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Author(s): Paul Humphreys and Joseph Berger
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Theoretical Consequences of the Status
Characteristics Formulation

Paul Humphreys
University of Virginia

Joseph Berger
Stanford University

In this paper we derive five major theorems from the latest version of
the status characteristics theory developed by Berger, Fisek, and
Norman. The first set of three theorems is concerned with the effect
of status characteristics on the degree of equality and inequality that
obtains among the members of a task group. Included here is a result
that establishes a direct relation between status inconsistency and
power and prestige equality. The second set is concerned with the
relations between different types of status and task structures. The
first of these theorems deals with the relations between task assign-
ments and status expectancies, while the second describes relations
between status expectancies and status-task associations. While vari-
ants of these theorems have been formulated previously as theoretical
assumptions, now for the first time they are shown to be derivable
from more basic status organizing principles.

The status characteristics theory was introduced by Berger, Cohen, and
Zelditch (1966). In its initial formulation, it was designed to cover the
status organizing process in situations involving two interactants oriented
toward a single task, with actors possessing only one activated diffuse status
characteristic. The second stage of the theory, formulated by Berger and
Fisek (1974), enlarged its scope to include situations in which two actors
possess any number of salient characteristics. These characteristics were
divided into two types: diffuse and specific. The third and current stage,
developed by Berger, Fisek, and Norman (1977), covers multicharacteristic
situations involving more than two actors and actors of different types. The
primary task of this paper is to formulate and derive five major substantive
consequences or theorems from this third formulation of the status charac-
teristics theory. These theorems are of considerable importance in under-
standing the operation of status organizing processes. We believe also that

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they can provide theoretical bases for devising new ways to intervene in the operation of such processes.

In this article we (1) review the latest version of the status characteristics theory; (2) formulate and derive the five major theoretical consequences of the status theory, which is our primary concern; and (3) briefly consider some of the implications of these results.

Before proceeding it is important to note that we make no attempt in this paper to assess the available evidence for this third formulation nor do we consider possibilities for testing the theory. Such matters merit detailed discussion, and we leave them for a future paper in which they can be dealt with fully and in their own right.2

THE STATUS CHARACTERISTICS THEORY

The theory of status characteristics and expectation states is concerned with describing the operation of status organizing processes. A status organizing process is a process by which differences in cognitions and evaluations of individuals or social types of them become the basis of differences in the stable and observable features of social interaction. The patterned effects of sex differences in interaction, race differences, ethnic differences, occupational differences, and the effects of differences in reading ability are all examples of status organizing processes. In each case differences in evaluations and beliefs about types of individuals, such as males versus females or blacks versus whites, are the basis for the emergence of stable and observable inequalities in their behavior. We take the view that in each of these cases where interaction is organized by some particular status distinction or set of status distinctions, a similar status organizing process operates. As a consequence of this theoretical position, the status characteristics theory aims for an abstract and general description of status organizing processes. In turn, it seeks to understand and explain how different specific and concrete status distinctions produce behavioral inequalities by treating these distinctions as instances of the same abstractly conceptualized process.3

In this section we shall provide a description of the theory as well as a

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2 For a partial review of empirical research which is relevant to the present version of the status characteristics theory, see Berger, Rosenholtz, and Zelditch (1980).

3 For examples of this approach in describing and explaining the effect of specific status distinctions see Meeker and Weitzel-O’Neill (1977), Lockheed and Hall (1976), and Pugh and Wahrman (1978), where sex is conceptualized as a status characteristic; Cohen (1972), Cohen and Roper (1972), and Lohman (1972), where the application is to race; Cohen and Sharan (1976), Rosenholtz and Cohen (in press), and Yuchtman-Yaar and Semyonov (1979), where the application is to ethnic identities and differences; Webster and Driskell (1978), where the application is to differences in physical attractiveness; and Stulac (1975) and Rosenholtz (1977), where reputed differences in reading ability in classroom situations are analyzed from this perspective.
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formal presentation. This will include, among other things, a specification of the principal terms and relations used in the assumptions, the basic assumptions of the theory, and definitions of terms used in stating our theorems. Throughout the paper, we adhere to the following notational conventions:

\( p, o \) (with or without subscripts) refer to actors;

\( C_i \) denotes the \( i \)th specific status characteristic, with \( C_i(+) \), \( C_i(-) \) denoting the positively and negatively evaluated states of that characteristic, respectively;

\( D_i \) denotes the \( i \)th diffuse status characteristic, with states \( D_i(+) \), \( D_i(-) \);

\( T \) is the task outcome, with states \( T(+) \), \( T(-) \);

\( C^* \) is the task instrumental characteristic; and

\( S \), with various superscripts, is a task situation.

A. The Concept of a Status Characteristic

The key concept in the study of status organizing processes is the status characteristic. A status characteristic is a characteristic of an actor that has two or more states that are differentially evaluated in terms of honor, esteem, or desirability; each state is associated with distinct moral and performance expectations, that is, with stabilized beliefs about how an individual possessing a given state of the characteristic will perform or behave. Expectation states are said to be specific if they concern how an individual will act in a clearly defined and specifiable situation; they are said to be general if they are not restricted to any specifiable situation. Thus “logical ability” is specific, “intelligence” is general. This gives rise to a distinction between two kinds of status characteristics, specific and diffuse.

A characteristic is a specific status characteristic, \( C_i \), if (1) it involves two or more states that are differentially evaluated and (2) associated with each state is a distinct expectation state. For example, reading ability may function as a specific status characteristic. We distinguish different levels of the characteristic which are differentially evaluated, and we associate beliefs about how individuals possessing the different states will perform specified tasks.

A characteristic is a diffuse status characteristic, \( D_i \), if (1) it involves two or more states which are differentially valued; (2) associated with each state are distinct sets of specific expectation states, each themselves evaluated; and (3) associated with each state is a similarly evaluated general expectation state. Thus sex, for example, is a diffuse status characteristic if (1) for a given population the states male and female are differentially evaluated; (2) males (or females) are assumed to be more mechanical, more mathematical than females (or males), hence distinct sets of specific expec-
tation states are associated with the states of the status characteristic; and (3) males (or females) are assumed to be more intelligent than females (or males), hence distinct general expectation states are associated with the states of the status characteristic.

B. Scope Conditions and Principal Relations

The theory is concerned with describing the status organizing process which occurs among a number of actors in a task-oriented situation designated as $S^*$. The following are the principal components of such situations.

1. Actors who may be either interactants or referents. We conceive of an interaction process in which, during any phase of the process, only two of the actors are involved in interaction with each other. These are the interactants. A referent is an actor who during a given phase is a noninteractant and whose status information is significant to the interacting pair. At the same time, we look at the situation from the point of view of each of the interactants and analyze their power and prestige position with respect to each other. In this sense the formulation is $p$-centric. In addition, we apply the same analysis to each interacting actor under the assumption that his definition of the situation is being determined by identical processes operating on the same initial task and status information.

2. Actors may possess any number of specific and/or diffuse status characteristics. Interactants must possess at least one status characteristic that either discriminates between them or is relevant to the task. It is assumed that initially the only information the actors have about each other concerns the status characteristics they possess.

3. The actors are addressed to a task, $T$, under conditions which make it necessary and legitimate to take each other's behavior into account. The task has two oppositely evaluated states. This means that the actors can distinguish or define for themselves a “success” or “failure” outcome. The actors are assumed to believe that there exists a particular characteristic or ability, $C^*$, that is instrumental to the group task. If an actor possesses the positively evaluated state of $C^*$, he expects or is expected to attain the success outcome of the task, $T(+)$. while if he possesses the negatively evaluated state, he expects or is expected to achieve the failure outcome of the task, $T(-)$. In other words, success at the task is not simply a matter of “chance” but involves an ability or set of related abilities. In the present analysis, it is assumed that there is a consensus among actors on their definitions of the task outcome states and on the ability or abilities instrumental to the task.

Actors, states of characteristics, and task outcome states can all appear as points or “elements” in the nondirected signed graph which is used as
our mathematical model of the status organizing process. Our results are formulated in a sufficiently abstract way that they cover situations containing any type of element except where explicitly noted, and we refer the reader to Berger, Fisek, and Norman (1977) for a discussion of the general properties of the elements not discussed here.

