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DISCREPANCY MODEL

by

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THE DISCREPANCY MODEL

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PREVIEW

CHAPTER ONE

THE RANK INCONSISTENCY HYPOTHESIS: A RELATIONAL MODEL

There is something fascinating for the sociologist about the rank inconsistency hypothesis. Simply stated this hypothesis is that above and beyond the direct influence of major stratification dimensions (such as the status, power, and economic structures outlined by Weber) on social behavior, the relationship of these dimensions to each other (i.e., the way they fit together in a social system) may have an independent impact on social behavior. That is, it is expected that while the "absolute" amount of status or power or economic resources will certainly affect an actor's or a group's behavior, it is expected that a discrepancy among these dimensions will also affect behavior. For example, an actor's level of satisfaction in a group setting will depend to some degree upon the rank of his position in the group (such as his occupation) and the economic rewards he receives (such as his salary). The rank inconsistency hypothesis, however, goes on to suggest that in addition to these factors the level of satisfaction of the actor will also be influenced by the relationship these factors have to each other--i.e., whether the actor's salary is "too much" for his position, "too little" for his position, or "just right."

What is interesting to the sociologist about all this is that the consistency or inconsistency, alignment or non-alignment of ranks on stratification dimensions is a purely relational phenomenon--a truly sociological conceptualization. Whereas an individual's

power or status rank might be construed as a psychological (or individual) characteristic (i.e., he is more or less powerful; he is a person of higher or lower status), the idea of congruence among these dimensions is necessarily a relational concept. In the logic of science relational phenomena have a special significance. Relational phenomena are the stuff from which new ("higher") levels of analysis are made. The relationships among the units of analysis at one level emerge as the units of analysis for the next level. Thus, the sociologist is as sensitive to the importance of relational phenomena as scientists in any other field. To put it simplistically, the emergence of a level of analysis occurs when wholes become more than the sum of their parts. The physicist's atoms become the chemist's molecules. These molecules increase in complexity until they become living organisms for the biologist. New relationships emerge at the physiological level to produce consciousness, etc. Of course, some dimensions translate directly, with varying emphasis, from one level to the next (e.g., mass, time, distance, etc.), but many times the more interesting phenomena are the emergent ones.

The present work has grown out of an interest in the rank inconsistency hypothesis. However, it would be more precise to say that it has been the inherent theoretical and methodological difficulties with this orientation that have been the central concern. As presented above, and as many sociologists have interpreted Lenski's (1954, 1956) statement of the rank inconsistency hypothesis, the hypothesis appears to be straight forward. It isn't. Fundamental problems with the logic of the rank inconsistency model were exposed

by Blalock (cf. 1966) and on a more empirical level the explanatory power of the model has generally proved to be negligible¹ (cf. Jackson and Curtis, 1972). What is the significance of this model and why has it failed?

The significance of the rank inconsistency model has been alluded to above. Relationship models of this kind are significant in the process of scientific theory building. Of particular importance to sociology, though, is that the rank inconsistency model is a type of model widely used in sociological theory in a more general form. I will refer to this general form as the discrepancy model. It will be argued that the general discrepancy model is the underlying framework or logic for such broad theoretical perspectives as anomie theory, balance theory, and cognitive consistency theory, among others. If this is true, and the logic of the discrepancy model is problematic, then there may be serious question as to the validity of the foundations of several major sociological orientations. Thus, concern with attacks upon the validity of the rank inconsistency model present an avenue for exploring much broader theoretical issues. While the end product of this work is an attempt at generating a rank inconsistency model which is better integrated into stratification theory, the motivation behind the development of this model is primarily to propose a generalized solution to the problems inherent in discrepancy models. It will be argued at length that the resolution of the discrepancy issue calls for a careful construction of systems or sources of

¹Some recent research (Hornung, 1977), however, has produced evidence of fairly large amounts of explained variance in terms of psychological stress.

reference to which theoretical processes are related. Discrepancy models, which are rendered indeterminate because of their lack of a reference source, will be viewed as valuable precursors of scientific theory. Scientific theory requires a frame of reference, but establishing a meaningful reference source requires the development and specification of theoretical processes. Thus, discrepancy models occupy a special place in the evolution of scientific theory, in that the dilemmas they pose direct the development of theory. They call for a reexamination of relevant processes, and they point to the need for adequate frames of reference which allow these processes to be determinate.

