

ON THEORETICAL APPROACHES AND RESEARCH STRATEGIES IN POLITICAL SCIENCE*

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On Comparison and Evaluation of Different Approaches

Political scientists have a great predilection for methodological reports that enumerate important research problems and different approaches in their field. (Kirkpatrick, 1962, pp. 1–33; Snyder, 1962, pp. 103–171) However, these reports are mostly spatially organized, i.e. they are inventories of models, conceptual schemes, and strategies for theory construction in different subfields of political science. They seldom attempt to compare either these subfields with each other or the general characteristics of political science approaches with those in other fields of the social sciences.¹ This preference for encyclopedic enumeration instead of systematic grouping and methodological comparisons is due to two reasons: first, the intense concern with the unity and independence of political science and, secondly, unwillingness to make the existing cleavages in the heterogenous field still more acute by pointing out the crucial methodological differences among the predominant approaches. (Kirkpatrick, 1962, pp. 19–20)

In the following discussion we shall try to take a methodological grasp that permits better discussion, comparison and evaluation of the different approaches in various subfields of political science. However, this can only be done by setting certain limits to our discussion. First, we shall be concerned only with those approaches within political science that present a clear-cut theoretical orientation. This limitation is based on the conviction that the ultimate goal of all scientific research is, or ought to be broad explanatory theories. Consequently, the focus of methodological analyses, or actually all meta-scientific discussions, is, or ought to be on the hindrances to this ultimate goal and their removal. Accordingly, we shall try to group and compare the main existing theoretical approaches along a few relevant methodological dimensions, and in evaluating different groups of approaches we shall focus on a few crucial aspects of theory formation.

* This article is a revision of a paper read at the Interdisciplinary Colloquium of the Behavioral Sciences, held at the University of Helsinki, Autumn, 1964.

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The Dimension of "Pure Information" vs. "Application" Orientation

Although our objective here is only to account for, compare and evaluate the main theoretical approaches to political science, in our comparison we can use such methodological dimensions that are relevant for the discussion and evaluation of social science approaches in general. Thus, at the same time we shall implicitly compare political science approaches with that of other social sciences —although we will not go into actual concrete comparisons.

Our first task is to find one relevant methodological dimension along which the main theoretical approaches to the social sciences can be classified for mutual comparison and evaluation. In order to find such a basic dimension we can first group the theoretical approaches according to the tasks (main functions) these approaches explicitly or implicitly assign to social science research. And, our main methodological hypothesis in this treatise is actually based on this classification: we assume that the nature of attempted theory construction is determined by the function assigned to social science research. Consequently, success or failure in achieving the ultimate goal, broad explanatory theories, depends in the last analysis on this same basic attitude.

We can start by distinguishing four main classes of attitudes toward the task of social science research which are detectable in theoretical approaches to the social sciences. First, there are those that consider the function of the social sciences to be equal to that of the most theoretically oriented natural sciences: to provide information about invariances in social phenomena and to try to explain them with the aid of theories and theoretical systems. These approaches are agnostic to the potential practical (i.e. application) value of social science research, and consequently theoretical concepts and models for theory construction that might enhance, unify and increase the practical value of the observed empirical invariances are in no way favored. If the problem of application of scientific research is explicitly discussed by the scientists adhering to this attitude, it is considered to be the task of "raw intelligence", an "art" that theory formation cannot enhance. This attitude as such does not, of course, deny the value of empirical research on practical problems or the possibility of developing and using normative models to guide the application of research results.

According to the second class of approaches, too, the main task of the social sciences is to provide information via observation and descriptive theory formation. However, some research results are assumed to indicate the objective degree of goal achievement of individuals and collectivities in their purposive action. At the same time generalizations about the "efficient" or "rational" ways of goal achievement are considered possible. Furthermore, it is assumed that these generalizations can provide automatically clues as to how individuals and collectivities should act in order to be "rational" or "efficient". It follows from these assumptions that theory formation is assumed to enhance the practical value of these generalizations by explaining them and indicating the conditions of their validity. Consequently, such concepts as "rationality", "efficiency" and "functionality" have a specific role in attempts at theory formation.² They not

only play the regular role of descriptive theoretical concepts, but by bringing into theory formation the assumption of "better" and "worse" actions for individuals and collectivities, evaluated from some supposedly objective point of view, they provide the bridge between the worlds of "prescription" and "description".

The third class of approaches considers that the main task of the social sciences is to find out and explicate the different rules of rationality or efficiency for a *specific field of practical action*, and thus focus on narrowing down the area of "raw intelligence". Consequently, the idea arose of starting theory formation with the concept of a completely rational individual actor in different fields of practical action (rational economic man, rational political man, rational organizational actor) and relating the other theoretical concepts of the field to that idea. The result of this would be simultaneously descriptive and normative theories for specific fields of practical action. (Simon, 1947, pp. 248–253)

The fourth main class of approaches in respect to attitudes toward application does not focus on specific rules of rationality or efficiency for specific fields of practical action, but aims at a *general* logical theory of rational individual action. These approaches are closely connected to, or can be even considered as part of certain fields of statistics (decision making theory) or formal logic (deontic logic). (von Wright, 1964) Although the main objective of this group is to develop normative theories of "right" action, it is often assumed that these theories can also serve as descriptive theories of individual behavior.

