Science and the Study of Mankind[1]

Laura Thompson

Institute of Ethnic Affairs, Washington, D. C.

THE REVOLUTION that has been taking place in science in the last century is apparently changing our conception of reality and the function of science regarding it. Indeed it seems to be overthrowing what we regard ordinarily as plain common sense: namely, the view of reality that is deeply embedded in, and perpetuated by, the peculiarities of Western European languages.

As is well known, our bias is related to the subject-predicate bifurcation of our sentence structure, which makes it impossible for us to formulate a sentence without a substantive either stated or implied, and which compels us to separate noun from verb, actor from action, form from function, etc. This linguistic peculiarity helps to condition us to the twofold slicing of experience so characteristic of Western civilization: i.e., our traditional division of "matter" from "mind," and our notion of matter as in itself inert and acted on only *externally* by forces. These and other grammatical forms characteristic of Western European languages are now recognized as having played an important role in structuring our world view, which we generally accept as simple common sense (*4*; *13*, p. 53; *15*; *16*).

On the other hand, fundamental to the revolution in modern science seem to be the following basic assumptions (*4*, p. 63; *10*; *13*, p. 90; *17*): 1. The external world is real and exists quite apart from any esthetic intuitions or logical assumptions on the part of man. 2. The external world is ordered and bound by immanent formative process or law according to which all of nature is interrelated and each event is an outgrowth of past events and a forerunner of future events. 3. The primary aim of scientific inquiry is not to understand what, ontologically speaking, these events are—since the nature of ultimate reality is beyond our reach as scientists—but rather to discover their inner dynamic relationships or structure.

All the sciences are gradually undergoing this revolution; but the social sciences, owing partly to their dependence on language as a basic means of expression and communication, are the last to be drawn into the great transformation. Since this lag in the development of the social sciences seems to be a crucial factor holding up the resolution of the current world crisis, it is important that social scientists concern themselves with it.

Actually, when we attempt to extend the new view of science to the study of mankind, it follows logically that man, as an integral part of nature, is a component in the dynamic natural order just postulated, and that the sciences of man are natural sciences. Furthermore, the ultimate aim of the scientist of mankind is recognized as that of attempting to understand man as part of the inherently lawful, dynamic natural order, that is, to understand man in his interrelationship with the world of nature, including other men. The significant units of research in the human sciences become human events viewed as complex wholes in space and time; they become nature-culture-personality events and occasions in space and time. The meaningful type of problem concerning these units becomes the investigation of their dynamic structures, that is to say, their inner relationships in full environmental context. Logically, the solution of such types of problems requires the cooperative, integral efforts of the major sciences of man with the help of other basic sciences.

We may infer, furthermore, that by increasing our knowledge of the inner dynamic structure of a nature-culture-personality whole, we shall also increase our ability scientifically to predict future events to the extent that they are predictable; namely, to the extent that they are manifest within and determined by the structural whole (*7*, p. 59; *13*, pp. 90–91; *14*, p. 250). Finally, following through this hypothesis, it seems probable that, once we begin to describe nature-culture-personality wholes from the viewpoint of their inner dynamic structures, we shall be able to compare them and to establish scientifically valid similarities and differences in basic structures between them.

From these general considerations let us turn to a specific research project which has attempted to test the hypothesis. The Hopi Indians are one of five tribes[2] studied as part of the Indian Personality and Administration Research, sponsored jointly by the U. S. Office of Indian Affairs, the University of Chicago's Committee on Human Development, and the Society for Applied Anthropology. The Hopi group consists of some four thousand Indians who,

[1] Based on a chapter from the writer's book *Culture in Crisis: A Study of the Hopi Indians*, to be published by Harper and Bros. this fall.

