

SOCIAL
STRUCTURE

AND
PERSONALITY
A Casebook

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edge, education, and scholarship. Such values are acquired as maturity is gained and they are part of an individual's self-system, for they express clearly his picture of himself, of his goals, his aspirations, and his sense of identity.

Many people are brought up to hold the values of knowledge very high, and yet only a few become academic scientists. And of those who do become scientists, some are far more creative than others. We do not know the reasons for this, nor do studies such as the one by Anne Roe tell us why some scientists are more adept at and have a greater proclivity for "tapping the resources of their unconscious" in work than do others, nor why a gifted minority of scientists have a flair for rapid and quick-fire insights which tend to transcend the limits and boundaries of their contemporary scientific fields. A full understanding of such processes is probably a long way off, and it undoubtedly falls more within the province of individual psychology than any other discipline. It has been mentioned here only to focus attention on one neglected area in these analyses.

Let us now turn to Anne Roe's study of American scientists to see how individuals "fit" into the role system of science, in terms of their personalities and in terms of the imperatives of the role system itself.

A PSYCHOLOGICAL STUDY OF EMINENT PSYCHOLOGISTS AND ANTHROPOLOGISTS, AND A COMPARISON WITH BIOLOGICAL AND PHYSICAL SCIENTISTS*

By Anne Roe

This is the third in a series of studies designed to investigate the existence of relationships between life history, intellectual functions or personality characteristics, and the selection and pursuit of a particular science as a profession. The subjects of the study are men who were selected for their eminence in research, as judged by their peers. The data comprise verbatim life histories, discussion of the work of the men and results of the Thematic Apperception Test, and the Rorschach. In addition, there were obtained, for comparison with these groups of eminent men, group Rorschachs of members of university faculties in the same fields. The psychologists have an

average age of 46.7, the anthropologists 49.4; for all social scientists the average age is 47.7. The physicists averaged 44.7 years and biologists 51.2.

Half of the psychologists and three of the anthropologists had professional fathers. Only 4 of the 14 psychologists came from families with rather good incomes, but 7 out of the 8 anthropologists came from families that were well-to-do. Incidence of the professional fathers in the other groups was 45 percent for the biologists and 73 percent for the physicists (experimentalists 50 percent; theorists 84 percent).

Number of children in the parental family and birth order of these subjects

* Excerpted from "A Psychological Study of Eminent Psychologists and Anthropologists, and a Comparison with Biological and Physical Scientists," by Anne Roe, *Psychological Monographs*, Vol. 67, No. 2, 1953.

are similar to those for the biologists and physicists. Comparison of the observed number of first-born with the calculated expected number shows the incidence of the first-born in these groups to be reliably greater than chance ($p < .01$). Cattell and Brimhall also remarked on the high incidence of first-born in their sample of 855 scientists. For their group it was possible to check incidence of first-born in each family size from 2 to 7, and in all of them it proved to be greater than chance. Of the 25 scientists in my group who were not first-born, 5 are oldest sons, and 2 of the second-born were effectively the oldest during their childhoods because of the death of older sibs, one at birth, one at age 2. Complete data are not available for 3, but for the others the average number of years between the subject and his next older brother was 5. The possible significance of this will be discussed later.

All of these men are married and most of them have children. Average age at marriage of all three groups of scientists is rather late, which is doubtless in part connected with the long educational histories. The social scientists, however, differ greatly from the others in the permanence of their marriages. Among the biologists there have been three divorces (15 percent); among the physicists, one (5 percent); but five of the psychologists (36 percent) and four of the anthropologists (50 percent) have been divorced, and of these several have been divorced more than once.

One of the striking differences between the social scientists and the others is the amount of material which was spontaneously offered in the interview. In part this may be due to the greater understanding among this group of the general problem and the relevance of details of personal history, but in perhaps larger part it is a reflection of their greater ease of verbalization.