All four of the classes above can be located on a single dimension that ranges from "emphasis on pure information through theory formation" to "emphasis on right application of information through theory formation". It is also easy to find concrete examples for each of our categories. As indicated above, in the most application oriented category we find normative decision making theory. (Simon, 1957, pp. 244–245) In moving toward the less application and more information oriented end of our dimension the second, what may be called rationalistic category is represented, for example, by the majority of theorizing in classical economics. (Schoeffler, 1955, pp. 189–193) The best representative of our next category, moving toward increased information orientation, is the structural-functional school of anthropology and sociology. (Pernanen, 1964) Finally, in the most information oriented and "agnostic toward application" class belong, for example, the non-functional approaches to the construction of deductive theoretical system. (von Bertalanffy, undated mimeo)

The examples above indicate that we can also easily find representatives of all four of our categories in political science. The most application oriented category is represented by game theory, which is favored by political scientists because of its nature as a theory of conflict situations. (Shubik, 1954) The second category towards the information oriented end of our dimension has its representatives in some rather sophisticated attempts to apply rationalistic conceptual frames of reference fashioned after the example of classical economics or the theory of the business firm. (Downs, 1957; Buchanan and Tullock, 1962; March and Simon, 1957) As the representative of our third category we have some attempts at

functional theorizing in political science. (Almond, 1960) And finally, political scientists have been among the first protagonists of the attempts toward non-functional system theories. (Easton, 1957; Kaplan, 1957)

Some general remarks about our basic classification and the "pure information/application" dimension are still in order. The classification is empirically inferred by examining such separate approaches as the examples presented above. This has two consequences that are worth pointing out. First, just as we cannot locate individual attempts at theory formation unambiguously within these different approaches, we cannot classify different approaches unambiguously within our fourfold classification. On the other hand, the ordering of the approaches along the "pure information/application" dimension can be done rather unambiguously with the aid of such criteria as the existence and degree of "normativeness" in the use of such concepts as "rationality", "efficiency" and "functionality" (in the main theories or theory sketches of the approaches.). Secondly, although the classification is in a way based on the "motivation" or "attitudes" toward research (pure information/application) it does not necessarily refer to individual scholars' attitudes: it concerns the motivation or attitude underlying different *approaches*. For example, many social scientists who are seriously interested in developing broad, predictive theories lean toward the structural-functional approach because it has been so predominant in anthropology and sociology, and because it seems to give promise for broad theory formation. At the same time, these scholars have not been able to avoid the "practical concern" predicament imbedded in the concepts and strategy of theory construction of this approach.

The Correlates of the Basic Dimension

There are several aspects of theory formation in the social sciences that seem to correlate with the dimension of "pure information/application orientation". At least the following can be enumerated:

- a) the amount of existing empirical research results explained or potentially explainable by the theories of the different types of approaches;
- b) the presence and importance of equilibrium assumptions;
- c) static vs. dynamic theory formation;
- d) structural refinement of the models for theory construction;
- e) exactness in definition of the theoretical concepts; and
- f) methodological emphasis on individuals vs. collectivities as the basis of analysis.

In general, we may say that in moving along our basic dimension from application toward pure information orientation, the explained/explainable empirical research results and emphasis on collectivities as the basic unit of analysis increases; the importance of equilibrium assumptions, the structural refinement of the models used for theory construction, and the exactness of the nominal definition of theoretical concepts decreases; and there is a continuous change

toward more dynamic theorizing. Consequently, we have six methodological hypotheses corresponding to points a–f.

As indicated above, these methodological hypotheses are based on empirical observations of social science approaches in general. We can, however, understand the "internal mechanism" of these hypotheses intuitively: in order for theoretical research to be of actual use for practical action it must be done in individualistic terms (individual action is easier to "reform" than collective one), it must pertain to clearly defined types of situations, and must be universally valid (i.e. not conditionally given). When theory formation is attempted with these requirements (or some of them) in mind, it will lead to "methodological individualism" and attempts at limited, by equilibrium assumptions closed theory formation. (Kaufmann, 1944, Pernanen, 1964) We shall return to the specification of this intuitive remark after having inspected the validity of these hypotheses in political science theory formation.

The Validity of the Methodological Hypotheses in Political Science

As indicated above, we can find representatives for all four of our main categories of approaches in political science. Consequently, we can investigate the validity of our main methodological hypotheses in this field and elucidate their nature with the aid of concrete examples. We shall generally speak about the more application oriented (game theory, "economic" models) and the more information oriented approaches to political science (functional analysis, "open", non-functional construction of theoretical systems).

According to our first methodological hypothesis, the amount of existing empirical research explained or potentially explainable is greater in the more information oriented approaches. In political science most empirical research has been carried out to a great extent independent of any broader theoretical considerations. Much of actual empirical research aims at establishing empirical "laws" (empirical invariances) and at best tries to explain these invariances with the aid of disconnected "theories of the middle range". (See, e.g. "theories" of voting behavior in Campbell, et al., 1960; Ranney, 1962) Furthermore, in many cases the research is explicitly or implicitly committed to the clarification of some basic problems of political philosophy, i.e. to investigation of the extent political "dogma" and reality correspond to each other. (Miller, 1964) Similarly, much research is done to confirm specific politically relevant hypotheses borrowed from psychology, social psychology and sociology. (e.g. "theories" of authoritarian personality, two step flow of influence, status consistency, etc.)³ All this dispersed research has been also used *ex post facto* to confirm the attempts at broader theory formation in political science. Because the type of research enumerated above is mostly concerned with individual behavior, most application oriented approaches benefitted from it the most. As an example we can take Downs' attempt to explain some empirical research results within an "economic" rationalistic theoretical frame, and Buchanan and Tullock's "calculus of consent". (Downs, 1957; Buchanan and Tullock, 1962)