There is a special case of the above argument in which the notion of inconsistency itself plays an active role in the development of science. The resolution of inconsistency within the cognitive construction of science is a major undertaking. The fundamental test of scientific theory as a useable cognitive system (i.e., a "good" construction of reality) rests with its ability to arrive at (1) consistency among the processes it uses to describe the current conception of reality, and (2) consistency between these processes and the empirical data they predict. The problem here--and this will be expanded upon in the pages that follow--is that in order to resolve an inconsistency of any kind, an adequate system of reference has to be established. Prior to this however, a system of reference is required to define an inconsistency. Without a reference all that exists is indeterminate. Kuhn (1962) goes so far as to develop a theory of the development of science on these ideas. Essentially he

argues that paradigms (i.e., consistent sets of processes which construct and explain reality) evolve when data and processes begin to emerge that are inconsistent with a given paradigm. Gradually a new paradigm emerges (i.e., in the language being used here--an adequate system of reference is established) which restores consistency and the process begins again.

It makes sense then for social scientists to recognize the potential points of inconsistency within the system of reality they have constructed--the social system--and to postulate problems for system actors concerning these inconsistencies. In sociology, possibly the most well developed theoretical and empirical area is stratification. It was within this area that measurement and conceptualization were sufficiently advanced to discover that the simple rank inconsistency model was indeterminate. Despite the obvious problems with this model it has not been abandoned, partly because it is too closely tied to our conceptualization of stratification, and certainly because it represents a type of model--the discrepancy model--which is a model used throughout the discipline.

Purpose

The purpose, then, of this dissertation is three-fold: (1) to explore the significance of discrepancy models and systems of reference at greater length, (2) to specify the available strategies for restating the rank inconsistency model in a determinate manner through the development of an appropriate system of reference, and (3) to specify consistent processes of stratification that are implied by the referenced rank inconsistency model.

The Discrepancy Model

Before getting into the reasons why the rank inconsistency hypothesis as presented above is problematic, it is appropriate that the more general discrepancy model (from which the rank inconsistency model is derived) be presented first.

The literature of sociology and social psychology contains a number of theories that are similar in form. This form may be referred to as a "discrepancy model" and typically involves a meaningful difference (or mismatch or incongruence) between two valued elements (e.g., objects, ideas, ranks, etc.). The discrepancy between these two elements is then felt to induce a malaise (such as, feelings of powerlessness or meaninglessness) in actors associated with the discrepancy. A more complete statement is that the greater the amount of discrepancy between the valued elements, the greater the malaise. At one extreme of this relationship--where the amount of discrepancy is minimal--we have congruency and we assume that the malaise is either minimized or is replaced altogether by some kind of a sense of well being.

The factors which make up this general discrepancy model, then, are:

- (1) a set of valued elements (e.g., status dimensions)
- (2) a set of possible relationships among these elements
(e.g., consistency--inconsistency), and
- (3) one or more dependent factors (e.g., degree of satisfaction)
that are related to the relationship among the values elements.

The typical expression of this model is: the greater the discrepancy between the valued elements the greater the dissatisfaction

(sometimes with the additional: controlling for the effects of the valued elements).

The variations of this model are numerous and diverse. However, it is possible to see that many social science theories are, despite their variations, of the same basic form as the general discrepancy model. Since the variations of this general model tend to obscure the underlying structure it is necessary to discuss a few of these variations in order to illuminate the underlying general discrepancy model upon which they are built.

One common variation, and the most obvious, is to interchange the different types of valued elements being compared with one another. That is, the model may be applied to differences between ranks (rank inconsistency), ideas (cognitive dissonance), levels (individual vs. social, as in alienation), etc. This criterion is the one that is traditionally evoked to label these theories. For example, focusing on the elements of "investment" and "profit" is Distributive Justice (Homans, 1961). Concern with discrepancy between "goals" and "means" yields Anomie Theory (Merton, 1968).

Another variation on the model is to allow for causality in either direction. The model may be used to explain that a state of congruency is being worked for because greater congruency (i.e., less discrepancy) is associated with a greater sense of well being (i.e., less malaise), or the model may be used to explain that a state of discrepancy is being avoided because greater discrepancy (i.e., less congruence) is associated with greater malaise (i.e., less of a sense of well being). That is, the direction of causality implied determines whether the theory at hand is being used to focus

on the discrepancy issue or on the consistency issue. This variation divides discrepancy theories into two camps. The first includes congruence, consistency and balance theories, such as Heider's (1946) balance model. The second involves discrepancy or inconsistency theories per se, such as rank inconsistency (cf. Lenski, 1954).