The interviews were very little structured. The subject was asked at the outset for information on general family background, early family and school life, and everything that related to his choice of vocation. I interrupted as little as possible, usually only to clarify a point or to recall him to pertinent material. Later I asked specifically for information on health, religion, and present leisure interests, as well as on use of imagery. Sometimes the projective material suggested questions for later interviews, but under these circumstances deep probing is impossible. The combination of projective material and life histories recorded verbatim offers excellent cross checks.

This group [of psychologists] came from lower to upper-middle-class backgrounds and the economic level varied from quite poor to well-to-do. Many of them had feelings of apartness relative to themselves or their families but it is rare for these to be colored with inferiority feelings. More than half of them had some definite sense of personal or family superiority, and family concern with social status, in one way or another (as striving, as recollection of striving in the parental generation, or as conscious of belonging to the "best people").

Inquiries about health during childhood and later uncovered a number of problems of varying sorts, [but] it would appear that health and constitution have not played any clear role in this group generally. In only one instance does it seem likely that they contributed significantly to difficulties in social integration.

The average economic level of the anthropologists is clearly higher than that of the psychologists, and concern with the social status of the family or a firm conviction of the social superiority of the family is evident in all but one instance. This did not always result in the development of a definitely socially snobbish attitude in the subjects, but there is good

evidence that most of them did consider themselves superior in one way or another. All but two went to private schools, either elementary or secondary, and this would certainly tend to foster these attitudes.

Health during childhood and adolescence was apparently good for only 3 of [the anthropologists]. Another had good health until an attack of rheumatic fever during secondary school, with some sequelae, which have not interfered in his field work. There are 5 who apparently had constitutional difficulties. Three were undersized or underweight, and in addition one of these had a number of allergies and the other had a number of serious illnesses, sufficient to have affected his early schooling. One was oversized ("I don't know whether it was pituitary or overeating, because eating was about the only satisfaction I had"). Another was always the tallest in his age group which sometimes gave rise to awkward situations. Another said, "My mother or at least I, had the idea that I was always a sickly child and I was always having to go to bed but there was nothing really wrong with me."

As in the case of the psychologists, the importance of the discovery of the possibility of doing research as a factor in choice of vocation is clear.

Although there is not much difference in the general socioeconomic background of the different group of scientists (except for the subgroup of theoretical physicists, 84 percent of whose fathers were professional men, as contrasted with about 50 percent in each of the other groups), there does seem to be a difference in their social attitudes. Among the biologists and physicists I encountered no direct expression of feelings of personal superiority and there were very few by inference. One of the physicists did say that the family considered themselves extra privileged in spite of their extreme poverty;

there are a few others who probably had some vague feelings of family superiority on one basis or another, and there are some who were conscious of their intellectual superiority, but they seem not to have translated this into social terms. It is, of course, not certain whether this is because these groups don't think in such terms, and hence it would not occur to them to mention it, or because they actually do not have such attitudes. I think it is primarily the latter, although the former may play some part in it—it is an aspect of their rather general indifference to or avoidance of personal interaction. But among the social scientists, in at least half of the psychologists and in most of the anthropologists, a feeling of social superiority has definitely played a role in their development. In some instances this feeling is a product of the family's or particularly the mother's strivings (or a paternal grandmother's).

In the matter of early interests (the term refers to spontaneous activities) this group differs markedly from the physical scientists, almost all of whom displayed early interest in mathematics, chemistry, physics or gadgeteering, and very few of whom were ever interested in literature or the humanities. Two of the psychologists and one anthropologist began in chemistry but quickly shifted. Literature and the classics, and less frequently social welfare interests, were common among both anthropologists and psychologists, as were some natural history interests, particularly among the anthropologists. The biologists included men whose early interests had been in natural history, in literature and in chemistry or physics, although the latter interest seems to have been aroused largely because these were the only sciences available in high school. In the histories of the social scientists and of the biologists the importance of the discovery of the possibility of doing research is highlighted, and this

was often the factor that gave the final determination to their choice of vocation, or that fixed them in it once it was chosen. This particular aspect did not appear among the physical scientists, but this may well be because the difference between gadgeteering and experimental work is really a matter of degree and emphasis; the possibility of doing things yourself is obvious, whereas in the other fields it is not. It would seem that this may be an indictment of the pedagogical techniques in general use.

