

THE METHOD OF PATH COEFFICIENTS

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Introduction

The method of path coefficients was suggested a number of years ago (Wright 1918, more fully 1920, 1921), as a flexible means of relating the correlation coefficients between variables in a multiple system to the functional relations among them. The method has been applied in quite a variety of cases. It seems desirable now to make a restatement of the theory and to review the types of application, especially as there has been a certain amount of misunderstanding both of purpose and of procedure.

Basic Formulae

The object of investigation is a system of variable quantities, arranged in a typically branching sequential order representative of some chosen point of view toward the functional relations. Such a system is conveniently represented in a diagram such as Fig. 1. Those variables which are treated as dependent are connected with those of which they are considered functions by arrows. The system of factors back of each variable may be made formally complete by the introduction of symbols representative of total residual determination (as V_0 in Fig. 1). A residual correlation between variables is represented by a double-headed arrow.

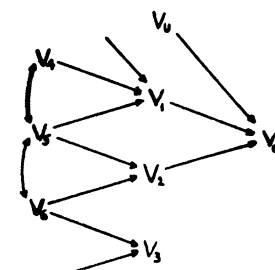


FIG. 1

It will be assumed that all relations are linear.¹ Thus each variable is related to those from which uni-

¹ Relations which are far from linear with respect to the absolute values of the variables may be approximately linear with respect to variations, if the coefficients of variability are small. Thus if $V_0 = f(V_1, V_2, \dots, V_n)$,