Lines between points of the graph can represent the following types of relations.

a) Possession. This can hold only between an actor and a state of a characteristic. For example, "p is white" or "p has high mathematical ability" is taken to mean that p possesses a state of a status characteristic.

b) Relevance. This is defined as follows: Element $e_i$ is relevant to element $e_j$ if and only if when $x$ possesses $e_i$, then $x$ expects or is expected to possess $e_j$. For example, the cultural belief that men are expected to have mechanical ability is taken to mean that a state of the sex characteristic is relevant to the high state of the specific characteristic of mechanical ability. Relevance can hold between any two elements in the graph, except where one or both points represent actors in the situation, or the points represent oppositely evaluated states of the same characteristic, task, or similar types of elements.

c) Dimensionality. This exists between elements $e_i$ and $e_j$ if and only if $e_i$ and $e_j$ are oppositely evaluated states of the same characteristic and both these states are possessed by actors in the situation. For example, if $p$ and $o$ are interactants and $p$ possesses high and $o$ possesses low mechanical ability, a dimensionality relation exists between the high and low states of this status characteristic.

Given that individuals are interacting in the task-oriented situation, $S^*$, the theoretical task is to describe how "status organizes behavior" under these conditions. This general task can be translated into the following specific theoretical questions.

1. Given that actors possess the states of any number of diffuse and specific status characteristics, what principles determine which of these status elements are admitted into the immediate situation? The answer to this question is given in our saliency assumption (Assumption 1 below).

2. Given that the states of a number of possessed status characteristics are admitted by the actors into the situation as usable items of status information, how is this information organized to define their situation? How are the states of characteristics related to their common task? These questions are dealt with in our burden-of-proof and sequencing assumptions (Assumptions 2 and 3 below).

3. Given that multiple items of status information have been related to each other and to the task, how is this information translated into the

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4 In addition to these, other types of elements, not directly involved in the derivation of our results, can appear in the graph, e.g., goal-objects, abstract task ability, specific task outcome (see Berger, Fisek, and Norman 1977, pp. 101–2).
actor’s behavior? This question is answered in our aggregated expectation states and basic expectation states assumptions (Assumptions 4 and 5 below).

C. Admitting Status Information into the Situation: Salience of Status Characteristics

The states of a status characteristic possessed by two individuals, say $p$ and $o$, may be directly or indirectly related to the outcome states of a task. Consider the following examples: (1) If $p$ and $o$ possess high and low mathematical ability, respectively, and their task is to solve mathematical puzzles, states of mathematical ability are directly related to the task. (2) If $p$ is white and $o$ is black, and they believe that race is related in a consistent manner to mathematical ability and are working on mathematical tasks, the status characteristic race is also—though indirectly—related to their task. To cover both kinds of cases, the theory of status characteristics speaks of a path of task relevance. A path of task relevance is a path between the actor and the task such that it links the state of the status characteristic possessed by the actor to an outcome state of the task, either success or failure.

A path of relevance provides the actor with information about how well he can expect to perform at the task, given the characteristic he possesses and information about how it is related to the task. These paths can be longer or shorter. In case 1 above we have a shorter path than in case 2, although both connect the actor to the task. Other kinds of paths are possible. Particularly interesting cases are those involving referent actors. For example, (3) if the interactants $p$ and $o_1$ are black and there exists a referent actor $o_2$ who is also black and is known by $p$ and $o_1$ to possess the high state of the ability relevant to the task they face, then race is connected to the task by a path of relevance created by the referent.

Such paths of task relevance are one of the two ways in which status characteristics, whether specific or diffuse, become salient, that is, come to be admitted as usable cues in the immediate social situation. Basically, the theory assumes that if the interactants are connected to the task by a path of task relevance, the status elements and the relations between them become significant in the task situation. Thus, in case 3 the fact that $p$ and $o_1$ are black and the fact that $o_2$, who is also black, possesses the high state of the task ability is status information that becomes salient to the actors. Further, if there exists a path connecting the interactant to the task, the status elements become salient whether or not they discriminate between interactants. Thus, in examples 1 and 2 the status characteristic discriminates between $p$ and $o_2$—that is, they possess different states of it. In case 3 the characteristic equates $p$ and $o_1$.

However, it does not require an existent path of task relevance to make
a status characteristic salient. A second and extremely important way in which status characteristics become admitted as usable cues in the immediate social situation is by discriminating the actors. In their search for social cues, interactants will focus on status elements, whether specific or diffuse, which provide a *basis of discrimination* among them providing only that they are not explicitly defined as independent from the task components in the situation. Thus, in a biracial task-oriented group, race becomes salient unless through cultural beliefs and prescriptions that status characteristic has been defined as independent from the task. There is an important difference between the two salience principles of the theory, however: where there is no path of task relevance, only discriminating characteristics become salient. We do not assume that an equating characteristic that is not connected by an existing path to the task will become salient. The principles about saliency are stated in *Assumption 1* (Salience Process):

1. Given existing paths connecting an interactant to the outcome states of the group task, the elements and relations in these paths become salient in the task situation; and
2. Given status characteristics that provide a basis for discrimination between interactants, the states of these characteristics become salient in the task situation.

**D. Completing the Definition of the Situation**

1. The burden-of-proof process. — As a result of the saliency process, some status states may be connected by paths of relevance to the task’s outcome states but some states, those that discriminate between *p* and *o*, may be salient and yet *not* be linked to the outcome states of the group task. Even where a path of relevance exists, it may be so extended—involving so many and such indirect links—that it provides only weak information on which to base expectations for self and other. We assume that if no claim exists or is raised that such status elements are not relevant, the interactants will act as if the information embodied in these status elements is relevant. That is, they act as if the burden of proof lies in showing that the salient status characteristics are not relevant to their task, rather than the other way around. Therefore, unless their inapplicability is demonstrated or justified, status characteristics, and status advantages, will as a matter of normal interaction be applied to ever new tasks and ever new situations.

This burden-of-proof process operates whether the status characteristics are specific or diffuse. In the case of diffuse status characteristics, generalized expectation states (such as "intelligence") associated with the states of the status characteristic become connected with the task ability, \( C^* \), involved in the immediate situation. In the case of specific status characteristics, states of these characteristics imply for individuals possessing them *relevant task outcome states*. That is, they imply the ability to succeed or fail at tasks...
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relevant to the specific characteristic. Success or failure at specific types of tasks induces in the actors expectations for more general problem-solving ability, high and low states of abstract task ability. This in turn is seen to imply success or failure at the group's particular task. For example, the ability to solve mathematical problems may imply the ability to solve problems in general, including the problem that is confronting the actor.

Burden-of-proof paths will also come into existence when existing paths are so long, so extended, that they provide only very weak information links. The burden-of-proof process will operate in this case if it provides more direct information, that is, if the shortest path generated by the burden-of-proof process is shorter than the existing path of relevance. Existing paths longer than the shortest path generated by the burden-of-proof process are designated as extended paths. These ideas concerning the burden-of-proof process are stated in Assumption 2 (Burden-of-Proof Process):

Given that a salient status element, possessed by or connected to an interactant, is not connected to the task, or is connected by an extended path, then

1. If the status element is the state of a diffuse status characteristic, the associated generalized expectation state will be activated, and it will become relevant to a similarly evaluated state of \( C^* \).
2. If the status element is the state of specific characteristic, its relevant task outcome state will be activated. This task outcome state will become relevant to a similarly evaluated state of abstract task ability, and the latter will become relevant to a similarly evaluated outcome state of the group task.

