been a number of challenges by American scholars to the Marx-Weber-Michels, etc., argument that western societies are becoming more centralized. Focusing on business firms, Adolf Berle and Gardiner Means (1933) in the 1930's argued that the power in large corporations was no longer being concentrated in the hands of the owners but was being passed to the control of a managerial class.

Meantime, Chandler (1966), in a number of retrospective studies, has argued that the largest and most diverse business corporations had begun to adopt decentralized structures by the 1920's and that only those multi-product firms that adopted the decentralized structures were successful in continuing to grow. At a more recent date, Galbraith (1967) has argued that the control of large business firms has decentralized into the hands of the technocrats.

Numerous scholars have focused on decentralization in other kinds of organizations. For example, many studies have demonstrated that increasing professionalization has led to decentralization in complex organizations (Blau and Scott, 1962; Wilensky and Lebeaux, 1958; Zeitz, 1976; Hall, 1968). Elsewhere, scholars, in a variety of disciplines, have focused on the level of centralization in various types of delivery systems (e.g. health, education, etc.). Alford's (1972) study of the American health delivery system, Stevens' (1966) analysis of the British National Health Service, Freidman's (1968) work on housing are examples of scholarship which argue that centralization is a critical variable shaping the delivery of the services which they are analyzing.

The Determinants and Consequences of Centralization

The scholarly literature has not been very successful in explaining why different types of activities or institutions are centralized. Focusing at

the nation-state level, Peacock and Wiseman (1961) explained centralization in terms of taxation and expenditures. They argued that during periods of crisis--e.g. depressions and/or wars--governments increase their spending at the central level, thus becoming more centralized. Integrating the crisis dimension with the work of Adolph Wagner, the Austrian economist, (1893) they argued that centralization increases with the level of economic development. This perspective, while valid for Great Britain, does not hold up very well when tested with many nation-states, however (Pryor, 1968).

Also focusing at the nation-state level, other scholars have argued that the more fragmented the society linguistically, religiously, and ethnically, the greater the decentralization (Rokkan, 1970; Lijphart, 1968; Wilensky, 1975). But these views have been tested with very few cases and for relatively few time points. And this as well as our other theoretical literature leave us without very much understanding concerning the historical process of centralization-decentralization among nation states.

Similarly, the variables which shape the level of centralization among complex organizations are unclear. A number of scholars have argued that increasing size, complexity, and professionalization lead to structural decentralization in complex organizations (Blau and Schoenherr, 1970; Chandler, 1966; Zeitz, 1972). Unless structural decentralization occurs, the literature suggests that it becomes impossible for higher level managers to maintain direct supervision over lower levels of an organization after it reaches a certain level of size, complexity, and/or professionalization.

It is the consequences of centralization that has attracted much attention, not only in political debates but also in the scholarly literature. Political activitists and scholars have long argued that decentralization

permits greater participation, regardless of whether the unit of analysis is total societies (Marx, 1967), political systems (Hamilton, et al., 1964), political parties (Michels, 1962), or complex organizations (Hage, 1965).

Meantime, the scholarly literature argues that the centralization dimension very much shapes a number of performance measures: levels of efficiency, rates of innovativeness, the degree of equality (Hage and Hollingsworth, 1977). However, the hypothesize relationship between the level of efficiency and performance varies somewhat depending on the unit of analysis and the kind of activity being analyzed. For example, Adam Smith, the "father of modern capitalism" argued more than two hundred years ago that the most efficient economic system is a highly decentralized, competitive one in which large numbers of consumers transmit their tastes to numerous producers who respond by producing goods and services at competitive prices (Smith, 1960). In other words, efficiency is maximized when there are perfect markets, and those markets are hypothesized to exist in a decentralized economy. On the other hand, Hollingsworth, et al. (1978) have argued that the markets for certain types of goods are imperfect and that efficiency is maximized only with a high degree of centralization. Medical care is such an area, and a highly centralized system tends to maximize the level of efficiency of the health delivery system.

Students of complex organizations have also argued that centralized power leads to efficiency, once there are controls for the level of complexity and task difficulty (Zeitz, 1972; Perrow, 1972; Weber, 1958, Hage, 1965). However, this literature generally fails to specify how much centralization is necessary to achieve efficiency. Presumably, some types of organizations, require more centralization than others in order to attain the same level of efficiency, even after there are controls for levels of complexity and task difficulty.

Whether the unit of analysis is a total delivery system or complex organizations, there are numerous studies which establish meaningful links between centralization, and another performance area, the rate with which innovations occur. One proposition which is quite well established in the literature states that the more centralized an organization or a delivery system, the slower it will be to adopt innovations (Hage and Aiken, 1971), but a centralized system, once it commits itself to a particular innovation will implement it more quickly than a decentralized system (Wilson, 1966; Zaltman, et al., 1973; Hollingsworth, et al., 1978). While this literature focuses on the speed with which innovations are adopted or implemented, another body of literature concentrates on the relationship between centralization and the likelihood that discoveries or inventions will occur. Ben-David (1971), for example, has demonstrated that the more decentralized the research facilities, the greater the frequency with which scientific discoveries occurred in several western countries.

The problem of establishing linkages between centralization and equality has been difficult, for the study of equality is difficult to measure. One may measure equality across social classes, or in spatial terms--i.e. across regions. Irrespective of the approach, however, one must decide whether one is dealing with the equality of access to resources (i.e. health facilities, schools, etc.) or to the equality of outcomes (i.e. levels of health, levels of education). There has been a substantial amount of literature on the relationship between centralization and equality for various types of large scale delivery systems (i.e. at the nation state level). And the findings suggest that centralization is more positively associated with the equality of access than with the equality of outcomes--whether measured by social class, groups, or spatially.

Whether the literature focuses on the centralization of societies, political systems, whether one's performance measure is efficiency, innovativeness, equality, or some other, the results of scholarly studies of centralization thus far have been quite inconclusive; for the literature employs multiple definitions of centralization. Moreover, studies which attempt to assess the impact of centralization on the performance of organizations, delivery systems, total societies, etc., for without adequate definitions, there are serious measurement problems. And with both conceptual and measurement problems, there can be little advance in any type of scientific inquiry.

A Conceptual Approach to Centralization

Regardless of the level of analysis, the concept "centralization" has been important in the study of policy formation and implementation because it provides one way of dealing with the distribution of power. As with most approaches that seek to explore the sources of change in, or consequences of, the distribution of power, "centralization" has proven difficult to define and operationalize. The purpose of this section is distinguish among several of the meanings and operationalizations of the term, centralization, and to provide a grounding for our approach.

As it appears in the literature as either an independent or dependent variable, the term centralization is often defined implicitly, or solely by reference to empirical indicators. In studies of nation states or political systems centralization is usually defined as having to do with the structures of decision-making. A most commonly used indicator is the ratio of central government (or all government) expenditures to G.N.P. Similar in intent, but not in content, are qualitative distinctions among systems that classify their decision-making structures as "poly-centralized", federationist, democratic, etc. Both of these indicators appear to be attempts to tap the extent to which decisions are made by a single or by many authorities.

Such definitions also often attempt to build in some understanding about the qualitative aspects of the authorities: i.e., the comparison of the size of the public versus the private sectors or the ratio of central government to local government expenditures. Here we focus concern not only on the issue of how many authorities are making critical decisions, but also on the types of authorities (central government bureaucrats, local government elected officials, private individuals, etc.).

We believe we can introduce greater definitional clarity and clearer analytic insights by distinguishing between two dimensions that are usually confounded in operational definitions of the term centralization. On one hand, centralization has been used to refer to a structural aspect of decision-making: are decisions about a particular resource allocation (money, personnel, information, etc.) made by one or many decision-makers? On the other hand, centralization has often been used to refer to the level at which decisions are made, and the qualitative characteristics of the decision-makers: are resources allocated by the central government, by local government, or by private mechanisms? The latter type of definition is an attempt to distinguish implicitly between decision-making structures on the basis of what elites are involved, what goals are being maximized, and what interests are represented in the decision-making process.

In this paper we are attempting to build a framework for the analysis of centralization based on the former, the purely structural definition. That is, our focus is on the degree of concentration in decision-making, and has no direct reference to who the decision-makers are, their interests and goals, and the influences affecting them. For the purposes of this paper, we define centralization as the proportion of all resources of a given type that are controlled by decisions made by various proportions of decision-making authorities. Thus, our immediate concern is with the issue of whether all decisions of a given type are made by one or many authorities (and the balance of resources controlled across authorities), and not with who the authorities are.

There are two major reasons for drawing this distinction among the meanings implied by use of the term centralization. First, we are able to quantify differences among systems by focusing on the purely structural aspects of decision-making as a prerequisite to the understanding of the

policy formation processes (agenda making, interest articulation, effective representation of interests) and policy implementation and performance processes (diffusion, standardization across space, etc.).

It is obviously desirable for comparative analysis to define centralization in a way that allows both cross-time and across-system variation to be represented. Measures that focus on a simple ratio (e.g. central government expenditure/G.N.P.) are comparable in time and space, but do not adequately capture the complexity of decision-making structures. More qualitative measures (e.g. degree of polycentralism) capture much of the variety of decision-making structures, but these measures are difficult to use comparatively, and are statistically intractable.

Distinguishing between the structural aspects of decision-making (i.e. what proportion of decision-makers control what proportion of decisions), and qualitative aspects (by whom are decisions made), allows for the study of the interrelationships between the two dimensions. Indeed, the relationships between the concentration of control and the nature of the dominant actors in a decision-making structure may be quite complex. Structures of decision-making are often deliberate constructions of the most powerful actors, and the relative power of actors is, in part, determined by the positions they hold within the structure of decision-making.

Our conceptual definition of the structural dimension of centralization is the degree of concentration in the distribution of control over resource flows across decision making points in a system. In order to operationalize this approach it is necessary to define system boundaries, types of resource flows, and decision makers, as well as to measure degrees of concentration in the joint distribution of controls over flows across decision-makers.

In undertaking this exercise with regard to medical and education delivery systems in the United States and Britain, we have relied heavily on systems theory and cybernetics to identify these quantities. The intellectual baggage of systems theory and cybernetics is not essential for the current approach to centralization. Any paridigmatic approach that allows for the identification of critical decisions and decision-makers within some bounded social organization would be equally applicable.

System Boundaries

To define the concentration of decision-making in a system, the boundaries of the system must be clearly understood. In examining medical care, one could focus on the doctor-patient interaction, on a hospital, or on the wider network of organizations providing medical care within some geographical boundary. The notion of centralization as the concentration of decision-making is equally applicable at each of these levels of analysis, though our examples speak only to national level delivery systems.

The boundaries of a system may be drawn in any number of ways, to suit the needs of the analysis. Generally, however, a system is defined as having inputs, production processes, and outputs, with boundaries composed of extraction of resources from the environment and disposal of outputs to the environment. For the purposes of our examples, we have defined these boundaries in national, medical and education delivery systems as follows. In medical care, we regard the boundaries as composed of those individuals and organizations that extract resources from the environment and allocate these resources to medical care, and which return curative medical treatments to the environment. Specifically, governments, social insurance systems, private insurance systems, hospitals, clinics, and other physicians practices

serve this function. Organizations such as pharmaceutical and medical construction providers are not included as part of the system as considered here, in that they do not make decisions to allocate resources to medical care or actually produce health care treatments. In education, the basic productive organizations which we choose to regard as parts of the system are the schools, but we also choose to include those organizations (in particular governments) that are responsible for the extraction of resources and their allocation to the production of formal education. We are thus not speaking of all organizations that play some role in the production of health or education in societies, but rather more limited organizational networks.