[2] The Navaho, Papago, Sioux, and Zuni tribes were also investigated as part of the project. For a list of project publications see reference 8. The writer was coordinator of the project from its inception in 1941 to its termination in 1947.

for more than fifteen centuries, have inhabited a few square miles of desert and semidesert highland in northern Arizona. A representative sample of two Hopi communities, expressing differing kinds and degrees of Euro-American influences, was investigated in total environmental setting and in historical perspective. Techniques from many sciences, including ecology, cultural anthropology, sociology, psychology, psychiatry, clinical medicine, and linguistics, were used integratively. From this broad-gauged, relatively precise analysis of the complex Hopi event in space and time have emerged facts and generalizations of theoretical and practical moment.[3]

Analysis of the Hopi nature-culture-personality integrate suggests that for at least fifteen centuries the Hopi tribe has played its life drama dependent on a relatively limited and isolated geographic area of such a nature as to allow a narrow range of choice regarding the group's adjustment to it. The arid northern Arizona plateau posed unyielding imperatives which had to be met habitually and unerringly if the tribe were to survive and reproduce itself generation after generation. Specifically, the existence of this group of sedentary agriculturists in Hopiland has always been linked with the regional water supply. The tribe's survival has depended on the presence of a few semipermanent springs used for drinking water and garden irrigation, on the retention of moisture in sand dunes used for dry farming, and on the fanning out of water at time of flood in such a way as to allow arroyo flood farming. Agriculture in Hopiland has always been limited and hazardous because of low rainfall and humidity, frequent droughts, floods, and storms, killing frosts, and pests. Although these Indians supplemented their farming by hunting in the vicinity of their mesas, subsistence was an ever present problem. No matter how industriously they stored up food to tide over their frequent crop failures, drought occasionally outlasted the food supply. Theirs was indeed an economy of scarcity. Thus the Hopi had constantly to cope with the problem of actual group survival and, although they solved this problem, it is likely that their precarious existence tended to take a physical toll in undernutrition, illness, and premature death, especially among the children.

Faced with these constant and intense environmental pressures, the Hopi through the centuries developed a social system which was apparently well adjusted to their indigenous needs. In brief, Hopi traditional society expresses a complementary relationship, a mutual dependence between a female-centered kinship system and a male-centered secret society system, integrated through an annual ceremonial cycle. The relationship between the kinship and secret society systems gives a fine balance to Hopi social organization and tends to equilibrate the status of men and women in Hopi society. Each sex has its unique and indispensable place, role, and function. The complementary biological functions of male and female are institutionalized in a complex, correlatively balanced social order. The system has been extended by means of totemic devices to include all classes of phenomena important to the Hopi lifeway, so that it functions as a sort of cooperative supersociety embracing man and the world of nature. All phenomena of value in the Hopi world are traditionally believed to work together in a complex, interdependent relationship, for the common good, and no one class is dominant or subordinate to the others. The concepts of "rugged individualism" and "exploitation" are completely absent, for no individual functions for himself alone, but only as a member of a group that is a responsible part of the complex, reciprocally balanced whole.

In a traditionally organized Hopi pueblo every individual is expected to fulfill his obligations to the group with a minimum of supervision and with a minimum of external controls exercised by centralized authority or by physical force. Characteristically, social controls are diffused and internalized. They tend to extend inward in the form of a group-structured individual conscience which reflects the group's ethical code, and also they tend to extend outward to the farthest reaches of the Hopi natural and supernatural world. Traditional leadership is self-effacing, obligatory, and socially responsible. Indeed, exposed as the Hopi have been through the centuries to all the hazards of the external environment, including out-group attacks, they have developed a social system which apparently allows and encourages the development of their human potential to a high level of efficiency and a high degree of intensity.

We do not know how great a psychological toll in anxiety and frustration was exacted in ancient times by all these pressures. But the personality findings from children of the First Mesa community, where the ancient social structure persists virtually intact, suggest that the balanced social system of the Hopi was reflected in a characteristically balanced and healthy personality structure, distinguished by its subtle complexity within definite boundaries; by its social, emotional, and artistic maturity within allowed areas; by its many-sided and deep-rooted control system; by its high puzzle-solving type of intelligence; and by its abstract, holistic, and at the same time practical, type of mental approach.