A third variation worth mentioning is the differential emphasis which may be placed on what stage of the model is being examined and amplified. One might question whether the actors are aware of the discrepancy, whether the malaise is interpreted within the context of the particular discrepancy, or which of the two valued elements will be changed to correct the discrepancy. This third variation occupies much of the literature attempting to pursue the implications of the various specific theories associated with the general model.

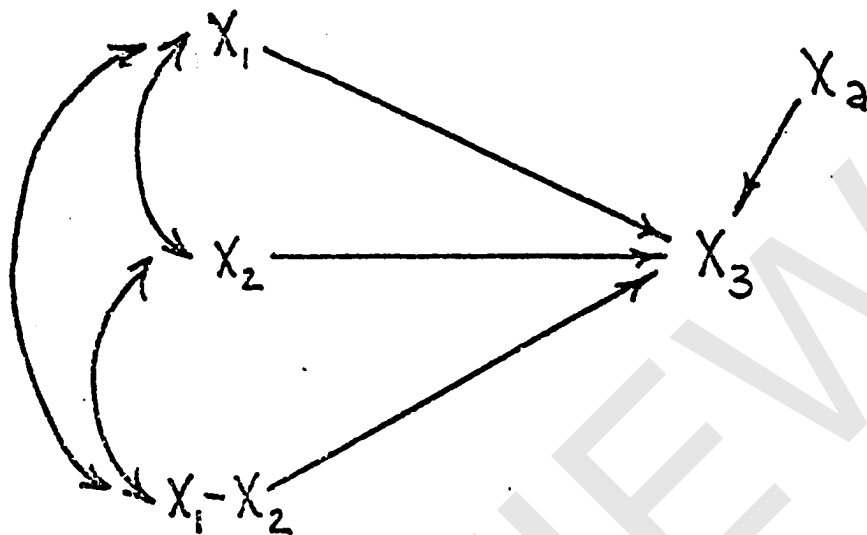
Theories and specific pieces of research may be fitted into this schema at will, but it is not the purpose of this discussion to create a typology of discrepancy theories. Rather, the purpose of suggesting this schema is to argue that there does exist a pervasive discrepancy model in the social science literature upon which major theoretical orientations (such as anomie, balance, and rank inconsistency) theories are based. Later it will be demonstrated that when this model is reduced to basics there are certain inherent difficulties (indeterminacy) because of its structure--mainly, a problem of reference. The relative success of these theories has probably depended not only on their appealing reflection of some fundamental social processes, but also upon their ability to obfuscate the fact that they are based on an indeterminate model.

If the argument that anomie and rank inconsistency, as well as other related theories can be reduced in their essentials to the discrepancy model holds, it follows that they will have to deal with the problem of reference inherent in that model. However, in order to make this connection, the case for the problem of reference in the discrepancy model will have to be presented. As it may already be anticipated, this argument will center around the difficulties in postulating relationships between valued elements without benefit of a fixed reference system.

Indeterminacy in the Discrepancy Model: The Identification Problem

What is wrong with the discrepancy model--or more specifically, the rank inconsistency hypothesis? Blalock (1966, 1967) irrefutably demonstrates that the discrepancy model suffers from the "identification problem". In the simplest case the rank inconsistency hypothesis can be reduced to a causal model with three independent variables and one dependent variable. Two of the independent variables represent two stratification dimensions (ranked valued elements) of interest--say, an actor's occupation (X_1) and his income (X_2). The third independent variable is the rank inconsistency measure. Inconsistency is represented by the difference between the two stratification dimensions ($X_1 - X_2$). That is, the individual's occupation rank minus his income rank. Each of these independent variables are predicted to have direct and indirect effects upon a dependent variable, say, political liberalism, (X_3). See Figure 1 below.

The problem is that it is not appropriate merely to assess the effect of the rank inconsistency measure on the dependent variable



where X_1 = occupation
 X_2 = income
 $X_1 - X_2$ = occupation-income
 X_3 = political liberalism
 X_a = residual

FIGURE 1: Example of underidentified version of discrepancy model.