Identifying Decisions

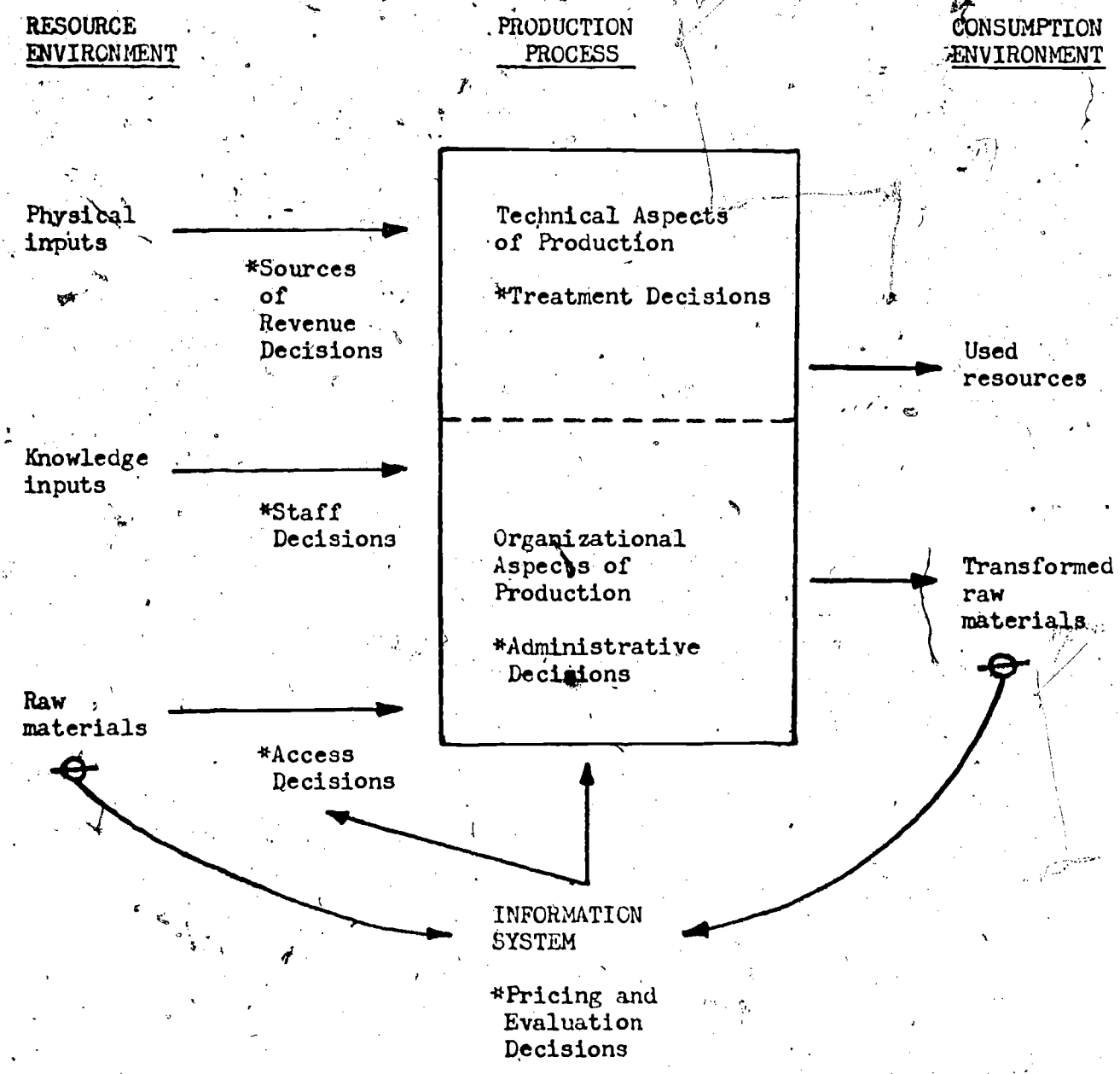
One of the major insights of the current approach to centralization is that in any social organization, there are many types of critical decisions and that the degree of concentration in the structure of decision-making may vary from one issue to another. We have used the systems perspective outlined in Figure One to identify critical types of decisions in organizations, though other perspectives might supply somewhat different lists.

Figure One About Here

Our perspective defines the system which interests us by its inputs, production processes, outputs, and information flows. Decisions are identified as the mechanisms by which input flows, production processes, output flows, and information are allocated between the system and its environment and across actors within the system. Various proportions of each of the flows in the system may be directly controlled by one or many actors.

Figure One

Conceptual Framework and Types of Critical Decisions



In complex systems, such as national level medical and education delivery, there exist a near infinite number of inputs, production processes, outputs, and types of information. System inputs in education, for example, could be defined as including everything from the money to pay teacher's salaries to the provision of erasers for blackboards. Production processes in health could be disaggregated into radiology, pathology, etc. System outputs in medical care include teacher's time consumed, students educated, and many others. There are also multiple types of information flows, including performance evaluation, price setting, and the like. A descriptively adequate study of concentration of decision-making in medical care or education must be concerned with all of these many types of decisions, but it is technically impossible to deal with the problem in such a disaggregated fashion. To reduce this complexity, we have borrowed heavily from the economist's conceptual approaches to productive systems.

When an economist speaks of the production of a given commodity, say steel (which is, in fact, many different commodities), he identifies the system in question by its outputs, and identifies the system inputs as land, labor, and physical capital. The production process itself (fueling furnaces, smelting and pouring, rolling, etc.) is normally characterized as a unitary "production function." "Decisions," when the system is described in such aggregate terms, refer to the acquisition of labor, capital, and raw materials, refer to managing the production process itself, and refer to the continuation of these functions. This approach can be applied to an analysis of medical and education delivery systems, also considered as production systems.

In national medical care and education systems, we regard the factors of production as consisting of physical capital, knowledge capital, and

raw materials. We approach the concentration of decision-making in regard to these inputs by examining the degree to which decisions about the supply of money, professional personnel, and raw materials (students, patients) are made in a single location. With regard to the "production function" in medical care and education, we are concerned with the problem of the concentration of decision-making about professional standards (e.g. which patients or students are to receive how much of what types of treatments or curricula). In examining cross-system and cross-time changes in the concentration of decision-making about information flows, we have focused on price setting decisions. Other information decisions that act to coordinate system activity, such as the evaluation of performance could also be considered.

To summarize: we have used a systems approach roughly analogous to those of the economist in order to identify the critical dimensions of decision-making in medical care and education. We will be concerned with the degree of concentration in those decisions that extract resources from the environment (physical capital, knowledge, and raw materials), govern the technical and organizational aspects of production of health and education (treatment decisions and administrative decisions), and govern flows of coordinating information in the system (prices). In our empirical examples, we will give each of these types of decisions a specific referent, e.g. hiring of staff for knowledge inputs. While we might use alternative conceptual frameworks in order to identify critical types of decisions, we use systems theory and cybernetics because of the personal tastes of the authors. In order to operationalize the degree of concentration in decision-making with regard to the types of decisions identified here, it is necessary to identify decision-making authorities and the degree of control of each authority over the aggregate flow of resources governed by each decision type.

Identifying Decision Making Authorities

Following from the above discussion, we define a decision-making authority as any entity that governs the flow of the supply of physical capital, the supply of knowledge capital, the supply of students or patients (raw materials), the professional standards of treatment, the administrative aspects of treatment, or information (prices). Again, it is important to distinguish between the manner in which decisions is made and the degree of concentration in decision making. For example, in the United States, the decision to build a municipal hospital (physical capital input) is made at the local government level. For our purposes, it does not matter that this decision is contingent on the approval of a majority of the citizenry (via bonding referenda) or contingent on the provision of federal matching funds. Regardless of what considerations are taken into account and what interest groups may dominate the decision, the decision to build is made by local government - not by central government or by private individuals. In this case, each local government may be regarded as a decision-making authority with regard to the provision of physical capital in the health care system.

Once the types of decisions of interest have been decided, it becomes a routine (albeit often very difficult) empirical matter to identify what part of the system is controlled by what decision-makers. In examining medical care and education delivery in Britain and the United States, we have found it most helpful to approach these empirical matters by identifying the share of decisions of a particular type that are made by central governments, local governments, and various private sector institutions. It is usually not possible to acquire data that would be wholly adequate to specify the share of the total decision flow of a particular type controlled by each individual decision point.

The empirical materials which we present are based on evaluations of what proportions of a given type of resource flow is controlled by central governments, local governments, and private sector institutions. For our purposes this is merely a convenient shorthand way of counting the numbers of decision-making authorities. It does not matter, from a structural perspective, whether a given decision-maker happens to be governmental or in the private sector.

Summary Measures of Concentration

We could obtain a fairly clear understanding of cross-national and over time variation in the degree of concentration in decision-making by examining changes in the numbers of decision-makers and changes in the resources controlled by central governments, local governments, and the private sector. In order to have clear emphasis on the structural nature of our measures of concentration in decision-making, we have gone a step further and have calculated gini concentration coefficients of the joint cumulative frequency distributions of the resources controlled by different authorities.

The gini concentration coefficients presented here vary from a minimum degree of concentration (zero) to a maximum of one. A score of zero indicates that each decision-making authority in the system controls an equal proportion of a given type of resource decisions. Conversely, gini concentration coefficients approaching unity imply that a single decision-maker controls nearly all of a given resource flow. This would be the case, for example, if the central government provided ninety-eight percent of the financial resources in medical care.

Concentration coefficients have the major advantage of providing a directly comparable summary measure across space and time, but also have

a few drawbacks. A number of pieces of information of some substantive interest are lost when calculating a gini coefficient. First, two distributions of dissimilar shape may be characterized by the same degree of overall concentration. Second, since the coefficients are calculated on the proportions of decision-makers and proportions of resources controlled, no information is available from the coefficient on the absolute numbers of each involved. Finally, the coefficient does not provide any direct information on who various decision-makers are, and where a particular type of decision-maker falls in the overall distribution. To correct for these deficiencies of the summary measure, we have presented tables throughout the text giving the actual numbers of decision-making authorities and the distributions of resource flows.

With these considerations in mind, we may now turn to an examination of changes in the degree of concentration in decision-making in American and British medical care and education.

The Concentration of Decision-Making in American Education 1890 to 1970

An impressionistic account of decision-making in the American education system between 1890 and 1970 would characterize the system as being highly decentralized, with some recent tendency toward centralization. A careful examination of the data strengthens rather than refutes this view. Within this overall perspective, however, we may observe a number of interesting characteristics of the system by focusing on the amount of concentration in different types of educational decision-making.

Sources of Revenue in American Education

Decision-making about the sources of revenue in American education has been shared among a large number of authorities throughout the period from 1890 to 1970. In Table One, we present data on the number of decision making bodies (the number of private schools, local school boards, states, and central government) over the period. Of course, each decision-making authority played some role in the finance of American education.

Table One About Here

In Table Two, we provide estimates of the proportion of total educational revenue controlled by each type of educational authority. And in Table Three we present gini coefficients which describe the degree of concentration (i.e. centralization) of decision-making about educational finance in the United States.

1.

U.S. Education. Number of Decision-Making Authorities

Year/Level	Private Schools	Local School boards	States	Federal
1890	6,215	72,000	44	1
1900	7,990	86,000	45	1
1910	8,588	97,000	47	1
1920	8,970	114,000	48	1
1930	13,423	128,500	48	1
1940	15,979	116,999	48	1
1950	14,916	83,614	48	1
1960	18,942	38,000	50	1
1970	20,065	17,500	50	1

U.S. Education. Sources of Revenue (Percentages of total)

Year	Private	Local Govt.*	State Govt.	Federal Govt.
1890	22.0	58.8	18.9	0.2
1900	8.8	71.8	19.4	0.0
1910	8.0	74.2	17.8	0.0
1920	7.0	76.9	15.9	0.2
1930	8.1	75.8	15.8	0.3
1940	8.7	75.0	14.7	1.6
1950	9.1	52.8	36.8	1.3
1960	9.1	52.6	36.0	2.3
1970	7.7	49.1	37.0	6.0

*Tuition fees paid to public schools included under local government.

3.

U.S. Education. Concentration of Revenue Decisions

Year	Gini coefficient
1890	.50
1900	.36
1910	.34
1920	.32
1930	.305
1940	.243
1950	.400
1960	.560
1970	.711

*Calculated on the joint cumulative distribution of decision-making points and sources of revenue. Coefficients are corrected for aggregation bias.

Tables Two and Three About Here

Observing the gini coefficients in Table Three, we note that the time trend of concentration in the decision-making about educational finance in the United States has been asymmetrically U-shaped, with declining concentration from 1890 to 1940 and with a rapid reconcentration that by 1970, exceeded the level that existed at 1890. By examining Tables One and Two, the sources of these movements in the coefficients are somewhat clear. The movement toward decentralization in educational finance between 1890 and the 1930's may be attributed in its entirety to the growth in the number of local educational authorities, coupled with no increase in the proportion of finance controlled at this level. Between 1940 and 1970, there was a rather dramatic shift toward state and central government finance of education, with a rapid consolidation of local educational authorities.

