THE TWO SOCIOMETRIES, HUMAN AND SUBHUMAN

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Dr. Gardner Murphy made a remark[1] which has become prophetic. "If sociometry is to be effective, it must be quick both to give and to receive, glad both to learn and to teach. The success of sociometric work . . . will depend on the willingness of each discipline to learn from another and the capacity of each discipline to adapt itself to the changing need of sister sciences." The present symposium well illustrates Murphy's statement.

Methodological Differences

Human sociometry started with a revolution in methodology. Indeed, looking back now to its beginnings as time goes by, the shift in method appears more significant that the evidence obtained to date. It started with a critique of the instruments of social investigation themselves, and last but not least, with a critique of the social investigator. The critique of antiquated social instruments was at one time formulated as follows:[2]

> We cannot adequately comprehend the central direction of an individual in his development either through observation, for instance, a child, through watching its most spontaneous expression, its play life, or through partnership. We must make him an experimenter. Considering group formation, we must make the members of the prospective groups themselves the authors of the groups to which they belong . . . The problem was to construct a test in such a manner that it is itself a motive, an incentive, a purpose, primarily for the *subject* instead of for the tester. If the test procedure is identical with a life-goal of the subject he can never feel himself to have been victimized or abused . . . From the point of view of the subject it is not a test at all and this is as it should be. It is merely *an opportunity for him to become an active agent in matters concerning his life situation.*
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> The other fundamental aspect of the problem concerns the investigator, himself. In the social sciences, the problem of the investigator and the situation in which the experiment or study is to be carried out have been of the gravest concern. However, the methods for dealing with this fundamental dif-

[1]See Gardner Murphy, "Editorial Foreword," *Sociometry*, Vol. 1, part 1, July, 1937.
[2]See J. L. Moreno, "Who Shall Survive?", 1934, pp. 12-16.

ficulty have been most unsatisfactory, to date. Let us consider two of the most advanced of these approaches: the method of the participant observer and the method of the psychoanalyst. The participant observer, in the course of his exploration, enters into contact with various individuals and situations, but he, himself—with his biases and prejudices, his personality equation and his own position in the group—remains unexamined and therefore, himself, an unmeasured quantity. The displacement in the situation to be investigated which is partly produced by his own social pattern does not appear as an integral part of the findings. Indeed, we have to take the inviolability of his own judgments and opinions for granted and the "uninvestigated investigator" constitutes, so to speak, an ever-present error. The psychoanalytic investigator is also an unknown quantity in the situation in which he operates as an analyst. Any educational psychoanalysis which he may have undergone at an earlier date does not alter the fact that he is not measured during the process of interviewing and analyzing any individual. Indeed, in order to accomplish the evaluation of both analyst and patient, a third person—a super-analyst—who is in equal relationship to both, would have to be present during the treatment situation—and yet aloof from it. The direction of his treatment and his interpretation of the material gathered is totally subjective. At the time there is no frame of reference in the situation except his own opinion, which can provide a basis for determining whether the material has been secured in the proper fashion or whether the significance he assigns to it is scientifically valid.

In order to overcome the grave errors which may arise in and from the investigator himself, we resort to a sociometric approach which is especially adapted to the microscopic study of individual phenomena. The participant observer—in one particular form of this work—does not remain 'objective' or at a distance from the persons to be studied: he becomes their friend. He identifies himself with their own situations; he becomes an extension of their own egos. In other words, the "objective" participant becomes a "subjective" one. As a subjective participant he can enter successively or simultaneously into the lives of several individuals, and then function as a medium of equilibration between them . . . The investigators to be tested are placed in life-situations and roles which may occur in the community or in their own private lives until their ranges of roles and their patterns of behavior in these life-situations have been adequately gauged. This procedure is carried on until every one of the investigators is thoroughly objectified. Re-tests are made from time to time in order to keep pace with any changes which may have taken place in their various behavior-patterns. In the course