(as was done by Lenski) because the immediate objection arises that the alleged effects of the inconsistency measure are confounded with the separate effects of the dimensions used to construct the inconsistency measure. That is, if it is predicted that rank inconsistency inclines the actor toward political liberalism, how is one to know to what extent that his political liberalism comes from his occupation rank or his income rank? Therefore, it is necessary to simultaneously control (statistically or otherwise) for the separate effects of occupation and income while examining the effect of the inconsistency (between occupation and income) upon political liberalism. All of this appears quite plausible until it is discovered that the path estimation equations used to solve for statistical effects of the independent variables on the dependent variable are indeterminate. That is, an infinite number of solutions obtain for the equations instead of only one, as was expected. The mathematical explanation for this is that multicollinearity among the equations (i.e., one of the equations is a direct linear function of the other two) has left us with a situation in which we have too many "unknowns" and not enough "knowns" to solve the equations. In short, the rank inconsistency hypothesis is "underidentified".

An analogous way of interpreting the "identification problem" is discussed by Hope (1975:325-326),

The essence of the difficulty may be grasped by considering the case of just two status axes x_1 and x_2 . The linear additive model purports to test for the presence of a status discrepancy effect by first of all computing the regression of a dependent variable y on x_1 and x_2 ,

$$y = b_1x_1 + b_2x_2$$

and then adding a discrepancy term to the equation,

$$y = b_1x_1 + b_2x_2 + b_3(x_1 - x_2).$$

The problem is that the estimates y yielded by the second equation* are identical with those yielded by the first. The covariance matrix for the three terms x_1 , x_2 , and $(x_1 - x_2)$ is singular and hence no unique set of regression coefficients b_1 , b_2 , and b_3 is specified by the second model. We may employ any one of an infinite number of sets of coefficients, all of which yield the same estimates as one another and the same estimates as one another and the same estimates as the first equation.

*Note this formulation differs from the usual one in that it focuses primarily on the identity of the estimated values of the dependent variable under the two equations, rather than on the indeterminateness of the estimates of the regression coefficients b_i in the second equation. This shift in emphasis was introduced in my previous paper (Hope, 1971).

A more complete mathematical explanation of the identification problem may be pursued through Blalock (1966, 1967), Hope (1971, 1975), Hodge (1970) and elsewhere in standard statistical texts, but for now let us continue the discussion of the rank inconsistency hypothesis in a somewhat different format. Certainly a mathematical interpretation (say, in the form of a series of equations) of the workings of the inconsistency model, or in this case the invalidity of it, provides for the most elegant analysis because of the abstractness of the mathematical interpretation. However, another (and equally valid) way to think about relationships is to model these relationships in a more concrete form such as a geometric spatial diagram. The specific advantages of rendering theory in a spatial format will be discussed at greater length but one specific advantage needs to be mentioned now because it summarizes the underlying logic and strategy for making sense out of the discrepancy model. The basic argument for why the discrepancy model has given us so much trouble, and also, how we can

restate the model in such a way so as to avoid this trouble, revolves around visualizing the discrepancy model as a relativity problem. And if you are anything like me the mechanics of relativity have to be seen to be believed. The discrepancy model will be stated in relativistic terms and later it will be shown that the most useful solution to the identification problem can best be analyzed as a relativity issue. However, relativity itself is at times a difficult and elusive mental construct to work with. For this reason a short digression into what I consider to be the proper use of the concept is in order.

Relativity

Relativity has earned a popular place in the common speech owing to its powerful influence in the theoretical development of physics (e.g., Galileo's Symmetry Principle, and Einstein's Special and General Theories of Relativity) as well as the virtual impossibility of avoiding inherently relativistic concepts in the social sciences (e.g., the anthropological concept of "culture"). Unfortunately relativity can be used improperly in such a way as to negate the more fundamental insights offered by the concept. The problem stems from our erroneous tendency to think of things (either social or physical) "out there" as being characterized by relativistic attributes. The proper use of relativity, on the other hand, has to do with the ways which we have to describe and predict the events that happen "out there", given the constraints imposed by our perspective. For example, we may observe two objects passing each other in reference-less space as moving relative to each other, or, behaviors

as being measured "good" or "bad" relative to their cultural context. In either case, whether we are measuring the speed of objects or the value of behaviors, it is apparent that our choice of reference points determines our measurement. Hence, relative speed is measured by positioning ourselves on one of the objects and noting the passing speed of the other object (or conversely, the speed at which we pass it). The point is that the observations that we make about things "out there" are not really properties of those things at all, but rather they are measurements we make about those things given a specific point of reference. Similarly we can state that the "goodness" or "badness" of any given behavior is relative to the cultural context of that behavior because we note that the evaluation (i.e., moral measurement) of that behavior varies with the cultural reference used to make that judgment. In general then, the relativistic orientation emphasizes that "what is" includes, or, at least, relies on the position from which we do our measuring as opposed to stating that we can make observations about what is "really" out there in any absolute sense.