Control over the Supply and Training of Educational Professionals

The degree of concentration in decision-making about the quantity and quality of professional personnel is a potential source of difference across nations and over time in the quality of education. In the United States, most decisions about professional staff have been quite decentralized until recent years with private schools and local school boards responsible for the hiring and firing of professional staff.

In Table Four, we present data on the numbers of teachers in primary and secondary education in the United States (including an estimation of the number of teachers in Federal government employment) we have made no estimation of the number of private, self-employed teachers in non-school based practice.

4.

U.S. Education. Employment of Primary and Secondary Teachers by Sector

Year/Sector	Private	Local and State	Federal
1890	41,194	365,111	243
1900	40,992	423,934	269
1910	47,191	527,515	539
1920	54,331	684,116	942
1930	84,353	856,168	1,291
1940	94,977	874,279	1,198
1950	118,271	912,056	1,575
1960	175,633	1,352,901	2,227
1970	216,825	2,057,879	3,234

5.

U.S. Education. Concentration in Staff Decisions

Year	Coefficient
1890	.023
1900	.004
1910	.002
1920	.012
1930	.064
1940	.137
1950	.129
1960	.422
1970	.663

*Gini concentration coefficients calculated from the joint cumulative distribution of teachers by employment and decision-making points. Coefficients are corrected for aggregation bias.

When the educational professionals in Table Four are distributed across the authorities responsible for making decisions about them, the gini concentration coefficients in Table Five result.

Tables Four and Five About Here

The data in Table Five indicate that the trend in the concentration of control over the supply of professional staff has been somewhat different less than that of educational finance. Concentration in the hiring of professional staff was very low in the period prior to 1920 because each employing authority (whether private or public) hired only an average of five or six teachers. A dramatic centralization of employment decisions began in the 1920s and 1930s and accelerated in the post Second World War period due to the rapid consolidation of local education authorities and some growth in the average size of private schools.

Control Over the Supply of Students

To speak of the degree of concentration in decision-making about the supply of students seems, at least at first, rather peculiar. The importance of this question is more obvious when it is asked in a less abstract fashion: how concentrated is decision-making about access to educational opportunities? or, how concentrated is decision-making about the demand for education? Seen in these terms, it is clear that concentration of control over access decisions may be very relevant to controlling the cost of education (by rationing educational opportunity), and controlling the equality with which educational opportunity is distributed across the population.

In a system that is completely decentralized with regard to access decision-making, access decisions would be made at the level of the individual

school (to obtain a concentration coefficient of zero, it would also be necessary that all schools be of equal size). A completely centralized system, in contrast, would be one in which all decisions about school attendance of individuals (either forcing attendance, or prohibiting it) are made by a single authority. Obviously the education system of the United States, like most others, falls somewhere between these extremes.

One may obtain a crude estimation of the concentration in decision-making about the demand for education by examining the progress of compulsory education. Governmental involvement in setting requirements for attendance centralizes decision-making in the sense that it is no longer the prerogative of individual providers to decide whether a given person will attend school. In the United States compulsory attendance requirements have been the responsibility of state governments, with the decisions developing rather slowly. At 1890, roughly fifty percent of the population of the United States lived in states having some form of compulsory education, by 1900 the proportion had grown to sixty-five percent and increased rapidly thereafter (U.S. Commissioner of Education Education Report, 1906 pg. 1267). For most years between 1890 and 1970, compulsory education laws have been of modest importance in controlling the demand for education--especially in recent years--as large numbers of students attend schools beyond the ages required by law. The coding of the degree of concentration in decision-making about educational demand displays increasing concentration until approximately 1920 (as more and more states instituted such laws), and declines somewhat thereafter as increasing proportions of students have attended schools at ages other than those required by law. We have attempted to represent these movements by estimating from qualitative sources the concentration coefficient to be .5 at 1890, increasing it to about .7 at 1920, and having it decline to

.6 by 1970. The shortcoming of this procedure is obvious, yet it is desirable to have some informed estimate of concentration along this dimension for American education in order to compare it to with the other systems to be examined here.

Process Control: Decisions about Administrative Affairs

As any school administrator knows, decisions about the production process of education involves far more than curriculum and teaching matters. The assigning of students to teachers and the allocating of space and other capital equipment are characteristic of the administrative problems. The degree of concentration in decisions of this type affect the quality, quantity, cost, and equality of education. Obviously, administrative decisions may be either highly concentrated or widely dispersed.

No single indicator of the degree of concentration about administrative decisions is wholly adequate because there are many types of administrative decisions, some of which are made at the level of the classroom, others at the level of the school, and others still further up the hierarchical control

6.

U.S. Education. Primary and Secondary Students by Administrative Authority

Year/Sector	Private	Local	State	Federal
1890	1,643,722	12,657,710	70,000	10,000
1900	1,407,921	15,317,711	80,000	15,000
1910	1,660,605	17,796,784	100,000	20,000
1920	1,748,169	21,511,847	115,000	30,000
1930	2,586,697	25,553,097	128,000	38,000
1940	2,611,047	25,332,542	66,000	35,000
1950	3,380,139	25,008,427	59,000	44,000
1960	5,674,943	35,946,771	83,000	57,000
1970	5,143,182	45,718,038	110,000	75,000

7.

U.S. Education. Concentration of Administrative Decisions

Year	Coefficient
1890	.040
1900	.005
1910	.009
1920	.007
1930	.061
1940	.130
1950	.132
1960	.410
1970	.638

*Gini coefficients calculated from the joint cumulative distribution of students by authority and decision-making points. Coefficients are corrected for aggregation bias.

structure. As a proxy of concentration in this area, we have measured the distribution of students across private schools, local school systems, state school systems, and federal government schools. We make this choice of indicator on the assumption that the presence of a student in a given type of school implies that most administrative matters with regard to that student occurs at the same level.

In Table Six, we present data on the distribution of primary and secondary students in the United States across the different categories of authorities, and in Table Seven we present the gini concentration ratios for this distribution.

Tables Six and Seven About Here

Not surprisingly, the results in Table Seven indicate a pattern of increasing concentration, primarily in the post Second World War years. As with many of the other indicators, movements in the administrative centralization index are caused primarily by the consolidation of local school boards.

Process Control: Decisions About Curriculum and Teaching Technique

Our history books tells us that the French Minister of Education once made the claim that, at any given point in time, he knew precisely what all students in all French schools were doing. This claim (probably a correct one) was based on the determination of curriculum for all French schools by the Ministry of Education in Paris. Such a high degree of centralization in decisions about curriculum has never been the case in the United States, but neither has every American teacher been completely free to decide such matters. In the private sector certain parts of the curricula of Parochial schools have been decided by diocesian authorities rather than by individual schools; in

the public sector local school boards have often dictated the content of teachings.

It is not possible to quantify precisely what proportions of all curricula in American schools have been subjected to some form of centralized control, but the proportion has probably been quite small. As an upper bound, we might consider the numbers of students distributed across administrative authorities as in the next section. These estimates (which vary from near zero at 1890 to .64 at 1970) probably overstate the degree of concentration in curriculum decisions in American education, as local school boards have played a limited (but increasingly important) role in concentrating such decisions. Our impressionistic coding of the degree of concentration in curriculum decisions--(based on extensive reading of the primary and secondary literature)--is near zero from 1890 through 1920, and thereafter increases to a 1970 level of about .30. Again, these numbers are far from perfect representations, but they do have sufficient face validity to allow comparison across delivery systems.

Information: Decisions about Pricing

Just as the control over inputs or control over the production process may maximize various system performances, control over the flow of information is a source of control over the entire system. In health and education one of the most important information linkages in the systems is the pricing mechanism. Even if direct control over input and processes does not exist, the control of prices provides leverage over resource allocation and production decisions. Control over flows of information may be either highly concentrated or widely dispersed, as with other resources in systems. In the case where each individual provider is free to set the prices for his

service, we would classify the control over this type of information flow as very deconcentrated. In contrast to such a "free market" system, a system with highly concentrated control over prices (or implicit prices) exists where all exchanges are at ratios or prices fixed by a single authority.

In American education, we estimate the degree of concentration of price decision-making by determining what proportion of prices for various services are set by different authorities. Central and state governments have played little direct role in controlling education prices (other than prices in the few educational institutions that they operate directly). For purposes of constructing an indicator, we have assumed that flows of private funds in private schools occur at prices set by the governing authorities of private schools. All public educational expenditure in the United States has been allocated to local boards of education which are, by and large, the locus of decision-making about tax rates, school fees, and other prices. This classification gives rise to the data in Table Eight and the concentration coefficients in Table Nine.

Tables Eight and Nine About Here

With the exception of the 1890 data point, almost all pricing decisions in American education are made by governmental authorities. However, over time the number of such authorities has changed over time (See Table One). Most importantly, the rapid consolidation of local school boards that began in the 1930s has led to large increases in the concentration of decision-making about educational pricing. Even by 1970, however, there were still almost 40,000 separate decision-making points with regard to pricing, leading to a concentration coefficient of only .457.

U.S. Education. Percentages of Expenditure at Prices set by Various Authorities

Year	Private	Local Government	State Government[1]	Central Government[1]
1890	22.0	78.0	0	0
1900	8.8	91.2	0	0
1910	8.0	92.0	0	0
1920	7.0	93.0	0	0
1930	8.1	91.9	0	0
1940	8.7	91.3	0	0
1950	9.1	90.9	0	0
1960	9.1	90.9	0	0
1970	7.7	92.3	0	0

[1] Direct expenditures of State and Central governments on owned and operated schools are not represented here.

U.S. Education. Concentration of Decision-Making in Pricing

Year	Gini Coefficient[1]
1890	.141
1900	.003
1910	.001
1920	.009
1930	.014
1940	.033
1950	.060
1960	.242
1970	.457

[1] Not corrected for aggregation bias.

American Education: Summary

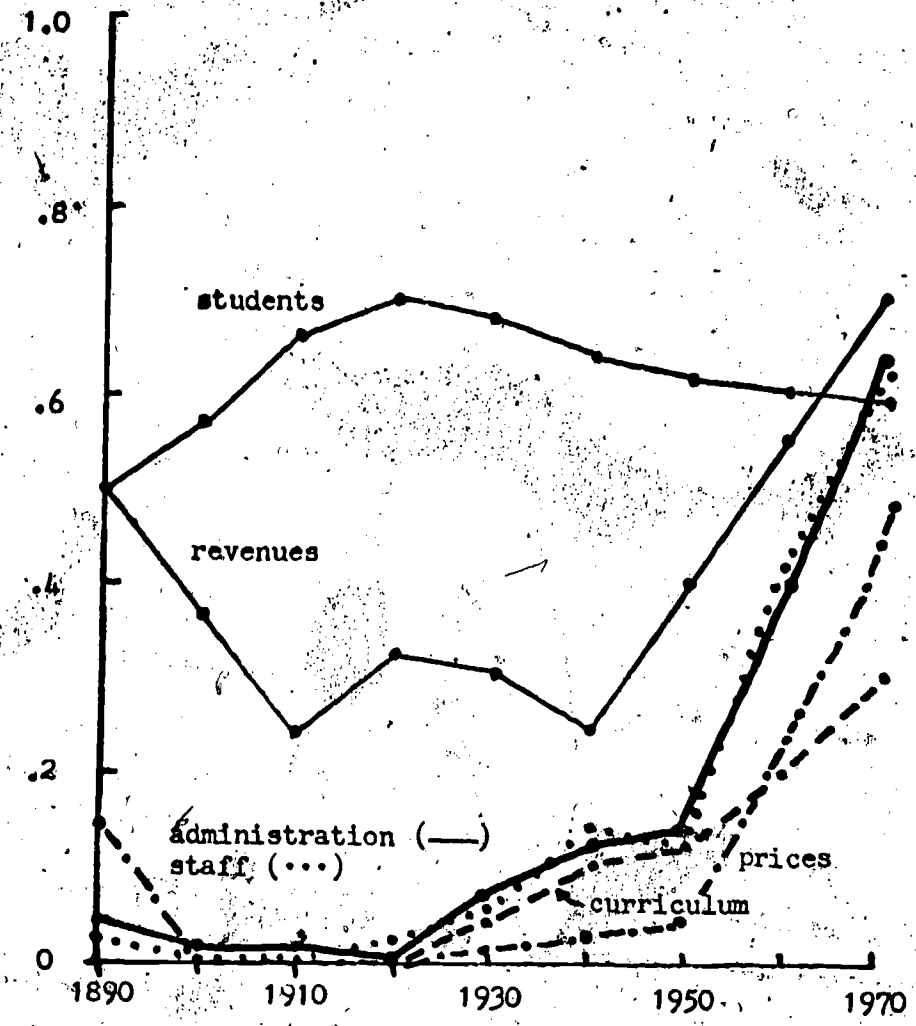
The degree of concentration in decision-making in American education has generally increased from 1890 to 1970. For most types of decisions, three major periods may be identified. From 1890 through the decade of the 1920s, a slight tendency toward deconcentration is observable. This tendency is a result of the rapid growth in the number of public authorities making decisions about public sector schools, coupled with a smaller change in the overall share of educational resources controlled by the public sector. From 1920 to 1950 a small movement toward greater concentration in decision-making occurred as the numbers of local school boards began to decline; from 1950 to 1970, the concentration increased dramatically, based on the rapid consolidation of local school authorities and an increasingly significant intrusion of state and federal authorities in financial affairs. These trends are summarized in Figure Two.