Among the biologists 5 lost father or mother before the age of 10, and the parents of two others were divorced (when the subjects were 9 and 16). Among the physicists, 5 lost a parent by death (at ages 5, 6, 9, 15 and 17) and the parents of one were divorced. There was only one divorce among the parents of the social scientists (and they remarried) but the mother of one of the anthropologists died at his birth and 4 psychologists lost their fathers by death (at 8, 12, 14 and 17) and one also his mother at 17. In the case of the biologists and physicists where the losses occurred very early, it seemed possibly to be a factor in the acceptance of isolation by the subjects, but among the psychologists and at least one of the physicists whose losses were later, the effect seems to have been more one of increasing the problems of adolescent reaction to authority, and this effect seems to have been greater in the case of the psychologists who have been more concerned with personal relations from the start.

A special factor, occurring generally only in the theoretical physicists, was the apparent effect of severe childhood illnesses which contributed to personal isolation. In all of the groups there are a number who had developmental problems related to constitution—abnormalities of size or general weakness. Unfortunately I have been unable to find comparative

figures for the general population.

Patterns involving overprotection and firm, if not overt, control are very common in the group [of social scientists]. They are commoner among psychologists than among anthropologists among whom there was more overprotection and more open hostility. Over half of this group reacted with more rebelliousness than is generally usual, and of these a number are still angry or rejecting or disrespectful of one or both parents.

The data on intrafamily relations are more complete than for the other groups, partly because of the fact that these groups are professionally more aware of the possible significance of such relations and are generally freer in such discussions. But there is additional, if inferential, evidence from the TAT protocols, and I think there is no doubt that the groups do differ in these respects. Both the physicists and the biologists early developed ways of life which involved very much less of personal interaction, and neither group shows anything like the extent of rebelliousness and family difficulty that the psychologists and anthropologists show.

There are also many more in the other groups who were isolates as children, or who had only one or two close friends, and the age of beginning heterosexual interests is very different. Among the biologists and physicists it is rare for there to have been any extensive dating in high school or early college. Half of the social scientists began dating in high school and dated happily and extensively from then on. Only four of them did very little or no dating until they were through college. Two of the psychologists apparently never dated any girl but the one each married (rather late in life) and have never had much social life since. These are very atypical for the group. Although a number of the social scientists, particularly those from self-en-

grossed homes, speak of being shy for a time, shyness was rarely the serious problem that it was with many of the biologists and physicists.

There are two Jewish families in the social scientist group, one devout and the other non-practicing. The others are all Protestant families, with most of the major churches and several of the smaller groups represented. The parents usually attended church, but frequently for social reasons. Only two of the subjects ever go to church now and one does not do so for religious reasons.

About half of the parents of the psychologists were personally uninterested in religious matters (as demonstrated in church attendance), but only two families made a point of not attending church. Nevertheless it was customary to send the children to Sunday School and all of the Protestant children did go for at least a time, even the son of free-thinkers. Seven of the subjects stopped going fairly early, and while two encountered some family opposition in withdrawing there was no personal crisis or conflict over religion. Five others were quite active in various ways, in young peoples' societies, in the YMCA, in teaching Sunday School, and continued their interest through college or beyond. Three of these were professionally interested, one actually serving as a missionary for some time and two studying religious education.

Among the anthropologists the picture is similar. One of them who came from a Jewish family had a little religious schooling, but it was not important to his parents or to him. One was the son of parents who had a family tradition of agnosticism on both sides, and religion never was a concern to him. The other six were all sent to Sunday school, although the parents of two were personally uninterested. Four of these soon dropped out, usually because of boredom, but the other two retained interest for

some time, but have no church affiliations now.

