

CHAPTER 11

DESIGN RULES FOR ORGANIZATION STRUCTURE PERFORMANCE PROPERTIES

1. A Process of Design

In a task as complex as that of designing effective and efficient organization structures, an efficient process of design is likely to be one made up of a series of steps. First, the technology and outcome function are identified, and the components of the environment are derived and segmented in the manner described above. The parts of the technology of the whole and of the outcome function that are relevant to each segment are identified. At the end of this step there should be an environment, a technology, and an outcome function for each segment of the structure. The second step is to derive from these and the rules of design, which are themselves derived from the propositions of the analysis, the levels which one wants the properties of the organization structure's performance to have. The third step of design is to identify the set of structure property levels which the structure needs in order to perform as desired. The fourth step is to take these derived levels of the structure properties and derive from them the design or specification of the components of the structure itself. Because the properties of the structure are defined in terms of its components, the move from the levels of the properties to a design of a structure is one of translation rather than derivation. What we now have is a set of levels of desired performance properties, and a set of properties of a structure that has the performance that has the desired property levels. Because this set of structure properties is obtained without consideration of structure costs, there will be a series of steps that include the repetition of this fourth step. We call these two sets the "starting" sets of the design process.

Let us call the set of desired performance property levels the P/set, and the set of structure property levels designed to give that performance the S/set. We now have the starting P/set and the starting S/set that is derived from it. The fifth step is to consider the costs of this S/set and adjust it. The object is to search the neighborhood of the

S/set we now have from the previous step for other sets that cost less money, involve lower structure costs, and yet yield a P/set that has outcomes very close to those of the set we started with. This is a process of making marginal variations in the S/set and estimating the changes these bring about in the P/set. Next, the change in cost of the changes in the S/set are compared to the changes in the outcome of the P/set. If these cost and outcome changes are acceptable, the whole process starts with the new S/set. If the changes are not acceptable, the process starts again with the original S/set. When the variations no longer produce changes large enough to pay for the next variation, we stop the process and adopt the P/set and S/set we have. These are the “ending” sets of the process.

What we now have is a set of performance property levels and the fully adjusted set of structure property levels that is derived from it. Next, we go back to the initial P/set obtained in step three, and search its neighborhood for other sets. The search starts somewhere close to the original and derives from it a set of structure property levels. Next, the search involves a series of adjustments on this set that are analogous to those done on the first set of derived structure property levels. This means that step four as described above is now repeated. These marginal changes are used to derive the changes they imply need to be made in the S/set, and the outcome and cost changes that result are estimated. If these two changes improve the relation between outcome and cost, and are acceptable, the new P/set is used to start the process all over again. If the changes are not acceptable the process then starts with the first P/set. As in step four, results of marginal variations in the set on which we are focusing, the P/set, become such that further variations in it are no longer worth making.

In summary, the design steps for one segment of the environment are in a sequence where the earlier step produces the facts to be used to perform the next step. Performing the activities of each step involves using design rules which turn the required results of the previous step into another set of required facts. Design rules which are derived from the analysis made earlier are derived below. These rules guide the acts involved in the steps of the design process. They are:

1. Identify an appropriate segment of the environment, the relevant segments of the technology and the outcome function, and the levels of the properties of all three.
2. Derive the desired set of performance properties for the organization structure. We call a set of performance property levels a P/set .