> of such work, the range of roles and the range of expansiveness of each investigator become clearly defined and the stimulus which he may be to the subjects of his investigations has become a known quantity. Thus, the . . . procedure provides a yardstick by which we can measure and evaluate an indefinitely large number of investigators in specific life-situations and in specific roles. The paradox is that the investigator, although he has become objectified by this process—a "controlled participant observer," so to speak—still continues to be "a subjective participant.[3]" He has vanished as a special agent outside of the group, but returns in a new form inside of it. The investigator becomes an anonymous member. As a result, the group itself has become *self-propelling, self-investigating* and *self-controlling.*

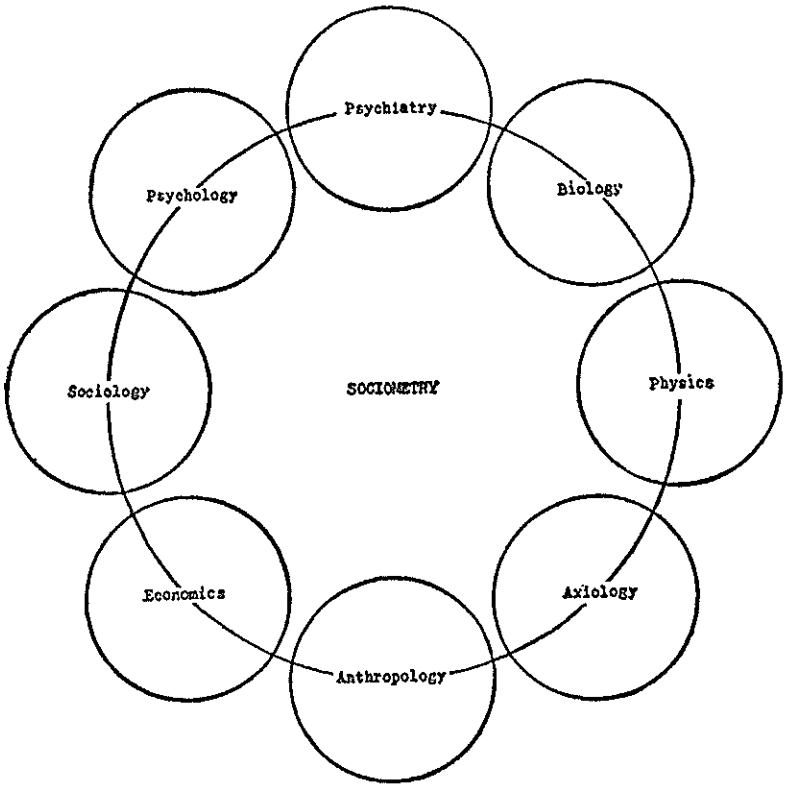
The anonymous influence of sociometry, more than the conscious one, has been largely responsible for a growing revisionism in the social sciences in the last two decades, the most all-inclusive since the time of August Comte and Charles Darwin. New instruments of investigation have been invented. *Action methods, participation methods and realization methods are more and more enveloping observational, interview and analytic methods.* The consciousness is maturing that lasting and central social control of human groups is not possible without central and adequate motivation of all its subjects in their behalf.

My critique, however relevant it was and still is, on the level of the human group, has little relevance on the level of the subhuman group. There is no *depth* to the subhuman groups which observation and experiment could not detect. All social structures are on the surface, none are hidden from the observer. But if there would be any, metaphorically speaking, then action-, participation- and realization methods would have to be instrumented by the animal participants themselves, the hens, the pigeons, or the primates, each within their own social sphere. Although therefore, the study of the social life among animals has profited greatly from observation, manipulation and experiment, these instruments are not sufficient for the human group.

As we have to know the actual structure of a human group[4] not only at one given moment but in all its future developments, we must look forward to the maximum spontaneous participation of every individual in all

[3]See J. L. Moreno, "A Frame of Reference for Testing the Social Investigator," *Sociometry,* Vol. 3, No. 4, October, 1940.

[4]The following pages are largely taken from J. L. Moreno, "Sociometry in relation to other Social Sciences" *Sociometry,* Volume I, 1937, pp. 207-215.