Another, more coherent area of empirical research is cultivated by political scientists (or better, political sociologists) in order to investigate the politically relevant aspects in the development of modern societies (democratization, bureaucratization, political modernization, *Entideologisierung*). This type of research is usually conducted for the explicit purpose of cross-cultural comparisons and generalizations. In comparing and combining the observed invariances, political scientists or political sociologists have mainly resorted to either a structural-functional type of analysis or to attempts to construct "open", non-functional theoretical systems. (Cf. articles by Allardt, Eisenstadt, Chodak, Linz. in *Cleavages, Ideologies and Party Systems*, 1964)

If we consider the types of empirical research results actually explained, or at least considered to be explainable by the theories of our different groups of approaches, we soon discover that the discrepancy between "theory" and "empirical world" remains wide in case of the more application oriented approaches. There have been determined attempts to close up the gap, but they have usually ended up with classification and reinterpretation of old research results instead of offering actual confirmation of the theories suggested. (March and Simon, 1959) On the other hand, the empirical material has shown much greater inclination to fit into the molds formulated by functional and open system analyses. (Cf. Allardt, 1964; Kaplan, 1957; Eisenstadt, 1964; Parsons, 1960)

There is one obvious objection to the above confirmation of our first methodological hypothesis. Most functional and open system theories have not reached any higher level of abstraction, and often are at best only rather crude typologies compared to the more application oriented approaches. One could now retort, that loose theory sketches can always incorporate larger amounts of empirical research results than structurally more refined theories which very specifically rule out the possibility of certain types of events. (Popper, 1961, pp. 121–122) However, it has been pointed out by several critics that the structural refinement of the more application oriented theories is not necessarily connected with the ability to distinguish between different types of empirical events and to definitely rule out the possibility of certain types of events. (Schoeffler 1955, Stokes 1963, Storing 1962) And a closer scrutiny might disclose that the theories and theory sketches of the more information oriented approaches are at least as discriminating in processing empirical data as those of the more application oriented approaches; the difference is that the former are discriminating within a wider area of empirical phenomena that often stem from several aggregate levels, while the latter focus on a narrow area of empirical phenomena, usually stemming from one aggregate level.

Our second hypothesis, i.e. the equilibrium assumption becoming looser as we move from more application oriented approaches to more information oriented, can be easily seen to hold even in case of political science. If we compare such works referred to above as Shubik and Simon and Kaplan we see a clear difference. Game theory analyses embody the idea of a stable equilibrium, rationalistic and some functional approaches embody either a stable equilibrium or multiple equilibria assumption, and some functional and all non-functional at-

tempts at broader, open system construction have either tried to modify the concept of equilibrium still further (partial equilibrium, moving equilibrium), or to do without any equilibrium assumptions at all. We must realize here that the correlation between our main dimension and the type of equilibrium assumptions might be caused by a factor external to the present analysis: the level of measurement. (Easton, 1960, pp. 266–307) Functional and open system theorizing is often based on rough qualitative typologies, or if the variables are quantifiable the level of measurement is low. In more application oriented analyses (especially the rationalistic ones) the variables included are at least in principle assumed to be quantifiable, often even on a rather high level of measurement. Thus, we could expect that the more information oriented approaches have consequently mitigated the equilibrium assumptions to correspond to the level of measurement achieved, and the more application oriented approaches have maintained the stricter equilibrium assumptions corresponding to the level of measurement of their variables. This is not, however, the case. First, even the more application oriented approaches have usually much stricter equilibrium assumptions than the level of measurement achieved would accommodate. Secondly, the more information oriented approaches have not mitigated the equilibrium assumption with conscious considerations of the potential level of measurement of the empirical variables, but as an attempt to break through to a more "dynamic" analysis. Both of these remarks imply that equilibrium assumptions have not been considered by either parties as only a methodological device for manipulation of certain variables, but they have been imputed some additional meaning. And that meaning, as we will see, is connected with our information oriented/application oriented dimension.

Our third hypothesis about the dynamic or static character of the theories or theory sketches along our basic dimension becomes apparent as we compare, for example, Downs', Simon's and Buchanan and Tullock's works with those of Kaplan, Easton, Allardt, and Eisenstadt. The former theories focus on the operations of limited, closed systems (democratic political regime, the "formal organization" or administrative unit in Western type of societies) and try to explain the invariances in the operation with the aid of the characteristics of these systems and the individuals belonging to them. The latter theories or theory sketches focus on the relationships between the political system (or part of it) and other social systems, and the particular interest is in the basic changes of the political system (or part of it) relative to the changes in other social systems. We must, however, emphasize that the dynamism of the latter group of approaches is more of a methodological nature than a property of the theories or theory sketches developed so far. The theories and theory sketches may still be rather static, but they imply the possibility of further incorporation of such new elements that will make it possible to account for dynamic changes. The possibility seems to be altogether excluded by the more application oriented approaches, and the only direction they could be developed seems to be the further internal refinement of the concepts and models so that they would still better explain the same phenomena they already now pertain.