2. Sequencing of definitions of the situation.—Salience and the burden-of-proof process provide \( p \) and \( o \) with information required to define the immediate task situation. But assume there are more than two actors. In this case, the theory assumes that the definition of the situation proceeds stepwise; that is, any two interactants will define their situation fully as they interact with each other. If the partner of any one actor, say \( p \), then changes so that some formerly inactive person becomes an interactant, further definition occurs if possible and if it is necessary to their interaction. More important, the theory assumes that, for each interactant, definitions achieved vis-à-vis the other in the past remain when a new interactant is engaged in the same situation. These ideas are embodied in Assumption 3 (Sequencing):

A given structure will be developed through the saliency and burden-of-proof processes for the interacting actors. If a noninteracting actor should later become an interactant, then the structure will be further developed, if necessary, through the operation of the salience and burden-of-proof processes. For any actor, those parts of his structure completed in relation to a former interactant remain while the actor is in the given situation \( S \).
3. The significance, length, and strength of paths of relevance.—Paths of relevance may differ in terms of their task significance. Some have positive task significance, providing the actor with information which leads him to expect to succeed, while some have negative task significance, providing information that implies task failure. There are three types of relations in paths of relevance: possession, relevance, and dimensionality. Possession and relevance are relations that “link” or “bond together” elements, for example, an actor with the status element he possesses, or one status element to a second status element. Consequently, we treat these relations as signed and positive. Dimensionality, on the other hand, indicates “segregation” or “opposition” of status elements, as in a dimensionality line between the “white” and “black” state of the racial characteristic possessed by actors. We treat this relation as signed and negative. We now can define the sign of a path. The sign of a path is positive if the product of the signs of its relations is positive; it is negative if the product of the signs of its relations is negative. Substantively, a positive path means that the actor has a status link to the task that implies that he will attain a particular outcome state, while a negative path implies that he will not attain that state. Thus a path of task relevance is defined as having positive task significance if it represents a positive path to a positive task outcome (success) or a negative path to a negative task outcome (failure). Similarly, a path of task relevance has negative task significance if it is a positive path to the negative task outcome or a negative path to the positive task outcome. Thus the task significance of a path is the product of the sign of the path and the evaluational sign of the outcome state of the task. To simplify terminology, we will refer to paths of positive task significance as simply positive paths and to paths with negative task significance as negative paths. These ideas on how to determine the sign of a path are summarized in Rule A (Sign of a Path):

The sign of a path from an actor to a task outcome is determined by the algebraic product of the signs of the lines constituting the path and the evaluational sign of the task outcome that is the final point of the path.

Paths of relevance differ also in length. The shorter the path, the more closely linked to the group’s task is the possessed status characteristic. The longer the path, the more removed from the task is the possessed status characteristic. Consider the following two situations: (1) \( p \) possesses high mathematical ability which is relevant to the mathematical puzzles task that \( p \) and her partner \( o_1 \) are working on; (2) \( p \) is a female, \( o_2 \) is a referent female actor, \( o_2 \) possesses high reading ability which is relevant to high mathematical ability, and \( p \) and \( o_1 \) are working on a mathematical puzzles task. Clearly the path of relevance from \( p \) to the task in the first situation is shorter than that in the second. The status information possessed by \( p \) in
the first situation, the fact that she has high mathematical ability, is more closely linked to the task than the status information she possesses in the second situation, the fact that she is a female.

The idea of the length of a path of task relevance can be simply defined. The length \( N \) of a path of task relevance from an actor \( x \) to a task outcome state is the number of successive relations joining \( x \) to the task state, where one relation joins \( x \) to some element \( e_1 \), one \( e_1 \) to \( e_2 \), \ldots, one \( e_{n-1} \) to \( e_n \), where \( e_n \) is the task outcome state. In the first situation above, the length of the path of task relevance is 2; in the second situation, it is 5.

It is reasonable to assume that the longer the path of relevance between a status element and the task, the less information it provides the actor that he can use in defining the immediate social situation; and that beyond some given length the path will be "ineffective." In addition, some paths will be ineffective because they are redundant. That is, they provide information that duplicates the information contained in other paths. Our ideas about which paths are effective and are therefore to be counted in determining the actor's status-task expectations are given in Rule B (Effective Paths) (below, unless otherwise noted, whenever we use the term "path," we mean "effective path"):

The paths effective in determining expectations for an actor \( x \) are all paths linking the actor to one of the task outcomes, with the following exceptions.

1. Paths of length greater than 6 are not effective.
2. If a graph contains a line joining two points, neither of which is an actor, then any path containing a subpath of length 2 or more joining these same two points with an actor is not effective.
3. If there is a path connecting an actor to a task outcome, then any second path to the same task outcome of equal or greater length and having the same sign is not effective if it has more negative lines than the first path.

While it is reasonable to assume that as a path gets extremely long it becomes more difficult for an actor to "work" from the path to achievement expectations, nevertheless, the limit value of length 6 is a simplifying idea. However, it appears to be a very plausible simplification given the existing experimental data (see Berger, Fisek, Norman 1977).\(^6\)

Part 2 of Rule B deals with situations in which paths involving referent actors convey redundant information. Consider this example: \( p \) possesses the high state of a status characteristic that is relevant to a high task ability which in turn is relevant to task success. At the same time, some referent actor, \( o_1 \), is known to possess the high state of the status characteristic and high task ability. In this situation we assume that the information about \( o_1 \) is redundant to \( p \) in the formation of his expectations. Since

\(^6\) In describing status organizing processes, we on occasion use terms that have phenomenological connotations. Nevertheless, it should be borne in mind that, within our theory, central concepts such as aggregated expectation states (see below) are formulated and used strictly as theoretical constructs.
there is a direct relevance relation between the status characteristic and high ability, the path involving that relation will be effective, while the less direct path involving $o_1$ (with the same sign) is ineffective.

Part 3 of Rule B is based on the substantive notion that people find it hard to work from negatives and will not do so unless they are forced to. At the same time we commonly find a path, for example, with two negatives, which actually introduces no new information not already contained in an existing positive path. In such a case the path with two negatives is not effective.

Paths of relevance of different lengths contribute different amounts to the expectations of an actor—specifically, the longer the path connecting an actor to a task outcome, the weaker its contribution to his performance expectations. We now assume that there are characteristic numbers associated with paths of different length. One can think of these numbers as representing the “degree of task relevance” or the “strength” of a path. However, at this stage we do not commit ourselves to a single substantive interpretation of these numbers. They may refer to the strength of the actor’s expectancy, the strength of his belief, or his degree of confidence that he will attain a particular task outcome based on a particular status-task bond. To capture this idea, we introduce a decreasing function $f$ from the positive integers to the open interval $(0,1)$, $f: N \rightarrow (0,1)$. This $f(\ell)$ is a measure of the “strength” of a path length $\ell$.

E. Translating Status Definitions into Behavior

1. Aggregating expectation states.—Because of the salience and burden-of-proof processes, the status situation becomes defined for the interactants. How is this status information translated into their behavior?

Each status element the actor possesses is connected to the task by a path of relevance. The task significance of these paths may differ: some of them may establish expectancies for success at the task, while others embody expectancies for task failure. Furthermore, some of the status-task links are closely tied to the task; others are further removed from it. Thus the actor may possess multiple status elements, some of which have positive and some of which have negative task significance, and these status items may differ in the strength of the bond by which they connect the actor to the task.

The basic idea of the theory is that the actor functions like an information-processing mechanism, combining all units of status information to form aggregated expectation states for self and other. The information-combining process is governed by what is called the principle of organised subsets. The

For the domain of experimental situations in which theoretical research is conducted, it is reasonable to assume that $f$ is a fixed function. Experimental situations in this domain are highly standardized and our assumption about $f$ is, in the first instance, formulated for this domain.
fundamental idea of the principle of organized subsets is that the actor organizes information within consistent (like-signed) subsets and then combines the valenced subsets. The "signs" to which the principle refers are the signs of the path of relevance connecting the actor to the task. Within like-signed subsets information is built up in accord with an attenuation principle: the strength of the subset increases in proportion to the strength of the paths being combined, but the strength produced by adding additional status items is a decreasing function of the strength of existing items in the subset. Thus each subset is assumed to be an organized structure of status information and to exist as such. If there is inconsistent status information, there will, of course, be two such subsets. And for each subset it is possible to determine an expectation value with $e_p^+$ representing the expectation value for $p$'s positive subset, and $e_p^-$ representing the value for $p$'s negative subset. Because of the strong task demands there is pressure on the actors to use all the status information that has become relevant in the situation. As a consequence the actor combines the values of these subsets to form expectations for self, $e_p$. In a similar manner the actor forms expectations for others. These ideas are embodied in Assumption 4 (Formation of Aggregated Expectation States):

If an actor $x$ is connected to the outcome state of the group task by sets of positive paths and negative paths, these paths will first be combined within like-sign subsets to yield a positive-path value $e^+_x$ and a negative-path value $e^-_x$ in the following fashion. Given strengths $f(i)$, $f(i')$, ..., $f(n)$, and $f(i')$, ..., $f(n')$ of paths within the positive-paths subset and negative-paths subset, respectively, then $e^+_x = [1 - [1 - f(i)] \ldots [1 - f(n)]]$, and $e^-_x = -[1 - [1 - f(i')] \ldots [1 - f(n')]]$. The aggregated expectation state is then given by $e_x = e^+_x + e^-_x$.