Of the 64 scientists studied altogether, whose religious backgrounds were not known when they were selected, none came from Catholic families. Five came from Jewish homes, and all of the rest had Protestant backgrounds. These include two Mormons and two Quakers. Among all of them the picture is much the same. Most went to Sunday School; very few now have any church connections. Two biologists are very active in church work; another contributes to a church but does not attend. Among the physical scientists none is personally active in any church, although there are five who have maintained some church connections, usually to please their wives. Among the social scientists, one is still personally interested in church, one goes occasionally, but not for religious reasons, and one pays dues but never attends. A few of them are militantly agnostic, but for the most part they are just not interested.

Analysis of content [in the TAT protocols] shows striking differences. Both biologists and physicists are much less interested in interpersonal relations generally, and more inclined to handle them in distance-getting ways than are the social scientists, although many of these are uneasy about them. But the unease is of a different sort and a manifestation of a considerable concern with such relations, rather than a dislike for them. Both biologists and physicists show a considerable independence of parental relations, and without guilt, particularly in the case of the physicists, whereas the social scientists show many dependent attitudes and much rebelliousness, accompanied frequently by guilt feelings. The attitudes of helplessness so noticeable among the social scientists are much less common in the biologists and physicists. The biologists are definitely more restrained than

the other two groups in their expression of aggressive attitudes; the social scientists are the freest in this respect.

What is most striking about these results, however, is the fact that the TAT rarely gives any indication that the subject is a man of considerable attainments. Sometimes, some amount of drive is shown, but for the most part this is not very evident in the stories, nor is there any clue in them as to what has made it possible for these men as a group to have achieved as conspicuously as they have.

Knowledge of Rorschach test varies in the group from none to fair acquaintance. . . . There are no major differences between psychologists and anthropologists with respect to their use of locations in the blots, and a particular pattern seems to be characteristic of most of them. They produce an absolutely large, but relatively small, number of whole responses—they can deal with large concepts, can generalize adequately, if sometimes sweepingly, but are usually more interested in smaller, and less often noticed details. They are quite good observers and tend to look at things which are not likely to strike most people. They are, however, quite casual and unsystematic in the way they go about things, sometimes to the extent of considerable disorganization in the approach. They are so productive, and so many responses occur to them so rapidly that they make no attempt to sort them out, nor do they need to rely upon any technique of procedure to stimulate further responses.

All of the social scientists give an adequate number of popular responses. A number of them tend to considerable use of original responses, about which they are likely to be rather uncritical. Anatomy and sex responses are relatively common, and are used by almost half of the group to an amount considered excessive. The range of responses is a rather curious and interesting one, since it is

customarily very broad in terms of number of categories, and at the same time may show stereotyping or restrictedness of some sort. This is more often in terms of particular individual perseverations of themes, but the restriction may be in terms of excessive use of animal and human responses. The wide range would be associated with their general productivity and must also indicate a pretty general receptivity. That it does not mean an undesirable diffusion of interests would seem to follow from the fact that they are also restricted, as well as from their actual behavior. The frequent emphasis on human responses may well have vocational significance.

Form responses are those in which the concept is determined entirely by the outline of some blot area. Form quality indicates the general soundness of thinking, and more extensively of the soundness of the subject's contact with reality in general. Half of the group do not rate very high in this respect, since they receive entries for excessive use of poor or vague forms. The point may be the nature of the "reality." Psychologists are generally less concerned with what may be called external reality than they are with inner realities (e.g., motivation) and must often disregard the apparent reality and search further. (Is this rationalization?) This may be less true of anthropologists. Whatever the explanation, the fact is that social scientists are relatively unconcerned with formal qualities.