Figure Two About Here

From Figure Two it is clear that the proper study of educational policy formation in the pre-World War II years must focus on the representation of interests in the deliberation of local public authorities. In the post-war years the deliberations of state and federal governments have also become of some substantive importance, and the policy making process of local authorities may have undergone significant change as these authorities have become consolidated. Indeed, the trends in figure two indicate that complaints of professional and bureaucratic dominance of educational decision-making in the United States in the post-war period, with a consequent reduced role for

Figure Two

Concentration of Decision-Making in American Education



consumer representation, may be a result of a dramatic change in the concentration of decision-making. As the structure of decision-making has become more concentrated, the potential for consumers to use their sources of power (numbers) to control the directions of educational policy has become less.

The increasing concentration of decision-making structures in American education may also be seen as a source of changes in system performance. As the system has become more centralized, the potential for successfully implementing a truly national education policy has increased. In particular, emphasis on equalization across social classes, races, and geographical areas has become an operational possibility for the American system. While the degree of concentration in control over critical educational decisions does not, in itself, predict such policy outcomes, standardization and equalization cannot be pursued under the conditions of high decentralization that prevailed in the American system prior to the Second World War.

The Concentration of Decision-Making in American Medical Care 1890-1970

Many of the trends which one observes in the concentration of decision-making in American education are also apparent in American medical care. Despite the similarities, there are also some differences in the decision-making structures of health and education. A careful examination of the differences between the two systems allows some preliminary conclusions about the sources of stability and change in system control structures.

Inputs: Sources of Revenue in American Medical Care

In contrast to American education, there has been little dramatic change in the sectoral distribution of decision-making in American health, analogous to the consolidation of local school authorities. In Table 10A , we present data showing the number of different decision making units; the number of private office-based physician practices, private hospitals, local government hospitals, states and federal governments. From this table, it is clear that there has been considerable potential for decentralization in American medical care in that the number of decision-making authorities has roughly doubled during the last eighty years.

Table 10A About Here

In Table 10B , we present estimates for the sources of medical care expenditures in the United States. Because of the inadequacy of data, this table does not separately identify the growth of private insurance schemes, which results in some underestimating of the estimates of the growth of concentration in medical financing. Trends in the sources of revenue for medical care demonstrate, with the exception of 1890, a fairly regular substitution of central government for private financing of medical care.

Table 10B About Here

Finally, we present the gini coefficients (See Table 10C) for the distribution of medical care expenditures across the various types of authorities.

10A.

U.S. Health. Numbers of Decision-Making Authorities

Year/Type	Private Practices	Private Hospitals	Local Govt. Hospitals	State Govt.	Federal Govt.
1890	89,262	2,800	640	44	1
1900	102,960	3,000	720	45	1
1910	113,520	3,256	800	47	1
1920	117,600	4,500	883	48	1
1930	122,018	4,907	943	48	1
1940	140,130	4,524	910	48	1
1950	168,089	4,518	1,005	48	1
1960	179,176	4,561	1,324	50	1
1970	188,900	4,458	1,680	50	1

U.S. Health. Sources of Revenue (Percentage of total)

Year	Central Government	State and Local Government	Private Sources
1890	0.2	1.3	98.6
1900	0.8	15.4	83.8
1910	0.5	11.8	87.6
1920	4.4	12.0	83.6
1928-9	4.2	9.7	86.1
1939-40	5.1	15.4	79.5
1949-50	12.0	13.0	75.0
1959-60	10.5	14.2	75.3
1970-71	24.7	13.3	62.0

U.S. Health. Concentration of Revenue Decisions

Year	Gini Coefficient
1890	.0066
1900	.1549
1910	.1168
1920	.1567
1930	.1315
1940	.1990
1950	.2446
1960	.2404
1970	.3731

Table 10C About Here

It is notable in this data that the 1970 time-point is a considerable departure from the 1950-1960 period, as are the 1950 and 1960 time-points departures from the earlier period. It is also notable that the level of centralization in the sources of revenue for American medical care is consistently lower than that for American education, though the time trends are somewhat similar. This fact points up the fallacy of regarding an entire society as being centralized or decentralized when one wishes to make implications about policy and performance in any specific policy area.

Input: Control over the Supply of Medical Professionals

In Table Eleven, we present data on the number of American physicians by the type of authority with which they work. In as much as physicians represent a proxy for medical knowledge, the distribution of physicians across decision-making authorities provides an indication of the degree of centralized control over knowledge inputs in medical care.

Table Eleven About Here

We present in Table Twelve the gini coefficients on the concentration of knowledge inputs. The levels of concentration observed in this table are quite low with the exception of 1960 and 1970. For the entire time period, however, the coefficients reflect the importance of private office based practice and private individual decision-making in American health. The deviation of 1960 and 1970 from the other data points is caused primarily a rapid post-war expansion in hospital-based practice and at 1970, by an

11.

U.S. Health. Employment of Physicians by Sector

Year	Private Office based	Private and Local Hospital	Federal	Total
1890	89,262	14,543	1,000	104,805
1900	102,960	27,042	2,000	132,002
1910	113,520	34,612	3,000	151,132
1920	117,600	23,377	4,000	144,977
1930	122,018	26,785	5,000	153,803
1940	140,130	25,859	7,500	173,489
1950	168,089	23,858	12,576	204,523
1960	179,176	58,329	14,212	251,717
1970	188,900	92,800	29,500	311,200

12.

U.S. Health. Concentration of Staff Decisions

Year	Coefficient
1890	.1111
1900	.1852
1910	.2147
1920	.1458
1930	.1621
1940	.1562
1950	.1480
1960	.2579
1970	.3643

*Gini coefficients of the distribution of active physicians across private office based practice, private hospitals and local government hospitals and State governments, and Federal government.

expansion of the proportion of physicians employed by the federal government.

Table Twelve About Here

Input: Control Over Access to Medical Care

While medical care in all societies is rationed in varying degrees, the United States, as in most other societies, makes no systematic effort at the central level to deny segments of the population access to medical care. Rather, the American medical care system, in so far as it has controlled demand for medical services at all, has done so indirectly by exercising control over the other factors of production.

At a formal level, decisions about access to medical treatment in the United States are made largely by the providers: private physicians, private and local government hospitals, and the administrators of state and federal government health care systems. If state and federal systems were major providers of medical care, we might regard decisions about access to be somewhat centralized. However, if one views the actual patient loads handled by each type of authority as a rough indicator of the control over access to medical care, the centralization of decision making over access to American medical care at no time exceeds aging: coefficient of .03 (See Table Fourteen). This remarkable level of decentralization is the direct result of the importance of private office based practice in the American system.

Process Control: Decisions about Treatment

Quite unlike the situation faced by American teachers, medical doctors and patients. Even in the public hospital systems (e.g., military hospitals,

state and local government hospitals), such intrusion is rare, and these systems compose a very small part of the American medical system.

The absence of any substantial government role in regulating the treatment act itself, however, should not be interpreted as meaning that there are no centralizing influences in health care treatment decision-making. The activities of local medical societies (private), and various treatment review bodies in hospitals do exert influence to control the treatment act, yet the fact remains that medical professionals, regardless of their employment status are the decision-makers about the content of treatment. As such, one must code the decision-making about the treatment process as essentially decentralized throughout the period.

Process Control: Administrative Decisions

In contrast to the decentralization of decision-making about treatment per se, it is possible that, as in education, other aspects of the production process could be more centralized. For example, decisions about the patient/physician ratio or the number of facilities available per patient could be made in a centralized fashion with directly affecting the physician's autonomy in determining the nature of treatments.

In the United States, however, there is no such disjuncture over the process of medical care. In Table Thirteen, we present estimates of the numbers of treatments carried out by the various administrative authorities. In Table Fourteen, we distribute these treatments across the different decision-making authorities and present concentration coefficients.

Tables Thirteen and Fourteen About Here

13.

U.S. Health. Treatments by Administrative Authority

Year/Source	Private M.D.	Private Hospital	Local Govt. Hospital	State Govt. Hospital	Federal Hospital
1890	59,903,200	940,000	189,000	89,000	3,000
1900	91,312,800	1,404,000	281,250	134,700	10,725
1910	133,990,150	2,000,363	410,540	189,049	30,895
1920	196,962,100	3,534,165	725,368	282,231	139,917
1930	311,133,330	5,322,893	1,134,215	388,984	301,149
1940	435,448,200	7,218,544	1,728,595	583,274	557,137
1950	627,621,100	12,706,143	2,397,570	791,863	1,127,937
1960	846,606,600	18,486,565	3,728,787	929,849	1,475,530
1970	918,809,600	22,979,000	5,521,504	751,402	1,741,000

14.

U.S. Health. Concentration of Administrative Decisions

Year/Concentration	Coefficient
1890	.0195
1900	.0177
1910	.0181
1920	.0253
1930	.0273
1940	.0192
1950	.0110
1960	.0088
1970	.0062

In these tables, the pre-eminent place of the private office based practice in American medical care is clearly demonstrated. In contrast to education, where the growth of large scale administrative units (big schools and multiple-school systems) has the norm, health care administration has remained very de-centralized, despite the rapid growth in the importance of hospitals in recent years.

Outputs: Control over Pricing in American Medical Care

The setting of prices of health care services is potentially a powerful tool in controlling the health care system. By manipulating prices it is possible to ration health care, to equalize its delivery, or to change the mix of effective demand. Contrary to many views, the pricing of medical care in the United States have not been determined in a completely decentralized "free market" fashion.

To gain a rough estimate of the degree to which prices in American medical services have been fixed by central authorities, we examined the total medical care expenditures in the United States at various years to determine what proportions of these expenditures occurred at prices set by private providers (as in the setting of physician's and private hospital fees), by local governments (as in municipal hospitals), and by the federal government (as in military and veteran's administration hospitals). We regard many categories of governmental medical care expenditures as having prices set by private providers (e.g. Medicaid), and we have grouped these prices in the private sector. The results of this somewhat crude classification are shown in Table Fifteen.

Table Fifteen About Here

U.S. Health. Estimated Proportions of Total Health Expenditure at Prices Set by Various Authorities

Year	Private Providers	Local Government	Central Government
1890	98.5	1.4	0.1
1900	83.8	15.4	0.8
1910	87.7	11.8	0.5
1920	83.6	12.0	4.4
1930	90.7	8.0	1.3
1940	83.3	12.6	4.1
1950	82.0	15.0	3.0
1960	84.0	12.0	4.0
1970	86.7	8.2	5.1

The data in this table indicate that, as expected, the vast majority of decisions about the price of medical care services in the United States have occurred in the private sector. It is important to recognize, however, that some proportion of the total national medical care bill has had prices set by local and central governments. In particular, the post Second World War period displays a consistently larger role being played by governmental authorities in the setting of medical care prices.

In Table Sixteen, we present these data on medical care pricing as gini coefficients, where the proportions of medical care expenditure occurring at prices fixed by the various categories of authorities has been distributed across the numbers of such authorities. One should view the coefficients in this table with some caution, due to the gross classification of the previous table and because no disaggregation within the private sector was possible. Absence of more detailed data about the private sector means that it is possible for the coefficients in Table Sixteen to be somewhat, but not substantially different. Nor would the trend over time likely be different.