2. Expectation advantage and the power-prestige order.—The observable power-prestige order of the group refers to the distribution among its members of chances to perform, performance outputs, communicated evaluations, and influence. A position $A$ is higher than a position $B$ in this order if $A$ is more likely than $B$ to receive action opportunities, make performance outputs, and have performance outputs positively evaluated but less likely to be influenced in case of disagreement with another. The greater the difference in likelihoods of initiating and receiving these behaviors, the greater the distance between positions $A$ and $B$. The power-prestige order of the group is assumed by the theory to be a direct function of the expectation states of the actors, and the degree of differentiation between actors in positions $A$ and $B$ is assumed to depend on the expectation difference between the actors. The expectation advantage of the actor, say $p$ in position $A$, is simply the aggregated expectation state $p$ holds for self minus that which $p$ holds for the actor in position $B$. These ideas are formulated in Assumption 5 (Basic Expectation Assumption):
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Given that \( p \) has formed aggregated expectation states for self and other, \( p \)'s power and prestige position relative to \( o \) will be a direct function of the expectation difference between \( p \) and \( o \).

Because of the direct functional relation between the actors' expectation difference (or expectation advantage) and their power and prestige positions, the degree of differentiation between actors \( p \) and \( o \) is measured by the expectation difference between \( p \) and \( o \): \( e_p - e_o \). When \( e_p = e_o \), we say \( p \) and \( o \) are status equals.

Empirical tests of the theory are made possible through application of Assumption 5. Within the general terms of this assumption it is possible to formulate specific functions relating \( (e_p - e_o) \) to different power and prestige behaviors. However, an actor's power and prestige position is traditionally indicated by the probability of that actor staying with his own choice when faced with disagreement from another actor. This is the stay-response probability, and we consider it to be a direct function of an actor's expectation advantage.\(^7\) One specific form for this probability function is given in Berger, Fisek, and Norman (1977). It is important to stress, however, that the theorems in this paper do not depend on the particular form of the function.

Finally, we need to present an additional idea that is part of the theory and that will be used in the derivation of our last two results. Paths of relevance differ in their length and strength in such a way that the longer the path, the less its strength. How can we relate the strength of paths that differ in length? Consider, for example, a number of paths of length 3 in "parallel," that is, paths with the same origin and same sign. A certain number of them, when combined, will have the same effect as a path of length 2. Similarly, a number of paths of length 4 will "add up" to a path of length 3, and so on. We now assume that the number of paths of length \( \ell \) that combine to be equivalent to a path of length \( \ell - 1 \) is the same for every \( \ell \), in other words, it is a constant. This constant we designate as \( k \).

These ideas are stated in the following assumption (Parallel-Paths Assumption):\(^8\)

\[
\text{Given a number of paths of length } \ell + 1 \text{ in parallel, there exists a positive factor } k \text{ such that } k \text{ parallel paths of length } \ell + 1 \text{ have the same effect as a single path of length } \ell. \text{ That is, } [1 - (\ell)] = [1 - f(\ell + 1)]^k.
\]

At this stage of the theory, we assume that \( k \) is a constant (not necessarily integer valued) for all \( \ell \). However, none of the theorems proved here depend

\(^7\) For information on a standardized experimental situation that has been developed to measure, among other things, the probability of stay responses, see Berger, Fisek, Norman, and Zelditch (1977), pp. 43-48.

\(^8\) For those familiar with the theory as presented in Berger, Fisek, and Norman (1977), we point out that the Parallel-Paths Assumption is not a new assumption of the theory. We display it as a separate assumption here simply because of the central role it plays in the proofs of Theorems 4 and 5.
essentially on that assumption, and generalizations of the theory to allow for a variable path combination factor \( k \) will still have these theorems as consequences.

DERIVATIONS FROM THE THEORY

The first three theorems that we prove are "differentiation theorems." All three are concerned with conditions related to the degree of equality and inequality that will obtain among the members of a task-oriented group.

As is true of all our theorems, they are formulated in general and abstract terms and are "conditionalized" only in the sense that it is assumed that the task-oriented group is operating under \( S^* \) conditions. Each of these theorems stipulates in an exact manner how a particular status condition affects the power and prestige order that exists in the group. It is to be noted that special cases or particular instances of these first three theorems have been taken previously as empirically supported assertions (see Berger, Fisek, Norman, and Zelditch 1977, esp. p. 76). Here we show that these results are in fact derivable from the basic assumptions of the status characteristics theory, and we conceptualize them in their most general form.

Before turning to our theorems, some preliminary comments are in order. Most of the examples we present are expressed in terms of specific status characteristics. It cannot be emphasized too strongly that all five theorems of this section hold for diffuse as well as specific status characteristics, and for structures containing both kinds. Further, in the first three theorems, states of specific task outcomes, generalized expectation states, or abstract task ability, which we refer to as activated or induced elements, can also occur as elements in the paths linking the actors to the task. In what follows, we define a discriminating status characteristic as a status characteristic both of whose oppositely evaluated states are possessed by (different) actors in the situation, and the strength of relevance of a path of length \( t \) as the value \( f(t) \) of the function \( f \).

Finally, the strength of relevance between a state of a characteristic and a task outcome is the aggregated absolute strength of all paths connecting that state to the task outcome.\(^9\) States of characteristics \( A_i \) are equally relevant to the task outcome if the set of path lengths \( i, \ldots, n \) connecting each state to the task outcomes is the same for each \( A_i \).

A. Status Relevance and Degree of Differentiation

In our first theorem, we are interested in showing that the more direct the relation between a status characteristic and the task outcome, the more

\(^9\) The specific value and sign of the strength of relevance can be calculated using Assumption 4.
differentiating is the effect of that characteristic. That is, the greater the strength of relevance between a discriminating status characteristic and the task to which actors address themselves, the more powerful is the effect of that characteristic in creating inequality among the actors in the system.

Consider the following two situations: (1) $p$ and $o$ are males and are known to possess different states of mechanical ability; let us say $p$ has the high and $o$ the low state of the ability; (2) $p$ is male and $o$ is female, and in their culture males are expected to possess high and females low states of mechanical ability. Further, assume that the task confronted by $p$ and $o$ in each situation is one involving mechanical ability. We argue that there is a smaller distance between the discriminating characteristic (states of mechanical ability) and the mechanical task in the first situation than between the discriminating characteristic (states of male and female) and the mechanical task in the second situation. In the first case, as compared with the second, the discriminating characteristic is more immediately relevant to the task. Alternatively, the strength of relevance of mechanical ability to the mechanical task is greater than that of the sexual status characteristic to the mechanical task. Now claiming that the inequality produced by a discriminating characteristic is a direct function of its strength of relevance, we argue that the power and prestige differentiation based on the status characteristic of mechanical ability will be greater than that based on the sexual status characteristic. Stating this relevance inequality relation as a general and abstract theorem, we have

**Theorem 1** (relevance strength and differentiation). Given a pair of possessed states of a discriminating status characteristic, the greater the strength of relevance between these states and the task outcomes, the greater the degree of differentiation on that status characteristic.

**Proof.** We are concerned with the kind of status situation described in the following structure:

\[
p \quad + \quad C_1(+) \quad \cdots \quad C_n(+) \quad + \quad C^*(+) \quad + \quad T(+) \quad - \quad I
\]
\[
o \quad + \quad C_1(-) \quad \cdots \quad C_n(-) \quad + \quad C^*(-) \quad + \quad T(-)
\]

where we also allow the situation that $C_i = C_n = C^*$. Then, as $n$ decreases, the differentiating effect of $C_i$ increases.