Shading responses are those in which the tonal quality of the blots is used as texture or vista. Shock is scored when disturbances in the level or time or quality of responses appear on the shaded cards. It is supposed to indicate serious anxiety. It may be a reflection of an insecurity related to early failures, or loss of interpersonal relations which have been accepted or somehow coped with; and that it is not necessarily by itself, a serious

indication. It occurs in about 50 percent of this group and is severe in about half of those who show it at all.

Some of the anthropologists start a response with free action and then tone the action down so that it becomes very restricted. This is not characteristic of this subgroup generally, and does also happen among the psychologists although less frequently. It suggests as a possible interpretation a need to repress too direct an interest in persons. Anthropology would be a good vocation for those who feel this way, since the interest in persons can be followed in a somewhat depersonalized way. To some extent, this is also true of experimental psychology. The use of human movement in these subjects would indicate consistent interest in persons, but an interest which has been frequently restricted in some way and which is sometimes carried to extremes. . . . It is not the picture that they are generally self-absorbed, but rather that they have considerable emphatic capacity.

Perhaps the comments most frequently found in the individual analyses refer to the general productiveness of the men in these groups, to their rather uncritical attitudes, and a sort of haphazard use of rational controls—that is, that they can be rational when they wish to be but generally feel no compulsion to make a point of being so. A very great sensitivity is also extremely noticeable in almost all of the records and it usually implies a great awareness of other persons. It may sometimes result in any easy irritability, but I think more often not. In most of the protocols, there is evident fairly free aggression, which is clearer and stronger generally among anthropologists, and more obviously oral among the psychologists. There are a number in which there seems to be a strong consciousness of hidden things, but this is not always accompanied by anxiety. Most of the subjects are fairly warm persons, but this is

not always the case. Conflict over dominance and authority is common. There is also evidence, particularly among the psychologists, of needing to hold and to feel nurturant attitudes.

The Rorschachs from these 22 social scientists can now be compared with those obtained from the 20 biologists and the 19 physical scientists previously studied.

It appears that the social scientists are significantly more productive on the Rorschach; that the biologists use relatively fewer responses not dominated by form than the others; and that the biologists are definitely the best adjusted. The two latter differences are certainly related, since the nature of adjustment shown by the biologists is one in which rational control and caution are emphasized.

Some qualitative differences may be indicated also. The biologists are the least freely aggressive; the social scientists, particularly the anthropologists, the most so, and with greater likelihood of oral elements. There are great differences between the biologists and physicists in their handling of anxiety, but the social scientists show no consistency in this respect. In the over-all picture the similarities are greater than the differences. This is to be expected from the fact that there is considerable heterogeneity within the separate groups, and from the fact that these men are all functioning adequately.

The group Rorschach was given to 104 psychologists and 25 anthropologists members of university faculties. Only 9 checklist items show significant differences; these, if they can be accepted at face value, would indicate that the eminent group, in addition to its greater productivity, used fewer whole and more unusual detail responses, including more anatomy and sex responses and more concept-dominated series of responses, and finally, tended to proportionately

more color than movement responses. These can be subsumed under a general attitude of greater productivity and reactivity, more originality, and less control.

Comparison of eminent biologists with other biologists produced a different picture—the more eminent men had rather better controlled, if somewhat more restricted, protocols. Here the opposite is true. In the case of physicists no important differences were found. Comparisons on the checklist between all of the eminent men and all of those who took the group Rorschach show a few major differences which are not related to the longer individual protocols. Among these the most marked are the greater use of unusual blot areas by the eminent men, and their freer use of anatomy and sex responses and of perseverating responses.

The direct study of eminent men raises numerous and very difficult problems. One clearly does not have the complete freedom of a biographer writing centuries after the lifetime of the subject. But these difficulties are more than compensated for by the value of direct clinical and test data.