Table Sixteen About Here

It appears from this table that an increasingly concentrated structure of decision-making about the prices of medical care is evolving in the United States. By 1970, a considerable potential existed for exerting centralized influence over pricing decisions. However, it is also well known to any student of American medical care policy that this evolving structure of control over pricing has been used to re-enforce the pricing decisions of the private sector, rather than to modify them significantly.

16.

U.S. Health. Concentration of Decision-Making about Pricing

Year	Gini Coefficient*
1890	.22
1900	.45
1910	.35
1920	.30
1930	.25
1940	.38
1950	.40
1960	.46
1970	.50

*Data are very broadly estimated, calculation of coefficient may over-correct for aggregation bias.

American Medical Care: A Summary

By our indicators, the American medical system between 1890 and 1900 is quite decentralized with only very modest tendencies toward centralization over time. Of the various types of decisions which we have considered, structures that significantly concentrate decision-making exist only with regard to pricing, sources of revenue, and the supply of professional staff. By our measures, there is little concentration of decision-making over the professional or administrative aspects of delivering treatments or over access to medical care.

Figure 3. About Here

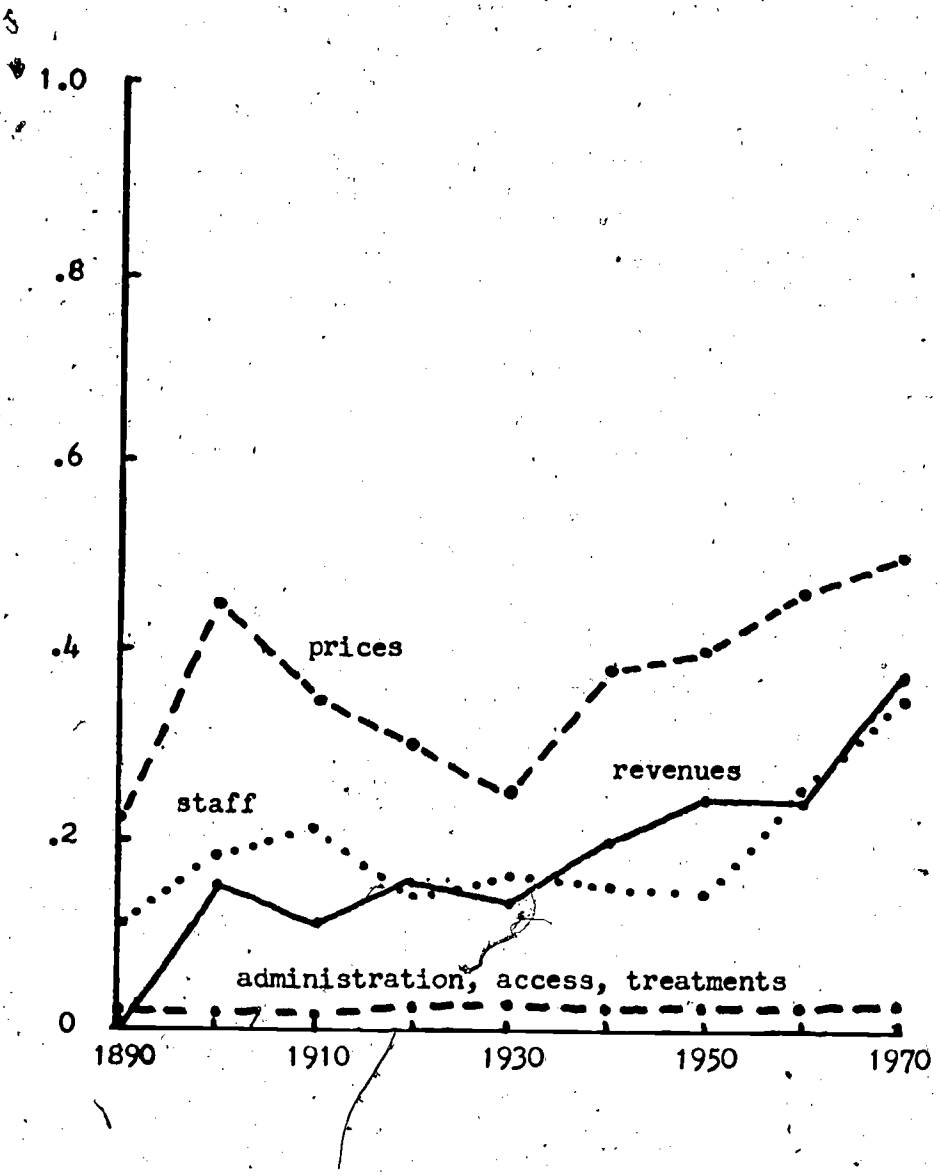
The American medical system differs significantly from that of the American education system, in which both generally higher levels of concentration and stronger trends toward increasing concentration are observed. Leaving aside for the moment the generally higher level of concentration of decision-making in education, both the health and education systems display similar patterns among the various dimensions which we have considered. In both systems there has been a tendency toward greater concentration in decisions about inputs and outputs than about the treatment process itself. And in both systems, the decades of the 1930s and 1940s were the starting point of historical tendencies toward greater concentration of decision-making structures.

The Concentration of Decision-Making in English and Welsh Education 1890-1970

The development of State intervention in and the effective centralized control over education in Britain was, by European standards, quite late in

Figure Three

Concentration of Decision-Making in American Health



occurring. Prior to 1870, government played little role in any aspect of the educational system except the providing of funds. With the reorganization of local government and the expansion of the franchise in 1868, the direct role of government began to expand rather rapidly. By 1890, when our data begin, large strides had already been made toward concentrating decision-making about education, mostly in the hands of governmental authorities.

Inputs: Sources of Revenue

To the uninitiated, the complexity of the British educational system is formidable. Over the period of our interest, a large number of different institutional arrangements and school types have come and gone, making the estimation of the number of decision-making authorities a rather difficult job. In Table Seventeen, we present an account of the number of primary and secondary schools as well as school systems in existence in England and Wales at various points in time. We have ordered the school types from minimum to maximum government involvement as one moves from left to right across the table.

Table Seventeen About Here

In contrast to the American system discussed earlier (See Table One), the number of education decision-making authorities in England and Wales has been in continuous decline since the late nineteenth century. One of the most notable features of Table Seventeen is the consolidation of local education authorities (at 1902 in England and Wales as opposed to the 1930's in the United States), and the rapid erosion of the wholly independent sector in the post Second World War period.

England and Wales Education. Number of Decision-Making Authorities in Primary and Secondary Education.

Year	Wholly Independent Schools	Direct Grant Schools	Certified Efficient Schools	Voluntary Schools	Controlled Voluntary Schools	Local Education Authorities	Total
1890	11,130		252	14,761	0	2,376	28,519
1900	10,608		108	14,359	0	3,333	28,408
1910	10,000	(1)	162	13,346	0	468	23,976
1920	9,500	(1)	294	12,863	0	462	23,119
1930	9,250	(1)	609	11,816	0	463	22,138
1938	9,000	(1)	776	11,178	0	461	21,415
1950	4,010	164	1,191	11,107	0	146	16,618
1960	2,680	178	1,479	5,579	4,782	144	14,842
1970	1,099	176	1,405	5,292	3,876	161	12,009

(1) Included under voluntary schools.

57.

58.

61

England and Wales Education. Sources of Revenue (Percentages of Total)

Year	Private Sources	L.E.A. (elem.)		L.E.A. (higher)	Central Govt.
1[illegible]0-1	36.3%		25.0%		38.7%
1900-1	17.0		32.7		50.3
1910-1*	16.8	38.4%		4.7%	40.1
1920-1*	16.6	31.7		5.2	46.4
1930-1*	13.5	30.9		7.0	48.6
1937-8*	16.0	32.3		7.8	43.9
1950-1	23.3		23.8		52.9
1960-1	10.1		14.8		75.0
1970-1	8.2				

*Separate local authorities existed in this period to deal with the different levels of public schools.

England and Wales Education. Concentration of Revenue Decision-Making

Year	Gini coefficient
1890-1	.666
1900-1	.835
1910-1	.903
1920-1	.902
1930-1	.900
1937-8	.903
1950-1	.856
1960-1	.928

In Table Eighteen, we present data on the sources of revenue in the English and Welsh systems from 1890 through 1970. In these data, we categorize funds as central government that are collected by central government but administered by local authorities. We have grouped private payments (fees, gifts, endowments) to public sector schools as local government.

It is clear from Table Eighteen that the central government has played a much larger role in the finance of education in Britain than in the United States. When we take the number of decision-making points into account (See Table Nineteen), a picture of very high concentration emerges.

Tables Eighteen and Nineteen About Here

The data in this table show that decision-making about educational finance was sufficiently concentrated by 1901 to allow for the central government to use it as an effective instrument of system control. In the 1950s and 1960s, further centralization of funding occurred, with the central government supplanting local education authorities. However, in the late 1960s some modification of this trend was noticeable, as there was a tendency for central government grants for education to local authorities to be of an uncategorical nature.

Inputs: Professional Staff

Decisions about the hiring, promotion, and firing of professional staff in primary and secondary British education have always occurred at the local level. Because the central government plays little direct role in such decisions (albeit the central government has long been concerned with the

general supply of educational professionals), the concentration of decision-making in this area is somewhat less than in finance. Although this institutional arrangement is similar to that which exists in the United States, there are relatively fewer local governmental authorities and private schools in Britain--leading to a higher level of concentration about such decisions than is observed in the United States.

When we distribute the primary and secondary professional staff of English and Welsh schools across the various decision-making authorities responsible for their employment, the following gini concentration coefficients result: .709 in 1950, .719 in 1960, and .808 in 1972. If the employment of teachers was proportional to administrative control over students in the period prior to 1950, the concentration of decision-making about professional staff was probably about .5 to .6 in the period 1890-1900, and rose to approximately .7 in the period from the reform of 1902 until the post-Second World War reforms. In contrast to the American system, the concentration of decision-making about professional staff in Britain has been quite high and has displayed discontinuous change.

Inputs: Students

Although slow by European standards, Britain established effective regulation of school attendance at the primary and secondary level earlier than in the United States. Also in contrast to the United States, such regulation of access occurred at central government initiative (rather than at the regional government level). As in the United States, most attempts to regulate educational demand were with the express purpose of increasing rather than rationing demand for education. In the United States regulation of educational demand changed in a smooth fashion as increasing numbers of states adopted mandatory attendance regulations. Characteristic of the more

centralized system in Britain, regulation of demand has changed in a stepwise fashion as one aspect of periodic broader reforms of education initiated by central government.

The various reforms of British education established increasingly long periods of mandatory attendance. In 1892 the requirement that all persons attend school from ages five through ten was instituted, though enforcement was often lax. In 1904 the requirement was changed to require attendance through age twelve, and after the First World War, this was revised upward to age fourteen. No additional changes occurred in the inter-war years, and it was not until after the Second World War that the leaving age was raised again to fifteen, and then to sixteen.

Direct coding of centralization of demand for education is not possible from quantitative materials. Taking into account the facts that British regulation occurred at the central government level, was established at earlier dates, and generally covered a wider proportion of the population, we have, on the basis of reading from qualitative sources, coded concentration along this dimension as being at the .8 to .9 level until 1930, and declining somewhat thereafter, as increasingly large proportions of students were in school beyond the mandatory leaving ages (and consequently by decentralized choices) thereafter.

Process: Decisions about Curriculum and Teaching Technique

A technically correct coding of the concentration of decision-making about curriculum decisions in British education does not tell the whole story. In British education the content of curriculum has been a major policy issue since at least 1830, and the balance of power among various interest groups in this area has displayed considerable change. In the

formal sense of what proportion of decision-makers control what proportion of curriculum decisions however, centralization has not been great. Most important decisions of this type have been, and continue to be made at the level of the individual school or local education authority. As such, a proper representation of the degree of concentration would resemble that of administrative decisions (next section). We have reduced these coefficients somewhat to allow for the role of individual schools rather than local authorities making some curriculum decisions. The resulting series moves in a step-wise manner from about .4 at 1890 to about .6 at 1970.