Without loss of generality we may assume that $p$ is connected by positive paths to $T$. Note also that there is a direct connection between the shortness of a path of task relevance connecting two elements and the strength of relevance between those elements, namely, the shorter the path the greater the strength of relevance.

Consider two situations $S^*$ and $S^A$, with the strength of relevance of the states of the discriminating characteristic greater in $S^*$ than in $S^A$. The
proof follows immediately from Assumption 4. This says that for \( p \), the combined strengths of relevance of paths of individual strengths \( f(i) \), \( f(n) \) is \( \{1 - [1 - f(i)] \ldots [1 - f(n)]\} = e_p^+ = e_p \) and \(-\{1 - [1 - f(i)] \ldots [1 - f(n)]\} = e_o^- = e_o \). Hence \( e_p - e_o = 2 \{1 - [1 - f(i)] \ldots [1 - f(n)]\} \). Thus as the strength of relevance increases from \( S^\Delta \) to \( S^* \), the degree of differentiation increases: \( e_p^* - e_o^* > e_p^\Delta - e_o^\Delta \).

B. Number of Status Characteristics and Degree of Differentiation

Theorem 2 of our differentiation theorems is concerned with relating the number of characteristics that discriminate between \( p \) and \( o \) and the magnitude of their status inequality.

If the actors possess common states of characteristics that are salient and there are no discriminating characteristics, then in their situation they will be status equals. As discriminating characteristics are introduced into the situation, status inequality is generated. As an example, imagine the following three situations: in situation one, \( p \) and \( o \) are males, and males are expected to have high ability at the task to which they are addressed; in situation two, \( p \) and \( o \) also know that \( p \) is a college graduate while \( o \) is a high school dropout; and, finally, in situation three, \( p \) and \( o \), in addition to the other information, know that \( p \) is a professional and \( o \) is a semiskilled worker. With this example in mind we can consider the general question of the relation between the number of status characteristics that discriminate between \( p \) and \( o \) and the degree of differentiation in the system. Prior to the introduction of a discriminating characteristic there is no basis on which to distinguish between the actors in the system. Consequently, the introduction of an initial discriminating characteristic provides the actors with a relatively large amount of new status information. In turn, this new (and novel) status information is the basis for a large increment in status differentiation. Under these conditions the introduction of an additional discriminating characteristic assumes that it is allocated consistently with the initial characteristic, confirms and strengthens the initial status distinction and therefore increases by some amount the differentiation between the actors in the system. However, the additional status distinction provides information which in terms of performance expectations is essentially "more of the same." Consequently, we should expect the increase in differentiation produced by the second characteristic to be less than that produced by the initial status distinction. And in general there should be a decrease in the incremental differentiation produced with each additional status distinction. These features of the relation between the number of discriminating characteristics and status differentiation are consequences of our formulation and are embodied in the second theorem.
The Status Characteristics Formulation

Theorem 2 (number of discriminating characteristics and differentiation). Given that the actors possess states of characteristics that are equally relevant to the task outcome and are consistently allocated, the greater the number of discriminating characteristics, the greater the degree of differentiation. As the number of discriminating characteristics increases, there is a decrease in the incremental differentiation produced by adding characteristics.

Proof. We are considering here situations of the form shown in the graph below.

Once again, $p$ is the actor connected by positive paths to $T$, and the assumption of consistency entails that all his paths are positive. Let the lengths of the paths connecting $p$ with $T$ via the first discriminating characteristic be $\ell_1, \ell_2, \ldots, \ell_m$ ($m \geq 2$ and will depend on the particular structure). Because each discriminating characteristic is equally relevant to the task outcome, each such characteristic will have paths of length $\ell_1, \ldots, \ell_m$ between $p$ and the states of $T$. Hence, if there are $n^*$ discriminating characteristics in situation $S^*$, we have from Assumption 4:

$$e^*_p = \left\{ 1 - \left[ 1 - f(\ell_1) \right]^{n^*} \left[ 1 - f(\ell_2) \right]^{n^*} \ldots \left[ 1 - f(\ell_m) \right]^{n^*} \right\}$$

$$= 1 - \prod_{i=1}^{m} x_i^{n^*}, \quad \text{where} \quad x_i = [1 - f(\ell_i)].$$

Similarly, $e^*_o = -e^*_p$, and

$$D^* = e^*_p - e^*_o = 2 \left( 1 - \prod_{i=1}^{m} x_i^{n^*} \right). \quad (1)$$

If we increase the number of discriminating characteristics to $n^\Delta$, keeping them equally relevant to the task outcome, then in such a situation $S^\Delta$,

$$D^\Delta = 2 \left( 1 - \prod_{i=1}^{m} x_i^{n^\Delta} \right).$$

Then $D^\Delta > D^*$ follows from $0 < x_i < 1$ and $n^\Delta > n^*$. 

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We now have to show that for a fixed strength of relevance, the addition of each further characteristic has a decreasing incremental effect. Consider three situations, $S_1', S_2', S_3'$, for which $n_2 = n_1 + 1$, $n_3 = n_2 + 1$. Then from the general form of (1),

$$
(D^2 - D^1) - (D^3 - D^2) = 2 \prod_{i=1}^{m} x_i^{n_1} + 2 \prod_{i=1}^{m} x_i^{n_2} - 2 \prod_{i=1}^{m} x_i^{n_1} - 2 \prod_{i=1}^{m} x_i^{n_2} + 2 \prod_{i=1}^{m} x_i^{n_3} - 2 \prod_{i=1}^{m} x_i^{n_2} + 2 \prod_{i=1}^{m} x_i^{n_3} + 2 \prod_{i=1}^{m} x_i^{n_4}
$$

$$
= 2 \prod_{i=1}^{m} x_i^{n_1} \left( \prod_{i=1}^{m} x_i^2 - 2 \prod_{i=1}^{m} x_i + 1 \right)
$$

$$
= 2 \prod_{i=1}^{m} x_i^{n_1} \left( 1 - \prod_{i=1}^{m} x_i \right)^2.
$$

Since $0 < x_i < 1$, this is positive, and hence $D^2 - D^3 < D^3 - D^1$, which is the desired result.

C. The Relation between Status Inconsistency and Equality

Our third theorem, the "inconsistency-equality" result, is possibly the most basic of our differentiation theorems. This theorem argues that there is a fundamental relation between the degree of status inconsistency and the degree of differentiation. Specifically, the claim is made that, given a set of discriminating status characteristics possessed by actors in the group, increasing the degree of inconsistency of these characteristics will decrease their differentiation effect; in other words, it will increase the degree of actor equality in the system. Assume, for example, that $p$ and $o$ are discriminated on sex and a performance ability that is a specific status characteristic. These status elements will produce the least amount of actor inequality when the male is believed to have the low state of the performance ability and the female is believed to have the high state, which is the status inconsistent situation. These status elements will generate the greatest amount of inequality when the male is believed to have the high and the female the low state of the performance ability. Similarly, imagine that $p$ and $o$ are discriminated on sex (one is male and the other female) and occupational class (one is a semiskilled worker and the other professional) and that traditional evaluations and expectations obtain for these status distinctions. Also, assume that sex and occupational class are directly connected to the task ability: males and professionals are expected to possess the high state of the ability, while females and semiskilled workers are expected to possess the low state. In this case, if the male is the semiskilled worker and the female is the professional, this inconsistent status configuration will generate the least amount of differentiation from this set of two discriminating characteristics. On the other hand, if the male is the professional and the female is the semiskilled worker, this consistent status pattern will give
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rise to the greatest degree of differentiation to be expected from this set of status characteristics (see fig. 1, in which two dimensionality lines have been dotted for general clarity).

Formulating this inconsistency-equality relation for the general case and in the form of an abstract theorem, we have:

**Theorem 3** (status inconsistency and equality). Given a fixed number of possessed states of discriminating status characteristics that are equally relevant to the task outcome, the greater the degree of inconsistency of these status characteristics, the less the degree of differentiation.