The structural refinement of the models for theory formation is usually reflected in the susceptibility of the models to mathematical treatment.⁴ In this respect our fourth hypothesis is easily confirmed. As already indicated above, theories of the more information oriented approaches are often at best at the stage of simple sketches where verbally expressed typologies serve as "models", while the models within more application oriented approaches are often further refined with the aid of rather sophisticated mathematics. One additional remark on the confirmation of our hypothesis must be made. In the more application oriented approaches the "mathematical model" often means the transformation of some preliminary verbally expressed generalizations into the language of mathematics, and the refinement of the model means the spelling out of some further consequences of these generalizations with the aid of mathematical calculations. Consequently, the further development of the models depends on the "hidden" implications of the preliminary generalizations and their interrelationships. Mathematics has only an auxiliary function, and it does not "create" new parts to theory, which often does happen in the physical sciences, where broad mathematical structures are used as models for theories. On the other hand, the further development of the more information oriented approaches may not depend on the mathematization of the models of these theories, but on the development of the deductive rules that can be used in formulating hypothetico-deductive systems.

It can be readily seen, too, that even in political science the more application oriented approaches are, no doubt, more systematic and coherent in their use of theoretical concepts than the more information oriented. The greater conceptual precision of the former is not, however, due to either a more conscientious nominal definition of the concepts or a clearer indication of their empirical referents (better operationalizations). This has been often pointed out by the critics of these approaches. (Storing, 1962) The concepts in the theories and theory sketches of these approaches pertain to a homogenous class of phenomena (usually those connected with the decision making process of a goal oriented, information processing individual actor) and are consequently logically interconnected and implicitly define each other. In functional and system theorizing, the concepts of theory formation pertain to a class of phenomena of widely different character (often from different aggregate levels) and consequently can be seldom formulated into a unified conceptual network where concepts would define each other. However, we must remember that the precision of the theoretical concepts in the sense discussed here does not make the task of giving them operational definitions any easier, nor does it make them more fruitful in inspiring further theory formation or empirical research. (Scrivens, 1957, pp. 175–180)

Rather often, even in political science some supporters of the more application oriented approaches proclaim themselves to be supporters of the individualistic method, in contrast to the "organic" method of emphasizing collectivities and their properties as the basis of analysis. (Buchanan and Tullock, 1962, pp. 315–317) Whether or not open adherents of this kind methodological principles, most

supporters of these approaches treat aggregate phenomena either as reducible to individual behavior or as environmental givens that are considered only to the extent that they influence individual actors' perception and motivation. On the other hand, in functional and open system approaches the collective concepts are part of the actual theorizing—even to the extent that makes it possible to speak about macro-reduction.

The "Artificial Closure" and the Application Assumptions

As can be seen in our discussion of the validity of our methodological hypothesis in political science and in the general elucidation, the different aspects of theory formation under inspection appear to be very closely interconnected. It is difficult to analyze one without simultaneously referring to the others. Thus, for example, in discussing the equilibrium assumption, we had to refer to the static/dynamic character of theories and the nature and scope of the empirical phenomena to be explained by theories; while discussing the last mentioned aspect, we had to refer to the degree of refinement of the models for theory construction. This interdependence is logically somewhat more than a sheer set of empirical correlations caused by our "intervening variable", pure information/application orientation, and therefore, deserves a closer inspection. At the same time we can elucidate our earlier remark about the relationship between application assumptions and the different aspects of theory formation.

The combination of the characteristics of a strict equilibrium assumption, use of concepts and variables pertaining to a limited scope of empirical phenomena, adherence to static analysis and interest in internal refinement of closed theoretical systems has been sometimes called an "artificial closure" of theory formation. (Schoeffler, 1955, pp. 29–31, 40, 106, 132, 107–111)

It is commonplace to state that theorizing must always end somewhere. In no field of research can we compile theories of such wide scope and high abstraction that they would include all possible variables and explain all possible invariances. We must always "close" theorizing somewhere and "open" it again when the gained grounds have been safeguarded (hypotheses derived and tested), and additional methodological or empirical information has been gathered for further theoretical progress. (Eisenstadt, 1963, pp. 30–31) It is natural that an attempt is always made to "close" theorizing at the stage where theories or theoretical systems developed are as "self-sufficient" as possible, i.e. the stage where they can provide a valid explanation of the empirical phenomena under investigation with the least possible resort to *ceteris paribus* clauses or other qualifying conditions. In addition, the conditions and clauses for the validity of the explanation are usually given in the form which indicates where theorizing can continue further. (Eisenstadt, 1963, loc. cit.) Now, some scientific approaches not only strive for as good a closure as possible, but by adopting what has been labeled above "artificial closure" also try to create an illusion of universally valid explanation in cases where it is impossible. (Schoeffler, 1955)

The relationship between "artificial closure" and our basic dimension is obvious. The more application oriented approaches benefit more from an "artificial closure" because theories thus formulated seem to give universally valid and easily applicable directives for "scientifically right" practical action. Besides, the strict equilibrium assumption can be easily connected with such theoretical concepts as "rationality", "efficiency", and "functionality", which are favored by more application oriented approaches. Conversely, if these concepts *are not* connected with strict equilibrium assumptions and other aspects of artificial closure, they lose their normative content. On the other hand, the more information oriented approaches, which are more interested in broadening the scope of the existing theories and theoretical systems, prefer "open closure" with indication of where theorizing can be continued.