Compared to the American system of deciding curriculum matters, the British system is highly concentrated - owing to the smaller number and larger relative size of local government administrative units. The British system, however, is even more centralized than these concentration coefficients would suggest. Having its origins in the nineteenth century, the central government in Britain has exerted very strong influences over curriculum indirectly, via its control over educational finance. Until 1902, grants were paid to schools on the basis of the performance of students on central government examinations; thereafter, while block grants replaced "payment by result", central government authorities have suggested curriculum and exerted influences on the nature of what is taught by their input into the content of the 11+ and school leaving examinations.

This mechanism of exerting control over decisions indirectly by means of direct control over other decisions is a very important aspects of all control systems. In terms of our formal coding, however, the decision-making structure with regard to curriculum must be regarded as relatively decentralized. The peculiarity of the British educational system in this regard points up an important type of decision that has not been considered in this paper: the control over information about performance and evaluation.

In the United States, the regulation of educational demand changed in a smooth fashion, with an increasing number of states adopting mandatory school attendance regulations. In the more centralized English and Welsh system, the regulation of demand changed in a step-wise fashion, as the central government has initiated periodic educational reforms.

Process: Educational Administration

As in the American system of education, decisions about administrative matters in British education are decentralized--occurring at the level of the school or local education authority. Because each education authority is proportionally larger in Britain than in the United States, the overall degree of concentration in such decisions is higher. While not immediately relevant to the objectives of this paper, it is also very important to recognize that the central government has a great deal more influence over the decisions made by local authorities and private schools in Britain than in the United States. This influence is exerted by use of the funding weapon: private schools and local authority schools in Britain have long had to obey increasingly detailed governmental regulations about administrative and curriculum matters in order to qualify for central government funding.

For measurement purposes, we have regarded control over administrative decisions as directly proportional to the numbers of students under the governance of various types of authorities. In Table Twenty, we present estimates on the numbers of students by type of governing authority in primary and secondary education in England and Wales.

Table Twenty About Here

England and Wales Education. Numbers of Primary and Secondary Students by Type of Governing Authority. (Special, technical, and evening education not included)

Year	Wholly Independent Schools	Direct Grant Schools	All Efficient Schools	Voluntary Schools	Controlled Voluntary Schools	All L.E.A. Schools	Total
1890	305,000		13,500	2,909,473	0	1,923,856	5,151,829
1900	329,639		4,666	3,043,006	0	2,662,669	6,039,980
1910	350,000	(1)	22,500	2,552,988	0	3,653,344	6,578,832
1920	339,000	(1)	48,756	2,353,538	0	3,916,889	6,658,483
1930	306,000	(1)	82,108	2,027,778	0	3,922,303	6,338,289
1938	300,000	(1)	100,350	1,746,067	0	3,811,421	5,957,838
1950	305,600	83,720	219,333	1,492,324	0	4,252,374	6,353,351
1960	202,521	108,663	293,954	1,009,183	543,524	5,371,574	7,529,419
1970	96,048	118,545	310,950	1,237,780	607,461	6,518,281	8,889,065

(1) Included with voluntary schools.

England and Wales Education. Concentration of Administrative Decisions

Year	Gini Coefficient
1890-91	.58
1900-01	.59
1910-11	.75
1920-21	.72
1930-31	.74
1938	.76
1950-51	.73
1960-61	.80
1972	.82

In Table Twenty-one, we present gini concentration coefficients for the distribution of students across administrative authorities. These data reflect a relatively high concentration of control over administration, with increases in the coefficients occurring at these times, when distinct reorganizations occurred in English and Welsh education.

Table Twenty-one About Here

Decisions About Consumer Prices

In a completely decentralized system the costs of education to the consumer would be set by bargaining between individual providers and individual consumers. Such an educational system has not been approximated in Britain between 1890 and 1970. In a series of reforms (1870, 1902, several acts in the 1930s and 1944) decisions about the consumer cost of education at the primary and secondary level were increasingly centralized. The central government has increasingly provided larger proportions of the total education at no direct cost to the consumer (that is, the costs are made indirect general taxation). Two major changes of this type have occurred. The 1902 reform act was most dramatic in that it eliminated school fees in primary education in both board and voluntary schools. Previous to this time, local authorities had set fees in board schools and voluntary schools were free to charge what they wished. A series of reforms in the 1930s, and the reform act of 1944 further centralized decision-making by making education in direct grant grammar schools free to the consumer (the state had earlier required that some places in these schools be made free as a condition of qualifying for

England and Wales Education. Students Attending Under Prices Set by Various Authorities

Year	Private	Local	Central
1890	62.7%	37.3%	0%
1900	55.9	44.1	0
1910	5.7	0	94.3
1920	5.8	0	94.2
1930	6.1	0	93.9
1938	6.7	0	93.3
1950	8.3	0	91.7
1960	6.6	0	93.4
1970	4.6	0	95.4

England and Wales Education. Concentration of Decision-Making in Pricing

Year	Gini Coefficient
1891	.29
1901	.32
1911	.94
1921	.94
1931	.94
1938	.93
1951	.92
1961	.93
1971	.95

state subsidy). However, throughout the period, there remained a sizable fee-for-service sector in education: the wholly independent and efficient schools.

A somewhat crude way of indexing the movement toward concentration in decisions about consumer cost is to count the numbers of students attending schools under consumer prices set at the various levels. As Table Twenty-two demonstrates, the reform of 1902 was significant in that it placed consumer costs under the control of the central government. In the period since World War II, the central government's decision to provide free direct grant secondary education and the decline of wholly independent schools has led to further concentration.

Table Twenty-two About Here

By taking into consideration the number of authorities making the pricing decisions, we have computed the gini coefficients, which we present in Table Twenty-Three.

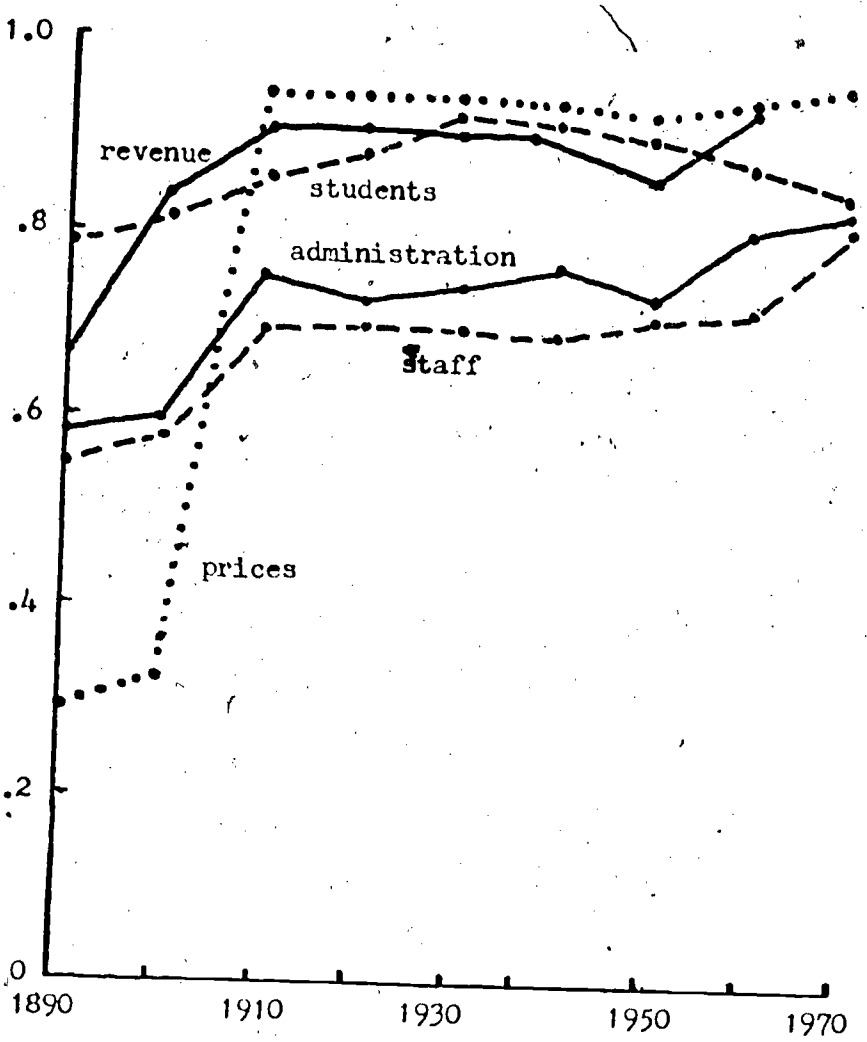
Table Twenty-three About Here

British Education: Summary

Both in the level of centralization timing which the centralizing process occurred, British education has differed substantially from the American system. Despite numerous alterations in the content of the British system, the reform act of 1902 established the basic pattern of system control. And this has not changed substantially since that time. The American system, by way of contrast, has undergone a continuous evolution in centralization

Figure Four

Concentration of Decision-Making in British Education



throughout the period between 1890 and 1970. And the Second World War, the two systems have converged somewhat in structure.

In the English and Welsh systems, input decisions are the most highly concentrated, general decisions about the process of education are somewhat less concentrated, and on-line work decisions (curriculum and teaching method) are the least concentrated.

Figure 4. About Here

The degree of concentration of various types of decisions in the American system is rather different and does not display the same hierarchy of concentration among decision types. This fact, coupled with the higher overall level of concentration of decision making in the British system, suggest one major source of differences in the performance of the two systems. Clearly the American educational system is less highly integrated, and on this basis alone, we would predict that the United States would have a slower diffusion of educational innovations (Hollingsworth, Hage, and Hanneman, 1978) and less equalization across classes and regions (Hollingsworth, forthcoming).

The Concentration of Decision-Making in British Medical Care 1890-1970

A more dramatic contrast between the structures of decision-making in medical care could hardly be found than between the United States and Britain since the Second World War. One of the primary aspects of "socialized medicine" in Britain can be defined by the high degree of concentration of decision-making under the National Health Service. In many ways, however, the apparently revolutionary reform of British medical care in 1948-49 is only an acceleration and rationalization of pre-existing trends.

Inputs: Sources of Revenue

A large number of decision-making authorities have over time played some role in allocating funds to medical care. Central and local governments, public and private hospital authorities, public and private insurance schemes, and individual physicians have all had some degree of control over the flow of funds into medical care.

In Table Twenty-four, we present the number of different types of decision-making authorities in British health care. We show the number of physician's practices, with a division between wholly private practice and practices associated either with the National Health Service or the earlier National Health Insurance system. Private hospitals and private practice in public hospitals did not disappear completely with the institution of the National Health Service, as shown in Table Twenty-four, but such practices were reduced to a very small number. In the period prior to the N.H.S., we counted the number of local authority hospitals rather than the number of local authorities. For the N.H.S. period, we count the counties and county borough as administrative units rather than the eight regional hospital authorities. Both of these choices are somewhat questionable, and bias slightly the centralization coefficients in a downward direction.

Table Twenty-four About Here

From Table Twenty-four, we gain some notion of the administrative revolution induced by the N.H.S. legislation. The numbers of physicians relying on private practice declined very radically, and essentially all hospitals, public and private, were absorbed into a central government administration.

England and Wales Health. Numbers of Decision-Making Authorities

Year	Private M.D.	N.H.I. or N.H.S. M.D.	Private Hospitals	Public Hospitals	Local Authorities	Central Government	Total
1901	19,091	0	572	371	146	1	20,181
1911	19,474	0	655	575	146	1	20,851
1921	15,460	4,000[1]	737	779	146	1	21,123
1931	15,075	8,087[1]	921	1,285	146	1	25,515
1950	1,714	19,000[2]	---	---	146	1	1,861
1960	1,575	22,100[2]	---	---	146	1	1,722
1970	1,153	24,600[2]	---	---	161	1	1,315

[1]Independent for sources of revenue purposes.

[2]Regarded as part of N.H.S. for sources of revenue purposes.

In contrast to the single dramatic change in the number of administrative units brought about by the N.H.S., the provision for financing British medical care underwent a more gradual transition between 1890 and 1970. In Table Twenty-five we present data showing the proportion of the total medical expenditures in England and Wales that were met by the activities of private individuals and private insurance, public and private hospitals, local governments, and the central government (including the N.H.S.).