**Proof.** As usual, we prove the theorem from a $p$-centric perspective, where $p$ is the actor with the expectation advantage. We are concerned with going from situation $S^*$ to situation $S^a$, where $S^a$ has a greater degree of inconsistency among the discriminating characteristics. Although it is possible to formulate a specific function for the degree of inconsistency, all we require here is the following. Let $A_1, \ldots, A_n$ be the states of discriminating characteristics possessed by $p$. Then the degree of status inconsistency of the characteristics is a decreasing function of $|n_1 - n_2|$ where $n_1$ is the number of $A_i$'s connected to the task outcome via positive paths and $n_2$ is the number of $A_i$'s connected to the task outcome by negative paths.

---

**Consistent Status Situation**

- $D_1(+) =$ states of occupational class
- $D_2(+) =$ states of sex characteristic
- $C^*(+) =$ states of task characteristic or ability
- $T(+) =$ outcome states of task

**Inconsistent Status Situation**

- $D_1(-) =$ states of occupational class
- $D_2(-) =$ states of sex characteristic
- $C^*(-) =$ states of task characteristic or ability
- $T(-) =$ outcome states of task

$p$ is a professional male and $o$ is a semi-skilled female. Sex and occupational class are relevant to task ability. Consistent status characteristics generate greatest amount of inequality between $p$ and $o$.

$p$ is a semi-skilled male and $o$ is a professional female. Sex and occupational class are relevant to task ability. Inconsistent status characteristics generate least amount of inequality between $p$ and $o$.

**Fig. 1**
Because the characteristics are discriminating, the degree of inconsistency will be the same for those states possessed by \( o \).

Each discriminating characteristic is equally relevant to the task outcome, in other words, the lengths of the paths connecting a characteristic to the task outcome are the same for each characteristic. Let the lengths of these paths be \( \ell_1, \ell_2, \ldots, \ell_m \). Hence the strength of relevance for any given positively relevant state is \( 1 - \prod_{i=1}^{m} x_i \), by Assumption 4, where \( x_i = [1 - f(\ell_i)] \). Thus we have

\[
e^+_p = 1 - \prod_{i=1}^{m} x_i^{n_1}
\]

and

\[
e^-_p = - \left(1 - \prod_{i=1}^{m} x_i^{n_2}\right);
\]

hence

\[
e_p = \prod_{i=1}^{m} x_i^{n_2} - \prod_{i=1}^{m} x_i^{n_1} = \prod_{i=1}^{m} x_i^{n_2} \left[1 - \prod_{i=1}^{m} x_i^{(n_1 - n_2)}\right].
\]

In the discriminating situations considered, \( o \) possesses \( n_1 \) states of characteristics which are negatively relevant to \( T \), and \( n_2 \) which are positively relevant. Hence

\[
e_o = \prod_{i=1}^{m} x_i^{n_1} - \prod_{i=1}^{m} x_i^{n_2},
\]

and thus

\[
e_p - e_o = 2 \prod_{i=1}^{m} x_i^{n_2} \left[1 - \prod_{i=1}^{m} x_i^{(n_1 - n_2)}\right]. \tag{2}
\]

Consider now situations \( S^* \) and \( S^\Delta \), where the degree of status inconsistency in \( S^\Delta \) is greater than in \( S^* \). Thus we have

\[
|n_1^* - n_2^*| > |n_1^\Delta - n_2^\Delta|.
\]

Because \( p \)'s degree of inconsistency will increase to a maximum and then decrease as the number of negative characteristics possessed by \( p \) increases, we are concerned here only with cases in which \( p \) possesses at least as many positive as negative states. An exactly similar proof can be constructed for an actor having an initial expectation disadvantage diminished by increasing the degree of inconsistency. In both cases the actors will become more nearly status equals with increased inconsistency. Thus we have \( n_1^* - n_2^* > n_1^\Delta - n_2^\Delta \). We now have to show that \( n_2^* < n_2^\Delta \). Suppose not, that is, suppose \( n_2^* \geq n_2^\Delta \). Then because the total number of discriminating characteristics is fixed, \( n_1^* + n_2^* = n_1^\Delta + n_2^\Delta \), and so \( n_1^* - n_1^\Delta \leq 0 \). From \( n_1^* - n_2^* > n_1^\Delta - n_2^\Delta \) we have \( n_2^* - n_2^\Delta < n_1^* - n_1^\Delta \leq 0 \), giving \( n_2^* <
n_2^A contrary to our assumption. Thus from n_1^* - n_2^* > n_1^A - n_2^A, n_2^* < n_2^A, and 0 < x_i < 1, using equation (2) for S^* and S^A, we have e_p^* - e_o^* > e_p^A - e_o^A, which is the required result.

D. The Relation between Assignment and Relevance Structures

Our two final theorems are "equivalency theorems." They are concerned with demonstrating that fundamentally different types of information structures are in fact closely related to each other and under certain conditions can be substituted for each other without basically changing the power and prestige relations among the actors in the system.

Within the present formulation of the status characteristics theory, there are a number of different types of structures through which actors may be connected to the states of the instrumental task characteristic, C^*. We shall be concerned with examining three such structures which we designate respectively as assignment, relevance, and associational structures. In Theorem 4 we concern ourselves with the relation between assignment and relevance structures, and in Theorem 5 with the relation between relevance and associational structures. These three structures certainly do not exhaust the ways by which p and o can be connected to the states of the task characteristic in status situations, but they do represent some of the most basic and frequently encountered situations.

How may actors be connected to states of the instrumental characteristic? First, the actors may actually possess states of the instrumental task characteristic. In such a situation we say that the states of the task characteristic have been assigned to p and o, and p and o behave as if they have direct information about their ability to succeed at the task. Assume, for example, that p and o know that p possesses the high and o the low of state C^*. In this situation the information structure is such that p and o behave as if p is competent and o is incompetent with respect to the ability required for their task. In an assignment structure the information about task abilities is noninferential and immediate: p has the ability or does not have the ability.

There is a second basic way actors may be connected to the instrumental task characteristic: p and o may be linked to the states of C^* via a number of other status characteristics, either specific or diffuse. That is, p and o may possess states of these characteristics, which, in turn, are directly relevant to the states of C^*. In such a situation we say that there is a relevance structure connecting p and o to the states of the task characteristic. In this case p and o behave as if they have indirect information about their relative abilities to succeed at the task. Imagine, for example, the following situation: p possesses the high states of three specific status characteristics, C_1(+), C_2(+), C_3(+); and o possesses the low states of these characteristics. Further, assume that the states of these characteristics are
relevant in a consistent manner to the states of the task ability. In this situation the information structure is such that \( p \) and \( o \) behave as if they expect that \( p \) will have high and \( o \) will have low task ability on the basis of the specific status characteristics they possess. In a relevance structure the information about task ability is nonimmediate and inferential. It is information about anticipations and expectancies: \( p \) expects that he has the ability or he expects that he does not have the ability to succeed at the task. (See fig. 2, in which two of the dimensionality lines are dotted for ease of reading.)

From an informational standpoint, an assignment structure is a structure representing the task abilities attributed to actors, while a relevance structure is a structure of expectancies that the actors hold about their task.

**Assignment Structure**

\[
\begin{align*}
  & p \rightarrow c^*(+) \rightarrow t(+) \\
  & o \rightarrow c^*(-) \rightarrow t(-)
\end{align*}
\]

\( p \) possesses high and \( o \) low state of task ability. In this situation \( p \) behaves as if he is competent and \( o \) incompetent on task ability.

**Relevance Structure**

\[
\begin{align*}
  & p \rightarrow c^*(+) \rightarrow t(+) \\
  & o \rightarrow c^*(-) \rightarrow t(-)
\end{align*}
\]

\( p \) possesses the high states of three status characteristics. \( o \) possesses the low states of these characteristics. In this situation \( p \) behaves as if he expects, on the basis of information in these status characteristics, to be competent and \( o \) to be incompetent on task ability.

\( c^*(\pm) = \text{states of task ability} \)

\( t(\pm) = \text{outcome states of task} \)

\( c_i(\pm) = \text{states of specific status characteristics} \)

**Fig. 2**
The Status Characteristics Formulation

abilities. We now argue that there exists a crucial relation between these types of structures: for certain basic types of assignment structures there exist corresponding basic types of relevance structures that are, in behavioral terms, approximately equivalent. More precisely, if \( p \) and \( o \) are status unequals in the given assignment structure, their status inequality will be at least as great in the relevance structure; and if they are status equals in the assignment structure, their status equality will be maintained in the corresponding relevance structure. Put another way, the claim is that, for given basic structures of attributed task abilities, it is possible to specify and construct structures of task expectancies that are, in power and prestige terms, near equivalents.

