THE CLASSIFICATION OF CAREER PLANS

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The increasing need for guidance and the continued shortage of trained counselors make it imperative that more efficient procedures be found for helping students make educational and vocational decisions. Improved use of tests and modern data-processing methods suggest new approaches. A computer-measurement system for guidance was recently proposed (Cooley, 1964) which requires a method for classifying career plans. In this paper the problem of developing a taxonomy of career plans is considered in more detail.

Most previous classification efforts in this area have been concerned with the problem of classifying workers, so it is useful to begin there. If each worker's position is taken as distinct, unique, unrelated to any other position, perception of this world of work disintegrates into complete meaninglessness. If each worker, for example, each farmer, were considered as a wholly different individual, he would not then be a farmer, for "farmer" is a collective concept not applicable to a single object considered without relationship to any other (Simpson, 1961).

Fortunately, training and functional similarities have made it possible to define clusters of similar positions and call them an occupation. The Dictionary of Occupational Titles (U. S. Employment Service, 1964) tells us that there are about 23,000 different occupational titles. Thus, there are at least 23,000 ways in which clusters of jobs or positions differ in some respect. Since 23,000 titles is still too large a number to work with, most workers in this area attack the problem of classifying occupations by combining these 23,000 titles into groups or clusters by discovering certain similarities and ignoring certain differences among the specific occupations.

One way of viewing the occupational classification problem, then, is to find clusters of occupations with common properties. There are many different types of properties which one might choose to consider.

One can analyze job requirements using data similar to those presented in the U. S. Department of Labor estimates of worker trait requirements, analyzing these to determine functional similarities through some type of cluster or factor analysis. Another empirical approach might be to analyze student perceptions to determine clusters of occupations which are viewed similarly by the people who have to make distinctions among them as they move into the world of work. Yet another approach might be to take a large aptitude-personality battery and administer it to a large number of workers, classify their specific occupations through some technique such as the Dictionary of Occupational Titles, and then use a type of cluster analysis to find those occupations which tend to overlap in terms of worker traits.

One might even do all of these, arriving at a scheme through an attempt to find the common groupings of the various approaches; however, before embarking on such a mammoth empirical undertaking, it may be more profitable to consider the experiences of other sciences with similar classification problems. One reasonable approach might be to turn to biology, which has struggled with the problem of classification far longer than the very new science of vocational psychology.

First, a brief summary of some of the principles of biological classification might be useful. A major function of classification is to construct classes about which we can make generalizations. The classes are constructed in connection with a particular purpose which depends on the kinds of generalizations that are considered pertinent. Some classifications pertain to a wider range of inductions or to more meaningful generalizations than others, and are in that sense "better," or more useful. There cannot be one ideal and absolute scheme of classification for any particular set of objects. There must always be a number of classifications, differing in their basis according to the purpose for which they have been constructed (Simpson, 1961).

Although these four principles certainly do not provide a formula for arriving at a classification scheme, they are useful in thinking about classification problems. One of the main conclusions from those principles is similar to that pointed out by Bruner et al. (1958); namely, that the test of the classification scheme is the predictive benefits that result from the use of invented categories, the predictions being based upon the generalizations made possible by the classification scheme.

Biology, as other sciences, has had and continues to have a variety of taxonomic systems. An example is the work of Adanson in the later eighteenth century. His system of plant classification builds up empirically from species to genus, to family, etc., by examining the shared characteristics of species to form genuses, examining genuses to form families, etc. Cuvier, on the other hand, established ranks of attributes and developed a hierarchical scheme on that basis. The problem was that the ranking of the attributes was arrived at in a rather arbitrary fashion. An alternative to hierarchical classification is the key system. Here, the two terms define sets of the same rank, and classification is based upon the intersection of sets.

Another system of classification is ecological. The scheme is based upon living sites or other environmental or situational factors. Thus, we have swamp plants and desert foxes. Also, zoologists have tried a teleological scheme in which animals are classified based on their usefulness to man; for example, pets, meat animals, draft animals, etc.