Table Twenty-five About Here

The most notable features of this table are the step-wise decline in private financing of medical care, and the compensating increase at the central government level. Also very important to the long-run transition in control over medical care financing is the nationalization of local government and private hospitals under the National Health System. Broadly consistent with our earlier discussion of the American medical system, the data in Tables Twenty-four and Twenty-five expressed as concentration coefficients, which are given in Table Twenty-six.

Table Twenty-six About Here

From these coefficients, it is clear that the British system has displayed consistently greater concentration of decision making with regard to medical care finance than has the United States. It is also clear from that decision-structures in regard to finance have changed in a step-wise fashion in Britain, as opposed to the more gradual evolution of the American system.

England and Wales Health. Sources of Revenue (Percentages of Total)

Year	Private Individuals and Insurance[1]	Public & Private Hospitals[2]	Local Government[3]	Central Government[4]
1901	70.3%	26.1%	3.6%	0%
1911	68.7	25.6	5.7	0
1921	44.0	28.0	6.6	21.4
1931	40.1	32.3	3.4	24.2
1950	15.4		5.7	78.9
1960	17.0		6.4	76.7
1970	16.7		5.6	77.8

[1]Net of central government contributions to N.H.I.

[2]Starting 1950, allocated to N.H.S. (central government).

[3]Net of central government subvention.

[4]Includes subventions to local authorities and to private insurance. Beginning 1950, includes N.H.S. non-fee receipts.

England and Wales Health.
Concentration of Revenue Decisions

Year	Gini Coefficient
1901	.238
1911	.249
1921	.500
1931	.529
1950	.829
1960	.810
1970	.806

Inputs: Control over the Supply of Medical Professionals

In Table Twenty-seven, we present estimates of the employment location of physicians in England and Wales, disaggregating the total into office versus hospital-specialty practices and by administrative auspices within each category.

Table Twenty-seven About Here

Even without any change in the administrative structure of medical care, we would observe some tendency toward centralization resulting from the growth of hospital-base practice. When coupled with the changes in the numbers of decision-making authorities, it becomes clear that the decisions about the conditions of practice of British physicians have become quite centralized (See Table Twenty-eight).

Table Twenty-eight About Here

Inputs: Decisions About Access

From a general systems control perspective, the absence of highly concentrated decision-making about the demand for medical care in Britain seems an anomaly. In British medical care since the Second World War there has been little or no attempt to centralize decisions with regard to who may receive how much health care; other than to insist that everyone has a right to medical care. As in the United States, the decisions about the demand for medical care has been left highly decentralized and such control as exists over the demand for health care is exerted indirectly, via manipulating the supply of health care revenue, and professional staff available and the prices charged to consumers.

England and Wales Health. Employment of Physicians by Sector.

Year	Office Practice			Local Authorities		Hospital and Specialist Practice			Est. Total Active M.D.s
	Wholly Private	N.H.I. or N.H.S. Affiliate	Total Office	Doctors	Local Authority and Private	N.H.S. Hospitals	Priv. & Private Consult	All Hospital and Spec.	
1891	16,307	0	16,307	50	1,919	0	---	1,919	18,276
1901	19,091	0	19,091	100	2,372	0	---	2,372	21,563
1911	19,474	0	19,474	200	2,530	0	---	2,530	22,004
1921	15,460	4,000	19,460	300	2,694	0	---	2,694	22,454
1931	15,075	8,087	23,162	425	3,370	0	---	3,370	26,956
1938	1,800	16,200	18,000	450	2,950	0	---	2,950	21,400
1951	1,714	19,000	20,714	1,300	---	12,000	2,399	14,399	36,413
1961	1,575	22,100	23,675	1,300	---	16,500	3,141	19,641	44,616
1971	1,153	24,600	25,753	1,300	---	25,500	5,077	30,577	57,630

28.

England and Wales Health. Concentration of Staff Decisions.

Year	Gini Coefficient[1]
1891	.07
1901	.05
1911	.04
1921	.03
1931	.04
1938	.08
1951	.84
1961	.89
1971	.89

[1] For 1891 through 1938 all office practices are regarded as seaprate authorities. Under the N.H.S. all private physicians are regarded as separate authorities and all employees of the N.H.S.--whether in hopsital or general practice--are allocated to central government.

Similar to the American system, patients are relatively free to choose whether or not they will be treated, to what extent, and by whom. Given this reality, the construction of an index of concentration decision-making about the demand for health services would show very low values through the time period.

Process: Decisions about Treatments

As with American medical care, there is little concentration in decision-making about the actual courses of medical care treatment. Such decisions, are made by individual providers of treatment on an individual basis--that is the state does not attempt to dictate the appropriate course of treatment for appendicitis, bronchitis, cancer, etc.

The absence of a formally concentrated decision-making structure with regard to such decisions does not, of course, tell the whole story. Strong influences do operate on the individual practitioner by medical associations, treatment review committees in hospitals, sources of payment for medical care, and the like. In terms of the formal concentration of decision-making as treated in this paper, however, treatment decisions in British medical care are coded as highly decentralized.

Process: Administration

In contrast to the lack of centralization about professional decisions over the medical care treatment process, administrative aspects of the treatment process in Britain have undergone a steady evolution toward greater concentration. From 1890 to 1970, decisions about the number of patients per physician and the physical facilities per patient have increasingly been the subjects of collective decision-making. In the period before 1911 contractual

arrangements between friendly societies and individual practitioners acted to collectivize such decisions. Under the National Health Insurance System, individual practitioner's control over such administrative matters were further eroded by the institution of "panel practice" in which the patient load and other administrative matters were an explicit part of the contractual arrangements between providers and approved societies. And under the National Health Service, virtually all administrative matters with regard to treatment, both in hospital service and office practice, have become matters of central government policy.

One way of quantifying this dimension is to examine the distribution of patient treatments delivered under administrative rules set by private practitioners, private hospitals, local and central authorities. In Table Twenty-nine, we present estimates of this type.

Table Twenty-nine About Here

As in the United States, office based practice is the predominant feature of the medical care system throughout the period, with hospital based practice making large advances mostly since the Second World War. In Table Thirty, we present estimates for the degree of concentration in administrative decision-making in medical care by calculating the distribution of treatments across the numbers of authorities responsible for administrative control.

Table Thirty About Here

29.

England and Wales Health. Treatments by Administrative Authority (in thousands of treatments)

Year	Physician's Office Practice	Private Hospitals	Public Hospitals	Total
1891	43,505[1]	3,355	1,368	48,228
1901	65,056[1]	4,815	2,151	72,022
1911	90,175[1]	6,276	2,936	99,387
1921	113,661[1]	7,784	2,983	124,428
1931	127,846[1]	11,177	4,503	143,526
1951	188,159[2]	50	29,586	217,795
1961	225,915[2]	84	33,852	259,851
1971	255,000[2]	115	40,221	295,336

[1]Some proportion of these treatments occurred under administrative arrangements fixed by friendly societies and (after 1911) friendly societies and approved (N.H.I.) societies.

[2]It is estimated that 5% of these treatments were outside the N.H.S. and consequently are treated as not concentrated. The remainder are regarded as being under central government administrative authority.

30.

England and Wales Health. Concentration of Administrative Decision

Year	Gini Coefficient	
1901*	.048	(.05)
1911*	.033	(.08)
1921*	.014	(.10)
1931*	.014	(.20)
1938*		(.40)
1950	.957	
1960	.956	
1970	.956	

*Alternative estimates for 1901-1938 are in parentheses. These estimates attempt to give some impression of the centralizing impact of friendly society contractual arrangements (1901-1911) and later "panel practice" under N.H,I. Under N.H.I. of physicians in office practice, roughly 4,000 of 19,500 were in panel practice at 1920, 8,000 of 24,000 at 1930, and 16,000 of 24,000 by 1938.

The degree of concentration in administrative decisions in medical care in Britain in the period prior to the National Health Insurance system was probably only slightly greater than that in the United States at the same period of time. In the interwar years the rapid growth of panel practice under the National Health Insurance led to a rather rapid movement away from physician autonomy, a trend that was carried to its conclusion under the National Health Service.

Decisions about Prices

As one of the most important mechanisms for coordinating the inputs and treatment processes in health, control over the pricing system represents a potentially powerful means of system control. In Britain there has been a trend toward greater concentration in decision-making about prices over the entire period 1890 to 1970.

Even in the earliest years of the period, prices were not set in a wholly unconcentrated manner (each provider setting his/her own prices). Considerable portions of the financial flows in medical care were the direct responsibility of local governments who set fees in the public hospital system. Even in the private sector, treatment occuring in hospitals occurred at prices set by hospital boards of governors, and not individual providers. In addition, some portion of medical care expenditures in the years prior to the National Health Insurance were set by negotiations between groups of providers and the Friendly Societies, resulting in some degree of concentration of control over pricing (the activity of Friendly Society fixed price schemes are not reflected in our data for 1901 and 1911).

Under the National Health Insurance system a much broader concentration of price decisions occurred as the central government regulated and essentially fixed medical care prices for the increasingly large portion of the population who were affiliated with the approved societies. In contrast to the American system, each increase in governmental subsidies to medical care also carried with them explicit controls over the pricing of services in the N.H.I. period.

The institution of the National Health Service in 1948-49 carried the concentration of decision-making about prices to its conclusion, as almost all prices over physician and hospital services were determined at the central government level. These trends may be represented by tracing the proportions of all money flows in medical care that occurred under prices set by providers, local government agencies, and central government agencies (Table 31) and distributing these pricing decisions across the number of decision-making authorities of each type (Table 32).

Tables 31 and 32 About Here

From these tables it is quite clear that pricing decisions have followed a course of concentration b[illegible] consistent with those of most other key aspects of the medical care system. Perhaps more clearly than with any other

31.

England and Wales Health. Percentages of Expenditure at Prices Set by Various Authorities

	At Prices Fixed Privately[1]	Local Government	Central Authorities[2]
1901	75%	25%	0%
1911	73	27	0
1921	46	38	16
1931	[illegible]	34	18
1950	5	0	95
1960	4	0	96
1970	3	0	97

[1] 1901-1931 includes private out-of-pocket, private insurance, voluntary hospitals.

[2] 1921-1931 includes N.H.I.

32.

England and Wales Health Concentration of Pricing Decisions

Year	Gini Coefficient
1901	.237
1911	.242
1921	.509
1931	.478
1950	.950
1960	.960
1970	.970

important type of decision, the history of concentration of decision-making about medical care pricing demarcates the transition of the British medical care system from a "mixed economy" to a "command economy."

Concentration of Decision-Making in British Medical Care: A Summary

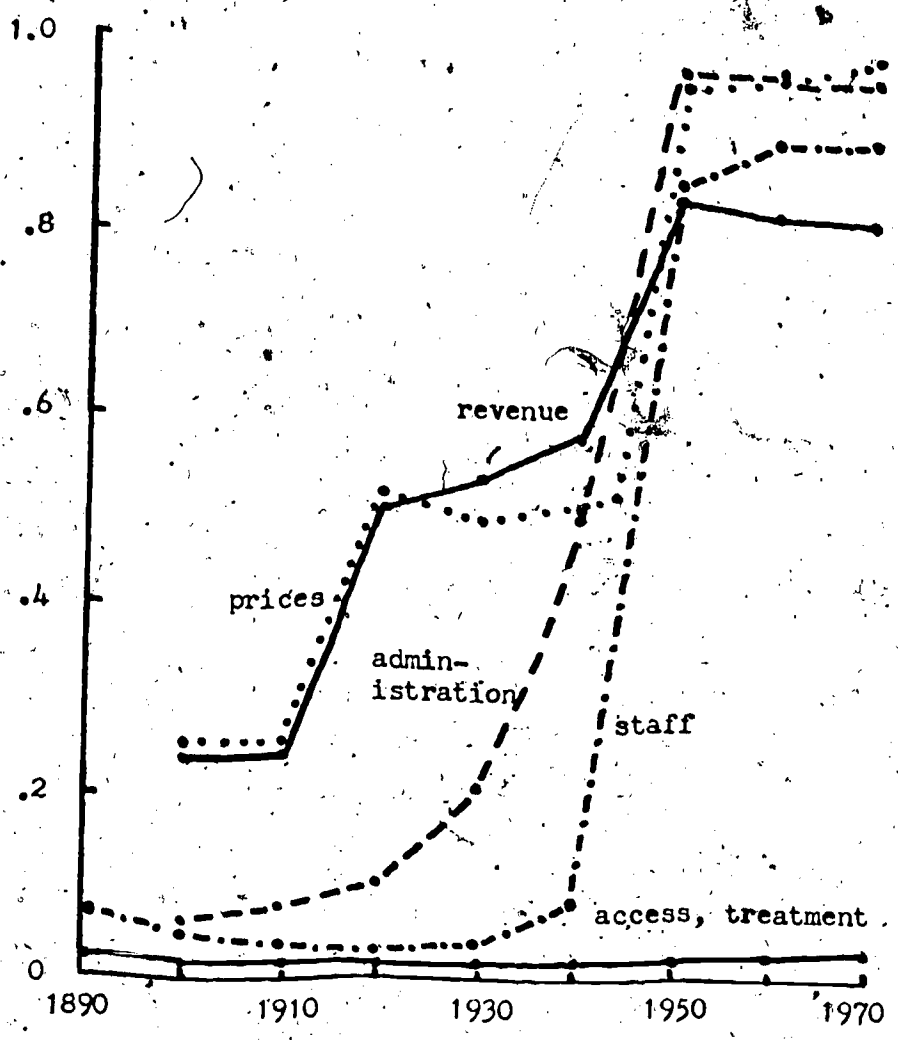
British medical care shares with the other systems examined in this paper a general evolution toward greater concentration in decision-making over time. In comparison with the other systems, it shows the tendency toward concentration to be highly advanced. The British medical care system also displays further variations in control structure; that is, in the British medical care system, the degrees to which the several critical types of decisions have become subject to concentration differs from other systems.