Similarly, the relationships we observe between measurements are also a function of our point of reference because of the inherent relativity of the measurements that make up the relationship. For example, (see Landau and Rumer, 1961), let us imagine two posts stuck in the ground and separated by some distance. We may now ask the question "Are they lined up?" Obviously the relation, "lined up-ness", is a function of our position relative to the posts. If we look at the situation from the perspective in which one post is

directly behind the other then the answer is "yes." If we move off to the "side", or if one of the posts is "moved", then they are no longer lined up, but it does not make sense to ask "Where did the lined up-ness go?" Confusion arises in this situation only when we fail to specify our point of reference, or, worse yet, when we make inadvertent or unspecified assumptions about points of reference and then change them arbitrarily.

Such a transparent example as this last one may seem to turn relativity theory into a trivial exercise. However, we should not be so quick to make that judgment unless we are also willing to describe the status inconsistency literature to date as a child's game of "now you see it, and now you don't." Rank inconsistency is a relationship (just like "lined up-ness") constructed from the measurement of statuses (i.e., the positions of the posts) and it should not be any wonder to us that when we control for the separate statuses that make up that relationship (i.e., move, or more precisely, remove the posts) the relationship disappears.

The following sections are devoted to restating the discrepancy model, its problems and solutions, in geometric spatial formats so that it will be possible to literally see how relationships like rank inconsistency change as we walk around them.

A Spatial Representation of the Discrepancy Model

A great deal of intuitive insight may be gained from spatially oriented diagrams and they will be used throughout this discussion for convenience in modeling the theoretical orientations presented.

The essential elements of the discrepancy model in general, or the rank inconsistency hypothesis in particular, may be modeled by visualizing two objects (X_1 and X_2) moving toward each other on parallel courses in two dimensional space². See Figure 2 below.

This discrepancy model could be used to "explain" the difference between the two objects, that is, the amount of distance by which it appears they are going to miss each other. As indicated in the diagram, the distance between the two objects at their closest point of approach will be 10 cm. The question addressed by the discrepancy model is how much of the apparent miss can be attributed to (1) X_1 being off course, (2) X_2 being off course, and (3) both X_1 and X_2 being off course in relation to each other? Without any other sources of reference the problem is obviously indeterminate. There is simply not enough information to come up with a unique solution to the problem. Even though the amount of the miss may be significant for any number of practical reasons (e.g., missing a rendezvous in space could ruin your whole day) it is not possible with the information given to uniquely partition the miss into factors, 1, 2, 3 mentioned above. Put another way there is no way to decide that X_1 being off 2 cm., X_2 being off 3 cm., and both being off 5 cm. (see Figure 3, page 18) is preferable

²For reasons that will be explained in depth later, this model is presented in terms of two dimensions even though only one of these dimensions is really being discussed. In essence, this is only a one dimensional model because only the dimension of the distance between X_1 and X_2 is allowed to vary. The other dimension is fixed and merely provides a background for the dimension under consideration.