We must still make a few additional remarks about the relationship between "application assumption" and "artificial closure". First, this relationship is naturally asymmetric: application assumptions lead to artificial closure, but we may have theories without application orientation with artificial closure. Secondly, artificial closure, too, can be naturally of different degree, and often varies according to the strength of application assumptions as, for example, a comparison between game theory, rationalistic models and the structural-functional approach indicates.

We must once more emphasize that "application orientation" (and similarly, of course, "pure information orientation") is a property of approaches, not of individual scientists. The scientist may be either unaware of these assumptions or he may consciously adhere to them, as in the following quotation:

We see thus, that the need for the knowledge of certain parameters, and therefore their identifiability—depends in general on the whole model in which the parameters occur; *and on the utility function of the decision maker.* (Italics ours)

Does not this land us in rather cross pragmatism? What about theory for its own sake, a theory that is not used to give advice, to choose, to act? A pragmatist will say that theory provides us with solutions which are potentially useful for a large class of decisions. It is welcome because we cannot foresee which particular decision we shall take. Our decisions may or may not be such as to leave certain properties of the system unchanged. Hence, the more we know about its properties the better. If we merely want to know how long it takes to boil an egg, the best is to boil one or two without going into chemistry of protein molecules. The need for chemistry is due to our want to do other and new things. (Marschak, 1954, pp. 214–215)

Besides providing a good example of a conscious "application oriented" attitude, this quotation is valuable in another respect. It suggests a "peaceful co-existence" for application and pure information oriented approaches. The problem, however, remains, that many a theorist boils eggs and believes that he is contributing to the chemistry of protein molecules.⁵

On Scientific Strategies and Their Success in Political Science

We have emphasized the importance of practical concerns and the subsequent "artificial closure" in application oriented approaches, and also indicated that in "closing" theorizing at one step these approaches neglect to give a clue as to how theorizing could be continued later. However, we must not forget that even most of the application oriented approaches have the goal of descriptive theory formation, too. In the following we will investigate in general the scientific strategies the different approaches follow in theory construction, and how successful these strategies have been.

In order to elucidate the concept of scientific strategy we can use two rough dichotomies. First, we can speak about deductive and inductive strategies. In the former case, theory formation is begun by developing a coherent set of theoretical concepts and adopting a well-structured (or well-structurable) model. With the aid of the concepts and the model testable hypotheses are derived. The theories are developed after testing further in the direction the model gives indication of. (Nagel, 1961, loc. cit.) In inductive strategy, the emphasis is on bringing together more or less dispersed empirical observations into sets of hypotheses which can be used to deduce more hypotheses. (Gross, 1960) Later, elementary models are adopted and unification of the concepts used is attempted.

Secondly, we can speak about reduction and non-reduction strategies. In the former case the theoretical concepts pertaining to the units of analysis are exclusively from one aggregate level, and the empirical laws (invariances) explained first on this aggregate level are accepted among the axioms used to deduce and explain empirical laws on other aggregate levels. (Schlesinger, 1963, pp. 45–72) In non-reduction strategy the theoretical concepts pertaining to the units of analysis can be from different aggregate levels, and no preference is given to any aggregate level in selecting axioms for future development of the theories.

We can now easily predict what kind of scientific strategies are favored by our major classes of approaches. The more application oriented approaches naturally favor deductive and reduction strategies; the more information oriented approaches, in turn, generally resort to inductive and non-reduction strategies. This prediction is naturally implied by our analysis of the principle characteristics of the main categories of approaches. We will, however, illustrate this prediction by inspecting the main representatives of political science approaches along the pure information/application orientation dimension. At the same time we can try to predict the success of these different approaches in developing broad explanatory theories in the field.

At the most application oriented end of our dimension, game theory fulfills our expectations at least as to the deductive character of theory formation. The exact formulation of the concepts and refinement of the model precedes by far the application of the approach in the field of political science. The connection of the theory to empirical findings in the field seems often very weak, sometimes even accidental. However, in some subfields of political science the application

of game theory shows the ideal pattern of interplay between deductive theory formation and empirical observations. An example of this can be found in the application of game theory to the study of legislative voting behavior. Shubik's *Reader in Game Theory* provided the basis for an attempt to apply n-person game theory to the study of the distribution of power in a voting body. (Shubik, 1954) This initial application, in turn, led to a still more sophisticated attempt to analyze the congressional power distribution. (Shapely and Shubik, 1959)

As to our other characteristic of scientific strategies, game theory approach can scarcely be labeled as a reduction approach. The analysis itself takes, of course, place on the level of individual decision makers, but the factors external to the decision making situation are considered only as givens within which the actual decisions take place. If game theory ever would be developed toward a more dynamic direction (e.g. with the aid of the concept of game learning) and its scope thus broadened, it would, however, probably become a reduction approach.