[3] Detailed documentation of the findings and generalizations from the Hopi project are presented in references *10* and *11*.

While the Hopi's basic-discipline training is definitely permissive and Hopi babies are characteristically happy and smiling, indigenous patterns of inducting the child into the social group, although nicely adjusted to the Hopi developmental curve, are relatively more systematic and concentrated and also more ritualized, than those of the other tribes studied in the Indian Personality and Administration Research, and relatively sterner methods are likely to be used when a child fails to meet social and moral expectations within the prescribed age range. Apparently these training patterns, in the context of Hopi social and cultural environment—which is both complicated and integrated in a balanced manner—tend to stimulate the child to a personality development that is somewhat precocious but at the same time emotionally balanced and socially mature, and of the kind needed to cope with Hopi life problems.

Finally, the findings suggest that the Hopi symbol system, expressed in language, mythology, ritual, and art, reflects a complex, subtly balanced, organic type of world view (*2*; *6*). While the world is believed to be very dangerous, it is not unpredictable or erratic, nor is man at the mercy of unpredictable or erratic forces. On the contrary, the universe is seen as a complex correlative system, controlled and regulated by natural law. There is no vagueness or inconsistency about man's role in this system, nor is it a subordinate or dependent one. And not only the character traits, but also the degree of intensity of emotional and mental energy needed to fulfill his role, are explicitly formulated and stressed. Indeed, the intensity of the Hopi's emotional and social atmosphere, as compared to that of the other tribes studied in the Indian Personality and Administration Project, seems directly to reflect the severity of environmental pressures and tensions that the tribe habitually sustains.

Thus, when the Hopi nature-culture-personality whole is analyzed as a multidimensional pattern of events in space and time, it reveals not only a high degree of integration, but also a delicately balanced, self-regulating type of structure.

Now I wish especially to point out that the type of structure described here appears to be similar to that which distinguishes ecologically balanced natural communities. Ecology teaches us that natural plant and animal communities tend in the course of time to move toward a delicately balanced, self-regulatory ecological arrangement in environmental context (*5*). In an ecologically balanced community the group supports the individual and the individual has to perform his particular function in the group. Characteristically, every individual has a place, a role, and a function in the whole arrangement, and this place, role, and function usually involve a certain unequivocal responsibility to the whole. The individual is an indispensable part of the whole and is of vital importance to it. Moreover, the values of functions and roles are not weighted. The balance of the parts and the whole is self-adjusting and self-regulating—in other words, it is organic. Furthermore, by a process of symbiosis, accommodation, and competition, isolated plant and animal communities in the course of time tend to move toward an optimum or climax type of organization, in which characteristically every niche tends to be used to full advantage and every individual tends to function with minimum waste of energy or potential energy. The Hopi analysis suggests that, like isolated plant and animal communities, isolated human communities under certain conditions tend to develop in the course of time toward an ecologically balanced optimum or near-climax type within the total environment.

On the other hand, the analysis suggests that whereas optimum or near-climax types of plant and animal communities are characterized by a high degree of organic integration in the context of the total environment, such types of *human* communities are integrated, not only organically and functionally, but also symbolically. In other words, the whole tends to be integrated not only in the manner of natural communities but also in a distinctively *human* manner; that is, esthetically and logically (*1*, pp. 24–25; *6*).

An intensive study of the covert aspects of the Hopi culture, and especially an analysis of the Hopi language from the conceptual point of view and its interrelation with the world view, ritual, art, myth, social organization, and group personality structure, led to the inference that the whole had an inner coherence which was logical as well as esthetic. And this logico-esthetic integrating dynamic seemed to give to the culture configuration its unique and persistent style [reference *7*, p. 61].