Sociologists have long held that structures of expectancies are related to structures of task assignments. For example, in an earlier formulation of the status characteristics theory, Berger, Cohen, and Zelditch assumed that under specified conditions, structures of task expectancies are transformed into structures of task assignments (see Berger, Cohen, and Zelditch [1972], in particular, p. 246, assumptions 2 and 3). Our object now is to derive from the more basic principles in this formulation a fundamental relation between these types of structures. To do so we must first introduce some technical concepts which will become part of our "relevance-assignment" theorem.

Definition 1. A basic assignment structure is a structure in which the only relevance bonds are those between the states of \( C^* \), the instrumental characteristic, and the respective outcome states of \( T \), the task. Further, there are no referent actors in the structure, and each actor possesses a state of \( C^* \).

Definition 2. A basic relevance structure is a structure in which the following conditions are satisfied: (1) there are no referent actors and (2) there is exactly one relevance bond between a possessed admissible element and a state of the instrumental characteristic \( C^* \).

Examples of basic assignment and relevance structures are given in figure 2. We use the term "basic" here just because relevance structures with shortest paths of length 3 are the simplest cases in which explicit expectancies occur in the path of task relevance. In fact, these basic relevance structures cover a large proportion of the socially significant situations where power and prestige orders are established solely on the basis of explicit task expectancies.

The question now is: given a basic structure of representing task abilities (an assignment structure), can we stipulate and construct a corresponding structure of task expectancies (a relevance structure) that is behaviorally equivalent? Theorem 4 states that this is indeed the case.

Theorem 4 (relevance and assignment). Given a basic assignment structure, there is a basic relevance structure in which the degree of differentiation
between the actors is at least as great as it was in the assignment structure. In particular, if the actors are status equals in the assignment structure, there is a relevance structure in which their status equality is maintained.

**Proof.** There are only three possible basic assignment structures, and for each we can construct the appropriate relevance structure. Case 1:

\[
\begin{align*}
\text{p} &\rightarrow C^*(+) \rightarrow T(+) \\
\text{o} &\rightarrow C^*(-) \rightarrow T(-).
\end{align*}
\]

There is one positive path of length 2, and one positive path of length 3 connecting \(p\) with task outcome; \(o\) has similar negative paths. Now consider a basic relevance structure which is just like the one given in figure 2 but has \(\lfloor k \rfloor\) status characteristics, rather than 3, where \(\lfloor k \rfloor\) is the smallest integer which is greater than or equal to \(k\), the path combination constant. (Again, we remind the reader that the status characteristics may be diffuse or specific.) For example, if \(k = 2.5\), \(\lfloor k \rfloor = 3\). If \(k = 4\), \(\lfloor k \rfloor = 4\). We now have \(\lfloor k \rfloor\) paths of length 3 and \(\lfloor k \rfloor\) paths of length 4 linking \(p\) to the task outcome. All of these paths are positive. By the parallel-paths assumption which we discussed at the end of the section The Status Characteristics Theory, \(k\) paths of length \(\ell\) running in parallel are equivalent to one path of length \(\ell - 1\). Then we have \([1 - f(2)] = [1 - f(3)]^k\), and \([1 - f(3)] = [1 - f(4)]^k\). Hence, as \(\lfloor k \rfloor \geq k\), we have \([1 - f(3)]^\lfloor k \rfloor \leq [1 - f(3)]^k = [1 - f(2)]\) and \([1 - f(4)]^\lfloor k \rfloor \leq [1 - f(4)]^k = [1 - f(3)]\). Using Assumption 4 concerning the aggregated expectation state for paths of like signs, we obtain

\[
e_p^{[R]} = 1 - [1 - f(3)]^\lfloor k \rfloor [1 - f(4)]^\lfloor k \rfloor
\]

\[
\geq 1 - [1 - f(3)]^k [1 - f(4)]^k
\]

\[
= 1 - [1 - f(2)] [1 - f(3)]
\]

\[
= e_p^{[A]}.
\]

(The superscript \([R]\) indicates quantities connected with the relevance structure; \([A]\) indicates those connected with the assignment structure.) Similarly, as all \(o\)'s paths are negative, \(e_o^{[R]} \leq e_o^{[A]}\). Hence \(e_p^{[R]} - e_o^{[R]} \geq e_p^{[A]} - e_o^{[A]}\).

We note two things here. First, the proof makes the standard assumption that \(k\), the path combination factor, is constant. In fact the theorem holds even when \(k\) is a function of a path length \(i\), as long as \(k(i) \geq 1\). In particular, if \(k(i)\) decreases with increasing \(i\), then taking \(\lfloor k \rfloor = \lfloor k(3) \rfloor\) in the proof will give the result. Second, it is obvious that status characteristics can only be possessed one by one, whereas \(k\) is not necessarily integer valued; this difference leads to the lack of exact equivalence when we go from the

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assignment to the relevance structure. Case 2:

\[ p \rightarrow C^*(+) \rightarrow + \rightarrow T(+) \]
\[ o \rightarrow + \rightarrow C^*(-) \rightarrow T(-) \]

In this case, \( p \) and \( o \) are undifferentiated, since they both have one positive path connecting them to the outcome.

The following relevance structure will clearly result in the same undifferentiated behavior:

\[ p \rightarrow C_1(+) \rightarrow + \rightarrow C^*(+) \rightarrow + \rightarrow T(+) \]
\[ C^*(-) \rightarrow + \rightarrow T(-) \]

Case 3:

\[ p \rightarrow + \rightarrow C^*(+) \rightarrow + \rightarrow T(+) \]
\[ o \rightarrow + \rightarrow C^*(-) \rightarrow + \rightarrow T(-) \]

This is dealt with in a way similar to case 2.

E. The Relation between Relevance and Associational Structures

Our fifth theorem is concerned with the relation between relevance structures and associational structures. We have already observed that there are a number of different structures by which actors may be connected to the task characteristic, \( C^* \): in an assignment structure the actors each possess a state of the task characteristic, while in a relevance structure, they possess states of other characteristics that are, in turn, relevant to the states of the task characteristic. We now consider a third basic way in which actors in a status situation may be connected to the states of \( C^* \): they may be linked to those states through referent actors. Specifically, there may exist in the situation referent actors who possess the states of a status characteristic that is possessed by \( p \) and \( o \) and who also possess the states of the task characteristic. If so, the characteristics the actors possess and the task characteristic are associated with each other by virtue of the fact that states of these characteristics happen to be jointly possessed by referent actors in the situation.

Now let us consider two different situations. Situation one is a relevance situation in which \( p \) is a male, \( D(+) \), and \( o \) is a female, \( D(-) \), and both expect that \( p \) will possess the high state, \( C^*(+) \), and \( o \) the low state, \( C^*(-) \), of the task ability because of the sexual characteristic state they possess.

Situation two is an associational structure. In this situation also \( p \) is a male,
$D(+)$, and $o$ is a female, $D(-)$. However, there exist six referent actors: $0_1$, $0_2$, and $0_3$ are males known to possess the high state of the task ability, $C^*(+)$; and $0_4$, $0_5$, and $0_6$ are females known to possess the low state of the task ability, $C^*(-)$. The information that $p$ and $o$ have relating them to the task ability is that, as a matter of contingent fact in their relevant social world, being a male or female is associated with different levels of task ability. What $p$ knows about the relation between sexual status and task ability is: there are others who, like me, are male and are competent and there are others who, like my partner, are female and are incompetent at the task. Thus, in an associational situation, $p$ and $o$'s structure provides information on which status elements are jointly possessed by actors, and how status elements as a matter of social fact happen to be associated with each other (see fig. 3).

We have said that a relevance structure is a structure of expectancies that the actors hold about task abilities, while an associational structure is a structure of actual status-task ability associations that the actors know exist in their immediate social world. We now argue that these two types of

<table>
<thead>
<tr>
<th>Relevance Structure</th>
<th>Associational Structure</th>
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<tbody>
<tr>
<td>$p^+D(+)C^*(+)T(+)$</td>
<td>$p^+D(+)C^*(+)T(+)$</td>
</tr>
<tr>
<td>$o^+D(-)C^*(-)T(-)$</td>
<td>$o^+D(-)C^*(-)T(-)$</td>
</tr>
</tbody>
</table>

$p$ is a male and $o$ is a female. $p$ expects himself to have high and $o$ to have low task ability on the basis of their sexual status.