Although political phenomena seem to offer one of the most fruitful fields of application for game theory, political scientists, after having recovered from the first wave of enthusiasm, now take a rather cautious attitude toward the possibilities of using game theory as an empirical descriptive theory. This is partly due to the inability of game theory to generate clearly testable hypotheses, and partly to the fact that even the deductive development of game theory is proceeding rather slow (especially the analysis of n-person games). It is generally agreed by now that game theory will be best utilized by political scientists either in situational analysis or in connection with some other broader theoretical framework. This opinion and the future possibilities of game theory are reflected in the following:

The game model is important in clarifying the nature of the choice situation. It then becomes possible to estimate, how the players can proceed to learn in a given game situation. If they learn the character of the matrix, this will have a second-order influence upon the probabilities with which they choose various moves. To predict whether they learn will require a more inclusive model than the game model. (Kaplan, 1957, p. 247)

The rationalistic approaches reflect a greater interest in broad descriptive theory formation and at the same time less deductive rigor. A coherent conceptual scheme is usually built around the idea of the rational individual actor in the maximizing sense of economic theory. The theoretical scheme is not, however, developed altogether deductively with the aid of a definite model, but attempts are made to bring it first closer to "empirical reality". To achieve this, two different roads have been taken. The first, following the practice of economics, takes the "empirical world" closer to the theoretical concepts by introducing certain simplifying assumptions about the political phenomena investigated. Thus, in his *Economic Theory of Democracy*, by starting out with a simplified "model society" (two parties, election at regular intervals, cabinet responsible directly and only to the voters) and with the assumptions of utility maximizing

voters and vote maximizing parties, Downs deduces a host of highly realistic, testable hypotheses. (Downs, 1957) The other, more radical way to obtain better correspondence between empirical phenomena and theories based on individual rationality is to take the concept of rationality closer to empirical reality, i.e. to give up rationality in the sense of maximizing behavior in favor of some more realistic conception. The most ambitious attempt in this direction has been made by Herbert A. Simon, who tried to develop an administrative and organizational theory based on the conception of "bounded" rationality. (Simon, 1957)

The increasing interest in broad theory formation while moving to rationalistic models brings reduction strategy into the picture. The characteristics of the analyzed total empirical systems (e.g. democratic political system, formal organizations) are supposed to be "deducible" in the sense explained above from the properties of the individual actors. At the same time, the factors external to the system are considered either as environmental givens or at best they enter into theorizing through the individual actors' perception and information about them. Thus, in rationalistic models reduction strategy and the tendency toward "artificial closure" are combined.

Rationalistic theories have been heavily criticized by both methodologists and empirically oriented scholars. For example, it has been pointed out that some of the hypotheses deduced by Downs from his economic theory of democracy are – although empirical in terms of verifiability – rather indiscriminating and contain but little actual information. (Stokes, 1963) On the other hand, Simon's approach has been criticized from a methodological point of view by showing that it gives up the formalizing and normative power of the maximizing conception of rationality, without still being able to provide a descriptive explanatory theory for administrative and organizational research. (Banfield, 1957) In general, critics take issue with the rationalistic approaches on the point that although these approaches seem to have a wider scope and applicability than, for example, game theory and other normative approaches, the analyses and explanations offered have a somewhat tautological character and consequently offer lesser amounts of information. (Heiskanen, 1964)

It is somewhat difficult to get a picture of the scientific strategy of the functional approach and judge its possibilities for developing broad explanatory theories, if we consider only the cases where this approach has been applied in political science. Fullfledged structural-functional analysis never got really rooted in political science, and the best attempts at theory formation in this vein are offered by sociologists interested in some special field of political phenomena. (Almond, 1960; Parsons, 1960) From the point of view of our classification of scientific strategies, it is difficult to classify the functional approach as deductive. Although the idea of assigning functions (or dysfunctions) to different social institutions, or generally to different aspects of social systems, leads easily to the development of a coherent set of well defined concepts, it cannot function as a model for actual substantive theory formation. Functional analyses of political phenomena (e.g. those contained in Parsons' *Structure and Process in Modern Societies*) clearly reflect both the strength and the weakness of functional

analysis: strength in its ability to generate theoretical concepts and carry on systematic analyses; weakness in the incapacity to produce substantive hypotheses and substantive theory formation.

Because of the nature of its basic tenets, functional analysis is bound to a kind of reduction strategy. The analysis must start with a closed, limited system, and the phenomena under investigation and in need of explanation are analyzed according to their relationship (functions, dysfunctions) to this system. Thus, for example, Talcott Parsons' way of explaining everything in the last analysis with reference to the general societal value system can be considered macro-analytical. (Parsons, 1960)

Some critics of functional analysis have tried to prove that the actual scientific explanations (in the sense of deductive derivation of hypotheses from theory and their subsequent testing) within functional theorizing have ensued altogether independent of the functionalistic assumptions, and that functionalism has consequently contributed little or nothing to the development of theoretical progress. (Homans, 1965) This is not altogether a fair judgement, if we take into consideration the analytical power of functional analysis and its value for definitional purposes in the above sense. On the other hand, it must be admitted that the application assumptions of functional analysis lead to the organizing of the attempted scientific explanations according to purposes external to and mostly also conflicting with the goal of broad explanatory theories.

The construction of open, non-functional theoretical systems has been lately in great vogue in political science, and it has produced some remarkable results. It is scarcely any use repeating that this approach has been very inductive in its preliminary stage, and theory attempts have been to a great extent only collections of loose, dispersed hypotheses that are somehow adjusted together deductively. (Gross, 1960) The development toward a more deductive direction is obvious at least in political science. Typologies based on few politically relevant dimensions of high abstraction have been compiled and they have been used as models for broad theory sketches. (Allardt, 1964; Easton, 1957; Kaplan, 1957) One of the basic characteristics of open, non-functional theory construction has been that it has attempted, and even been able to incorporate into analysis, concepts and generalizations from different aggregate levels, thus adopting a non-reduction strategy of theory construction. The broad scope of the theories suggested and the promises they show of great informative value in the future are no doubt due to multi-aggregate level of analysis.