Figure 5. About Here

As noted previously, control over finances appears to be the dimension of system control that changes first, and usually to the greatest degree. Control over the knowledge factors of production and general administration seems to follow sources of revenue concentration in British medical care and in the other system. However, not all critical decisions in the system have become subject to highly centralized decision-making. Most notably, demand and access decisions and decisions about the technical aspects of the treatment process have remained formally unconcentrated.

Figure Five

Concentration of Decision-Making in British Health



SUMMARY

The primary purpose of this paper has been to move toward a more adequate representation, both conceptually and operationally, of the variable "centralization" and to provide empirical examples with medical and education policies in the United States and Great Britain. The several sections of this paper have focused on previous uses of the concept, generalizations about the causes and consequences of centralization, a reformulation of the concept, problems in the operationalization of the concept, and the empirical examples.

Our scholarship has used "centralization" as both an independent and dependent variable and at several levels of analysis--e.g. total societies, political systems, complex organizations. The concept may be used to identify how critical decisions are made: whether by many or few decision-makers and whether the decision-makers are governmental or private sector actions. Our scholarly literature contains various indicators for measuring centralization. Some scholars use the ratio of governmental expenditures to gross national product to describe the degree of centralization in entire nation states. Other have used qualitative descriptive terms "federalist", "corporatist", and "democratic" for the same purpose.

While the conceptual frameworks underlying the various operational definitions of centralization are often implicit in the literature, we find most of the empirical approaches for analyzing centralization to be inadequate for purposes of studying policy formation and policy implementation. At this stage of scholarship, we need a clear conceptual framework for the study of centralization, as well as empirical measures that are derived directly from it. We need measurement that captures the decision-making processes

that are the general referent of the concept and that allow for empirical explorations both across systems and across time.

We have defined centralization as the degree of concentration in the distribution of decisions across different decision-makers--i.e what proportion of decisions of a given type are controlled by what proportion of decision-makers. Our definition is purely structural, and deliberately excludes such considerations as to what kind of interests are represented in a given decision, and the reasons for a particular decision is being made. That is, we view centralization as refering to the formal (not informal) integration of systems by means of direct control. We believe that it is useful to sever this dimension from questions pertaining to the goals of decision-makers, to the informal influences on them, and to the degree of participation in decision-making. We believe that our conceptualization of centralization has potential for helping us to understand system performance. Once we understand centralization within this context, we can also better why decision-makers' goals are implemented or not, why systems have attained their level of integration, and have their level of participation.

Adopting our definition of centralization requires that types of decisions be identified and that the degree of control over each type of decision be measured. We have chosen to adopt a systems and cybernetic paradigm to ground theoretically the choice of decisions and decision-makers, though the empirical approaches suggested are equally applicable if one chooses to see policy formation and implementation in terms of contingency theory. Our approach leads us to identify several types of critical decisions in systems. Control over each type of decision represents a source of control over the performance of the entire system.

Three types of decisions are important to system performance: acquiring resources from the environment, controlling the production process, and controlling the information flows that coordinate system inputs, production processes, and outputs. For empirical purposes, we distinguish further among three types of input decisions and two types of production decisions.

We identify decision makers that have discretionary control over the acquisition of a system input, have control over production processes, or control information about the systems functioning. We measure the concentration of control (centralization) with regard to a given type of decision by calculating the gini concentration coefficient of the joint cumulative frequency distribution of flows of a given decision type (inputs, processes, or information) across the authorities making decisions of a given type.

We have offered four examples of the operationalization of this approach to centralization. They deal with five decision types in each of American and British Education and Medical delivery systems between 1890 and 1970. In working through the various examples, a number of descriptive conclusions are reached with regard to the causes and consequences of changes in the concentration of decision-making, and important differences between the four examples and across time are uncovered. These descriptive findings are discussed in the following section.

CONCLUSIONS

The Concentration of Decision-Making in Medical Care and Education in Britain and the United States

In each of the four systems considered here there have been notable tendencies toward increasing concentration of decision-making between 1890 and 1970. That is, larger and larger proportions of certain critical decisions have come to be made by smaller and smaller proportions of authorities. Thus

it appears that, in the run of an 80 year period, the increasing complexity and size of medical and education delivery systems have not led to the de-concentration of formal decision-making structures posited by some complex organization theorists. Arguments that advances in technology and increases in the economies of scale necessarily generate centralization over time also seem unable to explain why systems performing the same function in different nations display different levels of centralization. Thus it appears that none of our existing theories of the causes of centralization are wholly adequate.

Perhaps more interesting than the general tendency toward greater concentration in decision-making are major differences in centralization in specific countries and in specific delivery systems. The very existence of such differences points up the inadequacy of such global measures of centralization as government expenditure as a ratio to G.N.P.. Both British delivery systems considered here tend to have higher levels of concentration of decision-making than the American systems. Some part of this result is simply a function of the relative size of the two nations coupled with technological limits on the span of control; because the United States is larger than Britain, larger numbers of local administrative units would exist in the United States even if the division of authority on a particular type of decision between local and central governments were equal. However, the higher level of centralization in Britain cannot be attributed wholly to the fact that it is a smaller country. It is clear that there are persistent differences between the structure of policy formation and implementation in the two nations that reflect dynamics other than size and technology.

In the United States, the structure of decision-making in education tends to be more highly concentrated than in health. In Britain, the opposite was the case by 1970. Furthermore, the four systems considered display quite different time paths in their progress toward their 1970 levels. These differences point up the importance of framing policy formation and implementation studies at levels more narrow than the nation-state. Indeed, there appear to be important system specific variation that cannot be explained by general differences between nations or by general differences between types of delivery systems.

In addition to differences in the overall level of concentration of decision-making in education tends to be more highly concentrated than in health. In Britain, the opposite was the case by 1970. Furthermore, the four systems considered display quite different time paths in their progress toward their 1970 levels. These differences point up the importance of framing policy formation and implementation studies at levels more narrow than the nation-state. Indeed, there appear to be important system specific variation that cannot be explained by general differences between nations or by general differences between types of delivery systems.

In addition to differences in the overall level of concentration of decision-making across the four systems, the systems differ in what might be called the "modes of control." That is, the different systems display different mixes of concentration across the types of decisions. In three of the four systems (American medical care being the exception), there has been a tendency for some concentration of each type of decision to occur (inputs, processes, and information). That is, some degree of concentrated control has occurred in each part of the system. In American medical care, there

has been some tendency toward increasing concentration in inputs and information, but no tendency toward increasing control over the production process. Such differences may not indicate an absence of effective centralized control over the system, but may be useful in predicting certain types of performances. In this particular instance, the absence of centralized control over the administrative and treatment processes of American medical care may be one cause of the bias in American medicine to emphasize highly intensive care of a few individuals at the expense of less emphasis on preventive medicine and associated social services.

The disaggregation of centralization into multiple dimensions representing different types of critical decisions enables us to see a "natural history" of concentration in decision-making. In the four systems, there is a common tendency for resource allocation decisions and pricing decisions to become more concentrated and concentrated at an earlier point in time than other decisions. This has generally been followed by increasing control over the administrative aspects of the production process (except in American medical care), and control over the appointment of professional staff. In the systems considered here there has been a tendency, stronger in medical care than in education, to leave the technical aspects of treatment in the hands of individual practitioners. Similarly, there has been a tendency in these two nations to avoid direct controls over access, other than the compulsory education movements in both nations.

The Concentration of Decision-Making as a Dimension in the Study of Social Policy

We have designed this paper to deal with a number of conceptual and measurement issues. We have said little about how our approach to centralization can be useful in the study of social policy. Nor have we presented any tests of hypotheses about either the cause or consequences of centralization.

While the utility of the current approach to centralization cannot be directly demonstrated here due to space limitations, we do suggest some advantages of our approach.

In the comparative study of social policy there are two basic sets of questions. How is policy formulated? And, what are the consequences of policy? Various writers have suggested that centralization is an important variable in understanding both of these questions.

The role of centralization in policy formation is to structure the representation of interests. Where policy is formulated by a single central authority as opposed to many local authorities different forms of interest group organization are necessary for effective representation. Whether decisions are made in a single location or many different locations may also play some role in the relevance of the power resources available to different groups to effective representation.. Thus, the large blocks of votes avilable to the Democratic Party in the United States do not, at least in the short run, have much relevance to policy formation in medical care, as most critical decisions are not made by governmental authorities. In Britain, by way of contrast, a large vote for the Labour Party may indeed be directly translated into changes in medical care policy (albeit, the mechanisms are still rather indirect).

Because there are differences between nations (and within nations between delivery systems), there are several advantages to our approach to the study of centralization. Our data indicate that there is variation in the degree of centralization in decision-making with regard to different policy areas and to different time points. Thus any single measure of centralization (such as government expenditures as a ratio to G.N.P.) cannot explain differences in the biases of policy across policy areas. Even if

analysis is focused on a single policy area, differences in the structure of decision-making across critical types of decisions argue against the use of a global indicator. The current approach also leads to greater insights about the structuring of interest group representation in policy formation than categorical characterizations of a policy area as having "democratic" or "corporatist" decision-making. Decisions about different parts of a system may, as we have demonstrated, display variability in structures. By examining several critical types of decisions within a system we are able to disentangle which decisions are broadly representative of interests and which have very restricted interests.

The wealth of descriptive detail about decision-making structures available from the current approach to centralization may be of some interest in itself, but the real proof of the pudding is in the eating. Does the rather complex view of centralization proposed here give us more systematic insights into policy outcomes and system performances than do some of our existing approaches?

The primary purpose of our approach has been to demonstrate that the degree of concentration in decision-making may vary across time, nations, system types, and even types of decisions within a given system. Is there any reason to believe that such variation is a cause of variation in system performances and policy outcomes?

We believe that differences across types of decisions in the degree of centralization may be very important for predicting specific system performances. For example, central government control over pricing and professional hiring may be directly relevant to the degree of equality in the geographical and social distribution of health services, while a large central government role

in the finance of the system may be irrelevant. David Mechanic (1977) has suggested that the combination of highly centralized decision-making about sources of revenue in medical care coupled with the absence of price control may be of great importance in explaining the cost performance of medical care. We have suggested elsewhere that various aspects of centralization may predict differences in the speed with which medical innovations are adopted and diffus (Hollingsworth, et al., 1978a) and the cost effectiveness of medical care delivery systems (Hollingsworth, et al., 1978b). Differences of this type cannot be predicted by any single global measure of centralization characterizing an entire system. Categorical measures of the degree of concentration in decision-making are able to draw such distinctions, but have little empirical rigor. Hopefully, this paper moves us somewhat closer to the goal of being more able to measure the impact of centralization on system performance.

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