$p$ is a male and $o$ is a female. $p$ knows as a matter of fact that there are three referent males who have high task ability, while there are three other referent females who have low task ability.

$D(#)$ = states of sex characteristic

$C^*(#)$ = states of task ability

$T(#)$ = outcome states of task

$0_i$ = referent actors

**FIG. 3**
The Status Characteristics Formulation

structures can also be shown to be behaviorally related to each other: for certain types of relevance structures there are associational structures that are, in behavioral terms, near equivalents. Again, this is to be understood to mean that if \( p \) and \( o \) are status unequals in the given relevance structure, their status inequality will be at least as great in the associational structure, and if they are status equals in the relevance structure, their equality is maintained in the corresponding associational structure.

Again it is correct to note that sociologists have previously argued (in one form or another) that structures of actual associations between particular status elements are often related to and give rise to structures of expectancies involving these elements. (For an example of one such argument as it applies to status characteristics and rewards, see Berger, Zelditch, Anderson, and Cohen [1972].) In the present context our objective is again to derive a relation between structures, in this case, between basic relevance and associational structures.

Before stating and proving our "association-relevance" theorem, some further preliminaries are in order.

Definition 3. A basic associational structure is a structure in which there is at least one referent actor, the only relevance bonds are between states of \( C^* \) and \( T \), and there are no states of activated or induced elements in the structure.

One way of obtaining basic associational structures, which is employed extensively in the proof of Theorem 5, is to replace all relevance bonds between states of characteristics by pairs of possession bonds linking referent actors to those states. Let us call any associational structure gained from a relevance structure by such a method a derived associational structure. For example, in figure 3, the associational structure is derived from the given relevance structure by just such a method. Further, that associational structure is symmetric and consistent in the sense of the following two definitions.

Definition 4. A structure is symmetric if each path from \( p \) to the task is either (1) the same as the path that connects \( o \) to the task or (2) matched by a similar path from \( o \) differing only in having oppositely evaluated elements.

Definition 5. A structure is consistent if it is true for every actor that each of his effective paths to a task outcome state has the same sign.

We restrict the statement of Theorem 5 to consistent, symmetric structures. Examples of the types of structures to which this theorem is applicable were given in figure 3. Although we believe the theorem also holds under other conditions, it has still to be shown for the fully general case.

Theorem 5 (association and relevance). Given a basic relevance structure that is consistent and symmetric, there is an associational structure in which the degree of differentiation between \( p \) and \( o \) is at least as great as it was in
the relevance structure. In particular, if the actors are status equals in the relevance structure there is an associational structure in which their status equality is maintained.

Proof. Because this is an existence proof, all we have to do is to find some associational structure which satisfies the theorem. The construction technique used here has the advantage that it can be extended to more complex situations than basic relevance structures. Thus, although in certain cases it may not give the “minimal” derived associational structure, its generality justifies its use here.

All paths in the type of basic relevance structure considered here are of length 3 or 4. Let the number of paths of length \( t \) connecting \( p \) to the task outcome be denoted by \( n_t \). By the symmetry of the situation, the number of paths of length \( t \) connecting \( o \) to \( T \) will also be \( n_t \). The actor \( p \) is taken as having the expectation advantage. Hence all paths connecting \( p \) to \( T \) are positive, and all paths connecting \( o \) to \( T \) are negative. From the definition of a basic relevance structure, there are \( n_3 \) paths of the form

\[ p + C_i(+)* + C*(+) + T(+) \]

connecting \( p \) and \( T \). Replace each relevance bond between \( C_i(+) \) and \( C*(+) \) by

\[ r_{k_1} + \left( \frac{n_4}{n_3} \right)^k \]

referent actors. Each of these actors possesses both \( C_i(+) \) and \( C*(+) \). (Here \( \lfloor x \rfloor \) is again, for any real number \( x \), the smallest integer greater than or equal to \( x \), and in the situation considered, \( n_3 = n_4 \).) There will now be at least \( kn_3 + n_4 \) positive paths of length 4 connecting \( p \) and \( T \). By the parallel paths assumption, these have the same effect as \( n_3 \) paths of length 3 and \( n_4 \) paths of length 4. The aggregated expectation of \( p \) in the partially completed associational structure is already at least as great as it was in the relevance structure. Further, it is clear that the resulting structure is still consistent. Thus extra paths induced by new dimensionality bonds being formed, or previous paths for \( p \) being lengthened by alterations in \( o \)’s path to \( T \), cannot decrease \( p \)’s expectation. Thus for \( p \), \( e_p^{[Ass]} \geq e_p^{[R]} \), where \([Ass]\) refers to the associational structure. An exactly similar construction is used for paths between \( o \) and \( T \). Here, by the addition of extra paths, the expectation of \( o \) is made at least as negative as it was in the relevance structure. Thus \( e_o^{[Ass]} \leq e_o^{[R]} \). We thus have \( e_p^{[Ass]} - e_o^{[Ass]} \geq e_p^{[R]} - e_o^{[R]} \), which is the desired result. For the special case in which \( p, o \) are status equals in the relevance structure, it is sufficient to replace each relevance bond between states of \( C_i \) and \( C* \) by a single referent actor who possesses the states of \( C_i \) and \( C* \) which were previously relevant. Then \( p, o \) are clearly still status equals. This completes the proof.
CONCLUSION

Our task in this paper has been to present and prove five theorems that can be derived from the latest version of the status characteristics theory. These theorems are of two types. The first three, our differentiation theorems, are concerned with describing the way status characteristics, the relations between status characteristics, and the relation between status characteristics and the task affect the degree of equality and inequality that obtains among the members of a task group. The last two, our equivalency theorems, are concerned with describing specific interpersonal structures and the relations of these structures to each other. In all cases, our theorems have been formulated in highly general and abstract terms.

One motive for formulating and proving these theorems is to facilitate the task of testing, elaborating, and refining the general theoretical ideas concerned with the operation of status organizing processes from which these theorems are derived. This is in accord with the methodological position that theorem proving can play a major role in the development of theories and theoretical research programs.

Aside from their utility in developing status theory, these theorems are of considerable substantive interest. Not only do they provide us with a deeper understanding of status organizing processes, but they also have fairly obvious social engineering implications. Theorem 3, for example, is the basis for most of the highly effective "expectation training" procedures that have been developed to "overcome" the operation of status characteristics such as race and sex in biracial and mixed-sex groups. In most of these intervention situations, specific status information that is inconsistent with the race and sex assignments is introduced to modify the effect of the diffuse status characteristic (see, e.g., Cohen and Roper 1972; Pugh and Wahrman 1978; and Webster and Driskell 1978). While Theorems 4 and 5 have not up to now been as heavily involved in intervention research, it is clear that they have definite engineering potentialities. Theorem 4, for example, provides us with information on how to produce structures of task assignments among actors by creating structures of expectancies that are behaviorally equivalent. Similarly, Theorem 5 tells us how to produce structures of expectancies among actors by creating structures of status-task associations that are behaviorally equivalent. These structure theorems may provide us with as powerful engineering principles as the inconsistency-equality principles that we have used up to now. Further, our work shows that these are all theoretically derived principles.

One final observation about the logical nature of our theorems. A standard conception of sociological theorems is that they assert a functional connection between variables—that a change in one quantity is associated with a particular type of change in a second. Our differentiation theorems, in fact, are of this form. There is, however, another important type of claim.
that a theory can make, and that is an existence claim. Our equivalency theorems are of this form. When dealing with interpersonal structures it is important that a theory concerned with such structures be able to make claims concerning the types of structure to which it is committed and the relations between these structures. The fact that this can be done, as demonstrated in this paper, is certainly of specific significance to the status characteristics theory. Moreover, given the widespread concern among sociologists with accounting for the presence of different types of social structures and with describing relations between these structures, the very existence of our results is also of general theoretical significance.

REFERENCES