The open, non-functional approach has, however, still a long way to go in many respects. There is still great need to develop the existing theories toward greater structural refinement, toward greater discriminating power of the concepts used, and in many cases toward more dynamic theorizing. At present there are three discernible methodological trends in the social sciences, which no doubt will favor the construction of such open theoretical systems as we have been discussing here. First, there is interest in finding and elucidating certain politically relevant dimensions that can be used as the basis of theory construction. (See e.g. Deutsch, 1963) Secondly, there is an increased interest in contextual analysis,

which tries to explicate how data from different aggregate levels can be effectively utilized in theory formation. (Rokkan, 1962) Thirdly, there is growing interest in developing formal rules of deduction for axiomatic theory formation based on correlational relationships between variables. (Costner and Leik, 1964) The future development of open, non-functional theory construction depends much on the results that methodological research in these areas can achieve.

Conclusion

The personal bias – or, to use a more positive term, the instructive purpose of the above analysis is imbedded in the basic argument that all scientific research ultimately aims at, or it should aim at broad explanatory theories. It is the conviction of the present author, that the future of political science as a mature science depends on its ability to achieve this goal. It would be somewhat tautological to conclude on the basis of the above analysis that approaches striving for this goal, and only for this goal, are probably best equipped to achieve it. It is less tautological to say that a major hindrance on the road toward this goal is the application orientation present in the majority of the political science approaches. And we are still less tautological when we refine this statement and conclude that the stronger the application orientation is within a theoretical approach to political science the more certain is the resort to artificial closure in theory formation, and the greater the danger of a theoretical dead-end.

Or perhaps we had to conclude that application orientation is no hindrance as such, but the actual hindrance is the scientist's ignorance of its presence and its impact on his formulation of theories and theoretical systems.

References

Allardt, Erik, "A Theory of Solidarity and Legitimacy Conflict", in Allardt, Erik and Littunen, Yrjö (eds.), *Cleavages, Ideologies, and Party Systems. Contributions to Comparative Political Sociology*. Helsinki: Transactions of the Westermarck Society, 10, 1964.

Almond, Gabriel, "A Functional Approach to Political Science". In Almond, Gabriel and Colman, James S., *The Politics of Developing Areas*. Princeton: Princeton University Press, 1960.

Banfield, Edward, "The Decision-Making Schema", *Public Administration Review*, 17, (Autumn, 1957), 284–285.

von Bertalanffy, Ludwig, "A Program of Systems Research and Interdisciplinary Synthesis", Center for Advanced Study in the Behavioral Sciences, Mimeographed.

Buchanan, James M. and Tullock, Gordon, *The Calculus of Consent*. Ann Arbor: The University of Michigan Press, 1962.

Campbell, Angus, et al., *The American Voter*. New York: John Wiley and Sons, Inc., 1960.

Schlesinger, G., *Methods in the Physical Sciences*. London: Routledge and Kegan, Paul, 1963.

Schoeffler, Sidney, *The Failures of Economics. A Diagnostic Study*. Cambridge: Harvard University Press, 1955.

Scriven, Michel, "Definitions, Explanations and Theories". In Feigl, H., et al. (eds.), *Minnesota Studies in Philosophy of Science*. Minneapolis: University of Minnesota Press, 1957.

Shapely, L. S. and Shubik, Martin, "A Method for Evaluating the Distribution of Power in a Committee System". In Walker, J. C. and Elau, E., *Legislative Behavior. A Reader in Theory and Research*. Glencoe, Ill.: The Free Press, 1959.

Shubik, Martin, *Readings in Game Theory and Political Behavior*. New York: Doubleday and Co., 1954.

Simon, Herbert A., *Models of Man*. New York: John Wiley and Sons, Inc., 1957.

Simon, Herbert A., "Some Strategic Considerations in the Construction of Social Science Models", In *Mathematical Thinking in the Social Sciences*, op. cit.

Snyder, Richard C., "Some Recent Trends in International Relations Theory". In *Essays on the Behavioral Study of Politics*, op. cit.

Stokes, Donald E., "Spatial Models on Party Competition", *The American Political Science Review*, 58, (1963) 368-377.

Storing, Herbert J., "The Science of Administration", In Storing, Herbert J. (ed.), *Essays on the Scientific Study of Politics*. New York: Holt, Rhinehart and Winston, Inc., 1962.

von Wright, Georg H., "Teon yleinen teoria" (The General Theory of the Deed), paper read at the Interdisciplinary Colloquium of the Behavioral Sciences, University of Helsinki, Autumn, 1964.

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³ These hypotheses of empirical generalizations are naturally connected with the broader theoretical approaches in their original field, but political scientists have been especially interested only in their relevance for the study of *political phenomena*, and consequently, dissected them from their "natural" theoretical connection.

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Allardt, Erik, "A Theory of Solidarity and Legitimacy Conflict", in Allardt, Erik and Littunen, Yrjö (eds.), *Cleavages, Ideologies, and Party Systems. Contributions to Comparative Political Sociology*. Helsinki: Transactions of the Westermarck Society, 10, 1964.

Almond, Gabriel, "A Functional Approach to Political Science". In Almond, Gabriel and Colman, James S., *The Politics of Developing Areas*. Princeton: Princeton University Press, 1960.