Analysis of the Hopi nature-culture-personality integrate also reveals that the tribe is in the grip of a severe crisis of considerable historical depth and scope (*10*). This disturbance may be traced from its origin in the tribe's first contacts with the Spaniards in the 16th century through the period of Franciscan missions, Spanish wars, and Navaho raids, to more recent influences, especially those expressed in Protestant mission teachings, traditional Indian Service policies, and new federal policies. The analysis indicates that Mennonite mission influences tend to have a disintegrating effect on the Hopi socioreligious system, reflected in a disorganizing trend in male personality structure (*12*); that the traditional Indian Bureau policy in Hopiland has had a negative effect on Hopi welfare, modified somewhat by the inaccessibility and cultural resistance of the tribe; that al-

though federal policy and program have been changed officially, many individuals in Hopiland (both Indian and non-Indian) still express, in feeling, thought and behavior patterns, ideologies, and rationalizations similar to those underlying the traditional policy; and finally, that the new, integrative Indian Service policy, based on a positive philosophy regarding the creative nature of man and of society in environmental context, has had a markedly beneficial effect on the personal and social welfare of the tribe. The analysis also indicates, however, that, in Washington, and in the general American population, there is considerable misunderstanding of, and resistance to, the new federal policy and program in Hopiland.

The findings suggest that, although the Hopi crisis has a tribe-wide spread in its ecologic and biologic dimensions, it has reached acute proportions in its sociologic psychologic, and symbolic dimensions only in communities where the traditional ceremonial and social system has broken down under white pressures. The findings viewed as a whole lead to the conclusion that the core of the crisis is ideological.

These findings and generalizations also suggest that in ancient near-climax types of human communities like those of the traditional Hopi, wherein an ecologically balanced and self-regulatory type of structure and a high degree of organic and logico-esthetic integration with the total indigenous environment have developed, new cultural elements and patterns may be added and many of the accoutrements (or much of the so-called "content") of the culture may change or even disappear, but under favorable circumstances the ancient culture structure will endure. Culture crisis is engendered not so much by changes in culture content as by disturbances in culture structure which generate a condition of imbalance in one or more essential dimensions of the culture and generate thereby a strain through the whole structure.

In an acculturation situation, aside from extermination or forced dispersal of the culture group, the factors most deeply disturbing to the balance of an optimum or near-climax type of culture thus seem to be intrusive influences which dislocate the logico-esthetic integration of the symbol system with the total environment. Next in importance as radically disturbing to such a culture type are attacks or influences which bring about a severing of the bond between the culture group and its geographic environment. Such radical disturbances may operate as determining factors in disintegrating the culture and the conditions which foster its particular type of personality. Such cultural shocks—the deep disturbance of the symbol system, throwing off balance the distinctively human component of the culture, and the severance of the life line between man and nature whereon the culture developed—engender major crises. If not resolved, such crises may be fatal to the cultural whole and to the personality type it fosters. Somewhat less radical in effect, since they do not necessarily disintegrate the culture quickly—although they may do so in the long run—are alien influences which throw the sociological structure out of balance by attempting to superimpose incompatible political or economic systems.

Thus this research project suggests that in broad perspective, acculturation problems are problems in the dynamics of culture structures. A culture structure may endure, it appears, long after many of its outer accoutrements have disappeared or changed almost beyond recognition. Furthermore, the findings underscore and clarify the close relationship between acculturation problems and practical administrative problems of the community. They indicate that, basically, problematic situations of community administration may be reduced to scientific problems in culture structure analysis. In other words, it is the culture structure of a community in environmental context that sets the form of the administrative problem of that community from the viewpoint of community welfare. It follows, for example, that the integrative type of governmental administration, effectively implemented at the community level by social action research (*3, 9*) may be expected to be successful and psychologically healthy in human terms, from the long range community welfare viewpoint, because it allows the group to function by means of the structures of its culture in environmental context and to find its own solutions to new problems mainly through those structures. An integrative community administration and social action research allow indigenous solutions, indigenously structured. On the other hand, exotic, arbitrarily imposed types of administration may be expected, in the long run, to be unsuccessful and psychologically unhealthy in human terms because they attempt to superimpose arbitrary, rigid, and foreign culture structures on the community and tend thereby to dislocate indigenous structures and to engender culture crises.