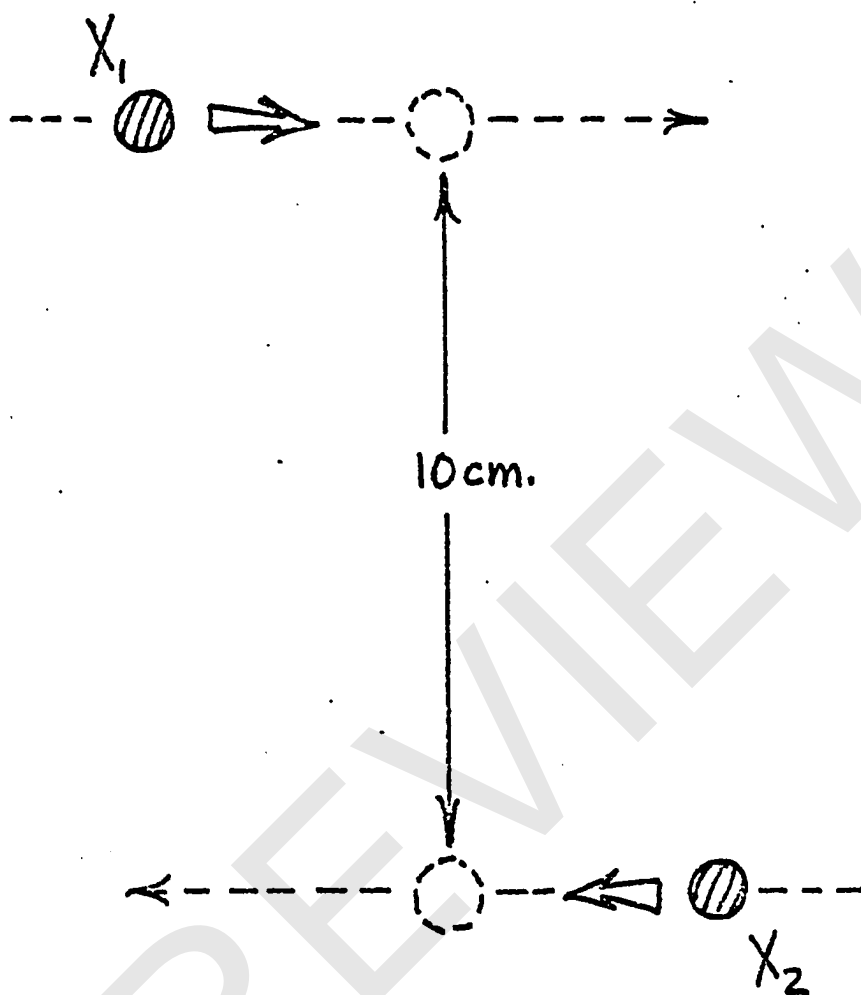


FIGURE 2: Two objects missing each other by 10 cm. illustrating the simplest case of the discrepancy model without reference.

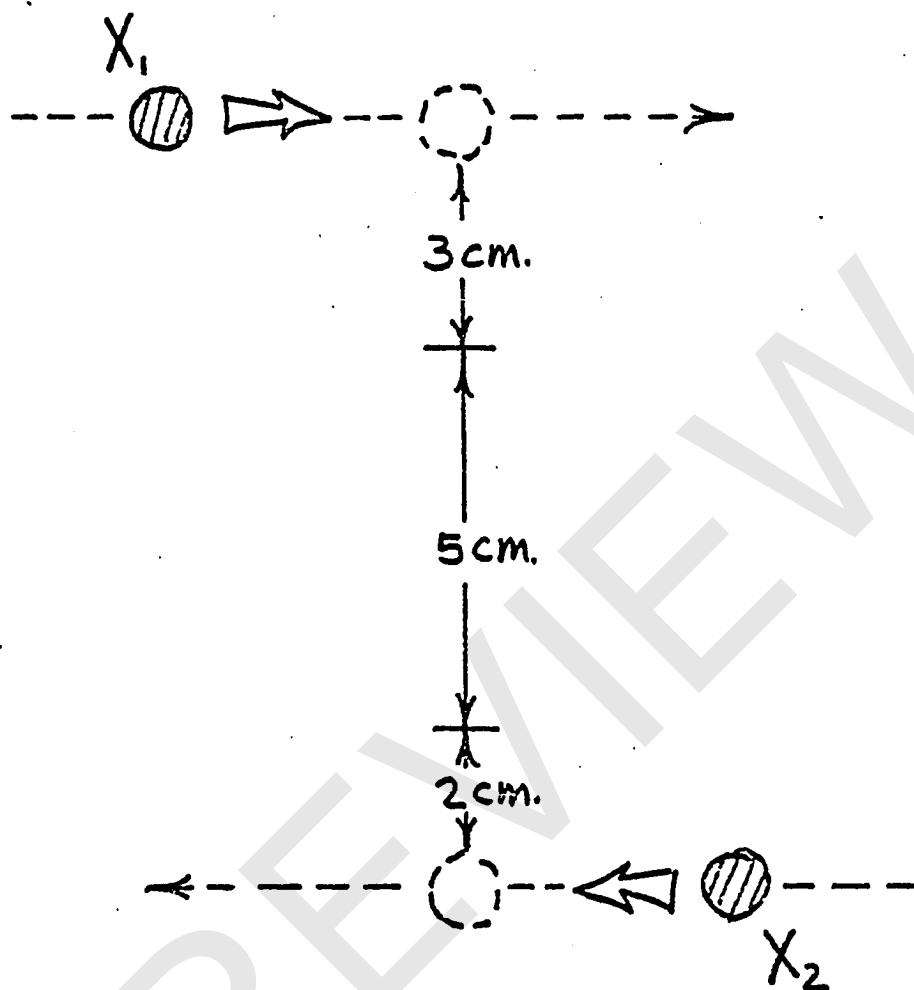


FIGURE 3: Simple unreferenced discrepancy model showing one way of partitioning the discrepancy.