Banfield, Edward, "The Decision-Making Schema", *Public Administration Review*, 17, (Autumn, 1957), 284–285.

von Bertalanffy, Ludwig, "A Program of Systems Research and Interdisciplinary Synthesis", Center for Advanced Study in the Behavioral Sciences, Mimeographed.

Buchanan, James M. and Tullock, Gordon, *The Calculus of Consent*. Ann Arbor: The University of Michigan Press, 1962.

Campbell, Angus, et al., *The American Voter*. New York: John Wiley and Sons, Inc., 1960.

Chodak, Szymon, "The Societal Functions of Party Systems in Sub-Saharan Africa", In *Cleavages, Ideologies and Party Systems*. op. cit.

Costner, Herbert L. and Leik, Robert K., "Deductions from Axiomatic Theory" *American Sociological Review*, 29, (December, 1964), 819–835.

Deutsch, Karl W., *The Nerves of Government. Models of Political Communication and Control*. Glencoe, Ill.: The Free Press, 1963.

Downs, Anthony, *An Economic Theory of Democracy*. New York: Harper Bros 1957.

Easton, David, *Political System*. New York: Alfred E. Knopf, 1960.

Easton, David, "An Approach to the Analysis of Political Systems", *World Politics*, 9, (April, 1957), 383–404.

Eisenstadt, S. N., "Bureaucratization, Markets and Power Structure". In *Cleavages, Ideologies and Party Systems*, op. cit.

Eisenstadt, S. N., *The Political System of Empires*. Glencoe, Ill.: The Free Press 1963.

Gross, Llewellyn, "System Construction in Sociology", *Behavioral Science*, 5 (July, 1960), 281–290.

Heiskanen, Ilkka, "Scientific Strategies and Model Selection in Organizations and Administrative Research", Unpublished Licentiate Thesis, University of Helsinki, 1964.

Homans, George Caspar, "Bringing Men Back In", *American Sociological Review*, 29, (December, 1964), 809–818.

Kaplan, Morton A., *System and Process in International Politics*. New York John Wiley and Sons., Inc., 1957.

Kaufmann, Felix, *Methodology of the Social Sciences*. London: Oxford University Press, 1944.

Kirkpatrick, Evron M., "The Impact of the Behavioral Approach on Traditional Political Science", in Ranney, Austin (ed.), *Essays on the Behavioral Study of Politics*. Urbana: University of Illinois Press, 1962.

Linz, Juan, "An Authoritarian Regime: Spain", In *Cleavages, Ideologies and Party Systems*, op. cit.

March, James G. and Simon, Herbert A., *Organizations*. New York: John Wiley and Sons, Inc., 1957.

Marshak, Jacob, "Probability in the Social Sciences", In Lazarsfeld, Paul F. (ed.), *Mathematical Thinking in the Social Sciences*. Glencoe, Ill.: The Free Press 1954.

Miller, Warren E. and Stokes, Donald E., "Constituency Influence in Congress" *The American Political Science Review*, 58, (January, 1963), 45–56.

Nagel, Ernest, *The Structure of Science. Problems in the Logic of Scientific Explanation*. London: Routledge and Kegan Paul, 1961.

Parsons, Talcott, *Structure and Process in Modern Society*. Glencoe, Ill.: The Free Press, 1960.

Pernanen, Kai, "Sosiologian funktioanalyysi. Kriittillinen tarkastelu" (The Functional Analysis of Sociology), *Reports of the Institute of Sociology*, University of Helsinki, 44, 1964.

Popper, Karl, *The Logic of Scientific Discovery*. New York: Science Editions, Inc., 1961.

Rokkan, Stein, "The Comparative Study of Political Participation: Notes Towards a Perspective on Current Research". In *Essays on the Behavioral Study of Politics*, op. cit.

Schlesinger, G., *Methods in the Physical Sciences*. London: Routledge and Kegan, Paul, 1963.

Schoeffler, Sidney, *The Failures of Economics. A Diagnostic Study*. Cambridge: Harvard University Press, 1955.

Scriven, Michel, "Definitions, Explanations and Theories". In Feigl, H., et al. (eds.), *Minnesota Studies in Philosophy of Science*. Minneapolis: University of Minnesota Press, 1957.

Shapely, L. S. and Shubik, Martin, "A Method for Evaluating the Distribution of Power in a Committee System". In Walker, J. C. and Elau, E., *Legislative Behavior. A Reader in Theory and Research*. Glencoe, Ill.: The Free Press, 1959.

Shubik, Martin, *Readings in Game Theory and Political Behavior*. New York: Doubleday and Co., 1954.

Simon, Herbert A., *Models of Man*. New York: John Wiley and Sons, Inc., 1957.

Simon, Herbert A., "Some Strategic Considerations in the Construction of Social Science Models", In *Mathematical Thinking in the Social Sciences*, op. cit.

Snyder, Richard C., "Some Recent Trends in International Relations Theory". In *Essays on the Behavioral Study of Politics*, op. cit.

Stokes, Donald E., "Spatial Models on Party Competition", *The American Political Science Review*, 58, (1963) 368-377.

Storing, Herbert J., "The Science of Administration", In Storing, Herbert J. (ed.), *Essays on the Scientific Study of Politics*. New York: Holt, Rhinehart and Winston, Inc., 1962.

von Wright, Georg H., "Teon yleinen teoria" (The General Theory of the Deed), paper read at the Interdisciplinary Colloquium of the Behavioral Sciences, University of Helsinki, Autumn, 1964.

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