It is evident that the family backgrounds of the 64 scientists studied are by no means randomly selected with respect to the population at large. According to census reports for 1910 only 3 percent of the gainfully employed men in the country were professional men. One-eighth of the group came from farm homes; and the fathers of 31 percent were in business, many of them owning their own. Only two fathers were skilled laborers. None of the scientists came from homes in which the father was an unskilled laborer and none came from families of very great wealth. Cattell and Brimhall in 1921 found 51 percent incidence of professional fathers for the 66 leading scientists they studied.

What seems to be the operative factor here is that in practically all of these

homes, whatever the occupation of the father, learning was valued for its own sake. Its concomitants in terms of possible better income or social position were not scorned, but it was rare for these to be the most important factor. This certainly was a major factor in the facilitation of intellectualization of interests. In my opinion this, rather than the possible associated intellectual levels, is the important aspect here. "Over-intellectualization" may be a middle-class characteristic and it may interfere with libidinal development in other spheres, as some psychoanalytic writers have pointed out. Yet it seems to me doubtful whether one can develop the sort of intense personal involvement which is characteristic of these scientists without some degree of this, if a channeling of energy in one direction means a lessening of it in others. There is a serious problem here. Unquestionably overintellectualization is frequently a technique for escaping emotional problems, especially those bound up in interpersonal relationships, but it is not necessarily so. I believe it is possible to concentrate upon intellectual activities without having a relatively sterile life emotionally, but we certainly have not developed educational techniques which foster this.

I have reported a greater than chance incidence of first-born among these eminent men. The problem of birth order is an extremely tricky matter statistically, and I would not be inclined to pay much attention to this finding in a group of 64 were it not that Cattell and Brimhall reported the same finding in a group of 855 scientists. It could be argued that the point here also is that intelligence levels are higher in the first-born, for which there is some evidence, but it seems much more probable that both of these facts are results of the same cause, whatever that is.

Certain aspects of the data offer evi-

dence on the basic importance of the need to achieve or to keep independence which is so well met by a career in research. There are no Catholics in the group. The Protestant church to which all but five of the scientists' families belonged have varying degrees of insistence on the authority of the church over its members' interpretations of life, but all but three of these subjects have dismissed organized religion as a guide and usually had done so by late adolescence. In this respect, also, they have achieved independence. The dearth of Catholics in research science is corroborated in other studies and the Wesleyan survey found that production of scientists from Catholic institutions is uniformly low.

More of these men than not, as boys, pursued rather independent paths, playing with one or a few close friends, instead of with a gang, following their own particular interests (shifting or not) with somewhat more than the usual intensity. There are some to whom this does not apply, but it is fairly characteristic, and such interests were more often intellectual than not, except among the experimental physicists and biochemists. It is, of course, true that their high level of intelligence would, in itself, have some of these effects.

There are no general patterns by which they approached science as a career. The modal age at which the decision was made was during the last two undergraduate years, but in some cases it was made in early childhood or as late as the second year of graduate work. The introduction may have been through natural history interests, through gadgeteering, through interest in laboratory sciences as found in high school courses, or for the social scientists, through dissatisfaction with literature as a means of studying the behavior of people, or through a service motivation. When the decisive point can be determined it was usually the discovery of the possibility of doing research, of

finding out things for oneself. For some this was understood very early—as with those experimental physicists who spent much of their childhood playing with erector sets, radios, and all the other equipment that permit manipulation and construction. For others, it came as a revelation of unique moment. Once it was understood that personal research was possible, once some research had actually been accomplished, there was never any question. This was it. The educational implications are obvious enough. There has been no question since. From then on, absorption in the vocation was so complete as seriously to limit all other activities. In the case of the social scientists, at least for those for whom people themselves provide the data, this did not limit social participation; for the others it intensified an already present disinterest. Although a few of them have cut down somewhat on their hours of work as they have grown older, it is still the common pattern for them to work nights, Sundays, holidays, as they always have.

Most of them are happiest when they are working—some only when they are working. In all of these instances, other aspects—economic return, social and professional status—are of secondary importance.