According to the holistic, community-centered approach which emerges from the findings, the applied social scientist's primary role is viewed, not as one of adjustor, mediator, or trouble-shooter, but rather as one of diagnostician and integrative leader in cooperation with the administrators and the residents of the community itself. Such an approach, it should be noted, logically implies that community governmental administration shall be designed to *serve* the community, that its personnel shall be selected and professionally trained according to the biosocial personality needs and trends and the resources of the

particular local area, tribe, or community wherein they are to serve. It logically implies, furthermore, that administrative organization shall be decentralized to the extent that creative community administration is made possible, encouraged, and rewarded.

The findings, therefore, logically point to an integrative, democratic type of long range administrative policy, implemented by a program of social action research, as appropriate and effective in promoting the welfare of the Hopi community and helping to resolve the Hopi crisis, and they explicitly define the structural foundations whereon such an administrative policy and program, if it is to be effective, has to be built.

Finally, we are given a clue as to the kind of community planning and self-cultivation that may be required for the development of enduring peace and mutual well-being in the world. The inference is that social planning need no longer be envisaged as "management" in either the gross meaning of the term or any of its subtle refinements. It may be viewed as self-discipline and self-cultivation.

> According to this view . . . social planning would become a function of cooperative action research, initiated and implemented by the society (or the community) itself. In a self-perpetuating process of discovery, during which the members of the group come to understand their distinctively *human* potential, through the cooperative leadership of social scientists and with the aid of physical and biological scientists, the society's self-made plans might become actualities. Men would be able to discover for themselves through their own experience that by cooperating with one another and with the world of nature *as human beings*—as systematic symbol-builders and symbol-integrators—they might grow in the course of time to their full stature in a pluralistic world, logically and esthetically articulated for mutual prosperity and peace [reference 7, p. 63].

Hence from the inquiry have emerged significant clues regarding the development of universal, pluralistic, local community norms and methods for their implementation, whereby the findings of science may be applied to community-wide and world-wide practical problems—problems of political, economic, social, religious, and psychological import. Discovery and formulation of such pluralistic cultural norms and research methods in the sciences of man, adequate to the needs of the current world crisis, may be expected to open the way for the development of a more mature science of mankind which will have far-reaching practical significance.

References

1. CASSIRER, E. *An essay on man.* New Haven: Yale University Press, 1944.
2. COLLIER, J. and MOSKOWITZ, I. *Patterns and ceremonials of the Indians of the Southwest.* New York: E. P. Dutton, 1949. Chap. 6.
3. DOBBS, H. A. C. *Operational research and action research.* Washington, D. C.: Institute of Ethnic Affairs, 1947.
4. KORZYBSKI, A. *Science and sanity. An introduction to non-Aristotelian systems and general semantics.* Lancaster: International Non-Aristotelian Library, 1933.
5. SEARS, P. B. *Life and environment.* New York: Teachers' College, Columbia University, 1939. P. 100.
6. THOMPSON, L. *Amer. Anthrop.,* 1945, **47**, 540.
7. ———. *Phil. Sci.,* 1946, **13**, 53.
8. ———. *América Indígena,* 1950, **10**, 35, 40.
9. ———. *Sci. Mon.,* 1950, **70**, 34.
10. ———. *Culture in crisis. A study of the Hopi Indians.* New York: Harper and Bros., 1950. In press.
11. THOMPSON, L. and JOSEPH, A. *The Hopi Way.* Chicago: University of Chicago Press, 1944.
12. ———. *Amer. J. Sociol.,* 1947, **53**, 17.
13. WHITEHEAD, A. N. *Science and the modern world.* New York: Macmillan, 1930.
14. ———. *Adventures of ideas.* New York: Macmillan, 1933.
15. WHORF, B. L. *Language, culture and personality: Essays in memory of Edward Sapir.* Menasha: Sapir Memorial Publication Fund, 1941.
16. ———. *Tech. Rev.,* 1941, **43**, No. 6.
17. WHYTE, L. L. *The next development in man.* New York: Henry Holt, 1948.