SOCIOMETRY*
Its Boundaries and Fields of Research
Primary Territory: The Human Group.
Secondary Territory: The Subhuman Groups.

future time. The problem is how to motivate men so that they all will give repeatedly and regularly, not only at one time or another, their maximum spontaneous participation. This difficulty can be overcome through fitting the procedure to the administration of the community. If the realization drive in regard to association with other persons or in regard to objects and values are aided officially and permanently by respective community agencies, the procedure can become *repeatable* at any time, and

*This chart and text is reprinted from "Sociometry and the Cultural Order," *Sociometry*, Vol. VI, No. 3, August, 1943.

the insight into the structure of the community in its development in time and space can become constantly available.

Types of Sociometric Procedures

Every type of procedure enumerated below can be applied to any group whatever the developmental level of the individuals in it. If the procedure applied is, in degree of articulation, below the level of that which a certain social structure demands, the results will reflect but an infra-structure of that community. An adequate sociometric procedure should be neither more nor less differentiated than the assumed social structure which it is trying to measure.

One type of procedure is to disclose the social structure between individuals by merely recording their movements and positions in space in regard to one another. This procedure of charting gross movements was applied to a group of babies. It could be applied to any group of animals, f.i. primates. At their level of development no more differentiated technique could have been applied fruitfully. This procedure discloses the structure developing between a number of babies, between the babies and their attendants, and between the babies and the objects around them in a given physical space, a room. At the earliest developmental level, physical and social structure of space overlap and are congruous. At a certain point of development the structure of the interrelationships begins to differentiate itself more and more from the physical structure of the group, and from this moment onward social space in its embryonic form begins to differentiate itself from physical space. The sociogram is here a diagram of positions and movements. A more highly developed structure appears when the children begin to walk. They can now move towards a person whom they like or away from a person whom they dislike, towards an object which they want, or away from an object which they wish to avoid. The factor of nonverbal, spontaneous participation begins to influence the structure more definitely.

Another development of the procedure is used in groups of young children who (before or after walking) are able to make intelligent use of simple verbal symbols. The factor of simple "participation" of the subject becomes more complex. He can choose or reject an object or person without moving bodily. A still further development of the procedure sets in when children are influenced in their making of associations by the physical or social characteristics of other people: sex, race, social status, etc. This factor of differential association signifies a new trend in the de-

velopment of structure. Up to this point only *individuals* stood out and had a position in it. From here on associations of individuals stand out and have a position in it as a group. This differentiating factor is called a *criterion* of the group. As societies of individuals develop, the number of criteria around which associations are or may be formed increases rapidly. The more numerous and the more complex the criteria, the more complex also becomes the social structure of the community.

To peck and to be pecked is such a criterion for hens. But the pecking is entirely overt. It is simply an act. There is apparently no conflict between *choosing* to peck one hen and pecking another instead. But in human groups the divergence between choice process and act process produces difficulties unknown to hens. There may be some point in the evolution of subhuman groups when the divergence between choice and act becomes gradually manifest.

These few samples may make clear that sociometric procedure is not a rigid set of rules but that it has to be modified and adapted to any group situation as it arises. Sociometric procedure has to be shaped in accord with the momentary potentialities of the subjects, so as to arouse them to a maximum of spontaneous participation and to a maximum of realization. If the sociometric procedure is not attuned to the momentary structure of a given community, we may gain only a limited or distorted knowledge of it, and it may never attain a fair and lasting degree of self control.