Being curious plays a major role—a trait which many aspects of our educational practice tend to discourage. It is of crucial importance that these men set their own problems and investigate what interests them. No one tells them what to think about, or when, or how. Here they have almost perfect freedom. Their limitations are only those of equipment and time, and the limitations of their own understanding.

The question also arises as to why one subject chose one field of science and others chose other fields. Apart from the often overlooked matter of necessary contact with the field, there is some further

evidence from the study. The problem of coping with early affectional loss has been mentioned. It would also appear that there are some, particularly among the experimental physicists, who seem early to have formed direct relationships with objects rather than people, not compensatorily. In others, a generalized anxiety, of unknown cause, and possibly only an exacerbation of normal anxiety, is alleviated by concentration on a particular field. For example, I know biochemists who seem to me to live in a very dangerous world—they are always conscious of the presence about them of dangerous microorganisms. They tolerate this in part because they are able to manipulate these organisms to some extent professionally. I am sure, however, that to them psychologists live in an equally dangerous world, surrounded by irrational emotional people, a situation which they would find quite intolerable.

The social scientists stand apart as having been more concerned at an earlier age, about personal relations (or as being willing to tolerate this concern as such, without translation). This may reflect an unconscious uncertainty over the consciously felt superiority that characterized half of the psychologists and most of the anthropologists. It is also certainly related to their difficulties in freeing themselves from their parents. The other groups seem to have been able, fairly early, to work out an adaptation not nearly so dependent upon personal relationships, but rather strikingly independent of them.

Certainly psychology to some extent, particularly social psychology, and anthropology to a large extent, particularly cultural anthropology, offer an ideal vocation to the person whose conviction of personal superiority is not accompanied by asocial characteristics; they permit a somewhat Jovian survey of their own society as well as others, and maintain the

social scientist in a state of superiority just because he is able to make the survey. (This accounts nicely for the observation that some rather paranoid indications in the test material are not accompanied by forms of paranoid behavior, except perhaps as regards their own colleagues.) The experimental psychologists are generally less concerned with people as people, although this is by no means true of all of them. The further observations that a conflict over dominance and authority is common in the group, and that in a number of their homes the mother was dominant indicate the possibility of difficulties in achieving masculine identification.

In this respect it would seem very probable that the physicists, particularly the experimentalists, were able to identify more easily with their fathers than the other groups and hence to follow comfortably in science which has rather more of a "masculine" tinge in our culture than the others do.

Another finding of considerable importance is the differences of imagery which are associated with the different fields of science, and which accord with and perhaps explain some of the test data. Briefly, the biologists and experimental physicists tend strongly to dependence upon visual imagery in their thinking; the theoretical physicists and the social scientists, to dependence upon verbalization or similar symbolization in theirs. Nothing is known about the development of these modes of thinking, but it seems probable that they were developed early (they are associated with father's occupation) and played a part in the choice of a science. Further, it was shown that those scientists whose preferred mode of thinking differed from that characteristic for their science also differed in some aspects of their early history, and in the things they did or the ways they went about their work. (This

is good reason for not using such a factor selectively—their contributions have a special place.) The domination of the formal qualities of the blots in the biologists' Rorschachs, which the others do not show, is in accord with this, as is the generally much more fluid verbalization of the social scientists.

Doubtless, also, some intellectual factors enter. So far as the test used is a measure of these, it is clear that the theoretical physicists surpass all other groups on both verbal and spatial tests. The ex-

perimental physicists are high on the spatial and relatively very low on the verbal test. Psychologists are at about the mean for this total group on all three. Anthropologists are high on the verbal and lowest on both spatial and mathematical. These patternings are probably of importance in selection of vocation—particularly the relatively low nonverbal abilities of the anthropologists and the relatively low verbal ability of the experimental physicists.

In the foregoing selection, Dr. Roe has given a startlingly clear portrayal of the personality of the academic scientist and differences between different types of scientists; unfortunately, due to limitations of space, it has been possible to present only a limited amount of her data. But her data support strongly our hypotheses concerning the relationships between the imperatives of academic science and its various subdisciplines, on the one hand, and the "self" of the person who participates in his chosen field, on the other.