From all of these many classification schemes there emerged eventually a dominant procedure, which was "an elegant union of a prioriism and empiricism" (Simpson, 1961). The classification system which "won out" was based on the existence of a set of principles and body of theory external to the classification problem, which could be used to determine the priorities in a hierarchical system. The external principles and theories, of course, were those of evolution. Thus, a classification scheme has emerged which is based upon evolutionary theory and empirical work.

The questions then become, "What set of principles or theory can provide the external basis for a classification of occupations? What theory can give a classification system some meaning?" One possibility

is career-development theory as it is currently evolving. A classification scheme is needed which will be useful in working back and forth between career-development theory and empirical research of the career-choice process.

Ginzberg, for example, has proposed a developmental approach to a general theory of occupational choice (Ginzberg et al., 1951). His work can be used to illustrate how theory can suggest priorities in a hierarchical classification scheme. When studying career development, the first time the classification of occupations becomes necessary is during the tentative period when the individual finally recognizes the problem of deciding upon a future occupation. The first stage in Ginzberg's tentative period is the interest stage. Thus, the first variables or attributes which we would use in a hierarchical classification scheme would be based upon interest considerations. Gross categories of occupations based upon interest would be sufficient at this stage, since those are the main types of distinctions which children themselves make. Then, sometime during junior high school children enter what Ginzberg calls the capacity stage. The reason for this happening at junior high school may simply be that this is the time at which the first educational decisions are forced with respect to college or not. Thus, the second level for classifying occupations is made on ability considerations.

Next, values become a consideration during senior high school and college. Thus, the third level in our classification system makes distinctions among occupations based on the specific differences with respect to values; for example, the consideration of differences in income, length of time of formal education required, situational factors such as living in the city or the country, and whether satisfactions are to be derived primarily from work itself or from monetary consideration.

The effort here is not to promote Ginzberg's theory of occupational choice, or even his stages, but simply to illustrate the fact that a classification system must be related to the theoretical approach which the investigator assumes. This has not been made particularly clear in previous discussions of the classification problem.

Perhaps, it would be useful at this point to consider current research in career development to see how this approach might work in practice. A recently completed five-year overlapping longitudinal study is useful for illustrative purposes (Cooley, 1963). In this scientific-careers study, the youngest of the five different sample age groups consisted of about 150 fifth-grade boys with above-average general intelligence. In this young group, almost no discriminations were possible in terms of what one might call level or capacity. Their plans did in fact seem to be based primarily on interest. At first, the only stable distinction among plans was the dichotomy science-technology versus nonscience technology. Of course, most of the boys gave more specific plans, but the boy who talked civil engineering one time in an interview perhaps was talking physics or even biochemistry in a subsequent interview. Also, those who said lawyer one time may have been talking business the next time. There was a great tendency of stability within this very broad dichotomy, science technology or not. Since the boys were not making finer discriminations, it was unnecessary for the classification scheme to do so either.

During and following junior high school it was possible to detect ability discriminations. For example, some of the science-technology group began to talk about professional careers in this broad area and others began to talk about being electricians or mechanics. Here again the ability discriminations were very gross, so that up through high school only four occupational categories were needed; namely, (a) college in science technology, (b) college in something other than science technology, (c) technology without college, and (d) neither college nor technology. The students did not seem to make consistent finer discriminations, nor were generalizations about finer distinctions possible. That is, it was not possible to find attributes which could significantly distinguish between those planning to be lawyers and businessmen or between future chemists and engineers. During college it was possible to make finer distinctions with respect to college science majors. These distinctions were based primarily on what might be called values, as measured, for example, by the Allport-Vernon-Lindzey Study of Values. That is, we could make finer distinctions among this broad occupational area, science technology, because the students themselves were now making, through reality testing perhaps, finer distinctions within science and technology.

The above discussion suggests a possible hierarchical classification of occupations. The main point is that it illustrates the interaction between developmental theory, the classification problem, and empirical research. This interaction is viewed as essential. A scheme like this may finally make it possible to study both choice and development.

ACKNOWLEDGMENTS

The work reported here was begun while the author was Research Associate at the Harvard Center for Research in Careers. My current research is supported by U. S. Office of Education Cooperative Research Project Number 2333 (Project Talent).

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