Necessary to the role system of academic science are "rugged individualists," and these it tends to recruit, at least as far as the truly creative men of eminence are concerned. And Dr. Roe has also shown how such personalities develop. But independence and individualism can take several forms and have multiple sources; and the structures and origins—in juxtaposition with each other—of these personality characteristics selectively "fit" into one subdiscipline (or role system) or another. Thus, the social scientists develop a sense of apartness and independence largely through their rebellion against their parents, through a sense of social superiority, in their interest in and concern with personal relations, and so forth. From the Rorschach material, it appears that one of the factors directing people toward psychology or anthropology is that psychologists are generally more concerned with internal reality while anthropologists are more concerned with external reality. The physical scientists develop a sense of apartness and independence through a set of factors which tended to encourage early social isolation and they tend to handle people in distance-getting ways. There is, in brief, a very neat interplay here between the ways in which people "fit" into a role system and the ways in which this system depends on particular personality-types, especially through its recruitment of these types.

SUMMARY

To summarize this chapter: an attempt has been made to spell out some of the theoretical tools necessary for an exploration of the relationship between personality

and social institutions. For purposes of sociological analysis, this discussion has focussed on the "self" as a subsystem of personality which, it was posited, relates personality and social institutions in such a way that they "lock" into each other. The "self" is the subsystem of the personality which enables the person to "fit" into an institutional or role system and which enables him to maintain that sociological system. It was also emphasized that paralleling a conceptualization of the "self" must be as clear an outline as possible of the nature of the institution under consideration.

To illustrate this approach, the role systems of the business executive and of the academic scientist were examined. In each case, it was shown that persons with particular kinds of self-systems were recruited for the respective role systems and that, reciprocally, these self-systems helped to maintain the institution, in terms of the latter's imperatives. In the case of the business executive, institutional demands necessitate the recruitment of persons who maintain strong masculine identifications, who are able to accept authority and to delegate it. The role system of academic science, on the other hand, seems to recruit and to depend on individuals who have largely rebelled against parental authority, who work as "lone wolves," who value intellectual over financial achievements. Institutional imperatives of the two sociological systems demand quite different self-systems.

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Chapter 8

INSTITUTIONAL INTEGRATIONS

In the previous chapter analysis was made of processes regulating the "fit" of particular self-systems into the role systems of the business executive and the academic scientist and of some of the processes governing the dependence of these institutions on these self-systems for the institutions' effective functioning. The role systems of business executives and academic scientists are rather small systems. But as we move from these relatively restricted areas of social organization into broader areas which encompass larger segments of a society, we find that there are some instances in which the question of "fit" does not arise; rather, the question becomes one of the dependence of an institution on given self-systems for its effective functioning. Similarly, there are instances in which the question of the dependence of the institution on personality does not arise but the issue of "fit" becomes the strategic one.

It should be stated clearly at this point that we are not certain why some institutions involve *both* the questions of "fit" and "dependence"; why some involve *only* the question of "fit"; and why some involve *only* the question of "dependence." It is to be hoped that sufficient research into these problems will someday enable us to formulate some generalizations about them. In the meantime, however, it can be hypothesized tentatively that those institutions and role systems which rely on *universal* recruitment from the total population—for example, the Western army or the legal system—involve only the question of "dependence," not "fit"; those which recruit *selectively* from limited segments of the population—for example, business executives, academic scientists, caste—involve at least the question of "fit," and sometimes "dependence," too.

In this chapter three institutions will be examined: military structure, caste structure, and legal systems. In the first and the third, the principal issue will be the dependence of the institutions on personality; in the case of caste structure, the central problem will be the question of "fit."

MILITARY STRUCTURE

Contemporary military organization, especially in the United States, is so structured—because of perceived social needs—that it relies on almost universal