The participant observer of the social laboratory, counterpart of the scientific observer in the physical or biological laboratory, undergoes a profound change. The observing of movements and voluntary association of individuals has value as a supplement if the basic structure is known. But how can an observer learn something about the basic structure of a community of one thousand people if the observer tries to become an intimate associate of each individual simultaneously, in each role which he enacts in the community? He can not observe them like heavenly bodies and make charts of their movements and reactions. The essence of their situations will be missed if he acts in the role of a scientific spy. The procedure has to be open and apparent. The inhabitants of the community have to become participants in the project *in some degree.* The degree of participation is at its possible minimum when the individuals composing the group are willing *only to answer questions about one another.* Any study which tries to disclose with less than maximum possible participation of the individuals of the group the *feelings which they have in regard to one another is near*-sociometric. Near-sociometric procedures of the research or the

diagnostic type are of much value. They can be applied on a large scale, and within certain limits without any unpleasantness to the participants. The information gained in near-sociometric studies is based however on an inadequate motivation of the participants, they do not fully reveal their feelings. In near-sociometric situations the participants are rarely spontaneous. They do not warm up quickly. Often an individual, if he is asked, "Who are your friends in this town?" may leave one or two persons out, the most important persons in his social atom, persons with whom he entertains a secret friendship of some sort which he does not want known.

The observational method of group research, the study of group formation from *outside* is not abandoned by the sociometrist. This becomes, however, a part of a more inclusive technique, the sociometric procedure. In fact, sociometric procedure is realizational and observational at the same time. A well-trained sociometrist will continuously collect other observational and experimental data which may be essential as a supplement to his knowledge of the *inside* social structure of a group at a particular time. Observational and statistical studies may grow out of sociometric procedures which supplement and deepen structural analysis.

The transition from near-sociometric to basic sociometric procedures depends upon the methods of creating the motivation to more adequate participation. If the participant observer succeeds in becoming less and less an observer and more and more an aid and helper to every individual of the group in regard to their needs or interests, the observer undergoes a transformation, a transformation from observer to auxiliary ego. The observed persons, instead of revealing something, more or less unwillingly, about themselves and one another, become open promoters of the project; *the project becomes a cooperative effort.* They become participants in and observers of the problems of others as well as their own; they become key contributors to the sociometric research. They know that the more explicit and accurate they are in expressing what they want, whether it is as associates in a play, as table mates in a dining room, as neighbors in their community, or as co-workers in a factory, the better are their chances to attain the position in their group which is as near as possible to their anticipations and desires.

The first decisive step in the development of sociometry was the disclosure of the actual organization of a group. The second decisive step was the inclusion of subjective measures in determining this organization. The third decisive step was a method which gives to subjective terms the highest possible degree of objectivity, through the function of the auxiliary ego.

The fourth decisive step was the consideration of the criterion (a need, a value, an aim, etc.) around which a particular structure develops. The true organization of a group can be disclosed if the test is constructed in accord with the criterion around which it is built. For instance, if we want to determine the structure of a work group, the criterion is their relationship as workers in the factory, and not the reply to a question regarding with whom they would like to go out for luncheon. We differentiate therefore between an essential and an auxiliary criterion. Complex groups are often built around several essential criteria. If a test is near-sociometric, that is, inadequately constructed, then it discloses, instead of the actual organization of the group, a distorted form of it, a less differentiated form of it, an *infra*-level of its structure.

Within sociometric work several approaches can be distinguished: (1) the research procedure, aiming to study the organization of groups; (2) the diagnostic procedure, aiming to classify the positions of individuals in groups and the position of groups in the community; (3) therapeutic and political procedures, aiming to aid individuals or groups to better adjustment; and finally, (4) the complete sociometric procedure, in which all these steps are synthetically united and transformed into a single operation, one procedure depending upon the other. This last procedure is also the most *scientific* of all. It is not more scientific because it is more practical; rather, it is more practical because it is more scientifically accurate.

The Sociogram

The responses received in the course of sociometric procedure from each individual, however spontaneous and essential they may appear, are *materials* only and not yet sociometric facts in themselves. We have first to visualize and represent how these responses hang together. The astronomer has his universe of stars and of the other heavenly bodies visibly spread throughout space. Their geography is given. The sociometrist is in the paradoxical situation that he has to construct and map his universe before he can explore it. A process of charting has been devised, the sociogram, which is, as it should be, more than merely a method of presentation. It is first of all a method of exploration. It makes possible the exploration of sociometric facts. The proper placement of every individual and of all interrelations of individuals can be shown on a sociogram. It is at present the only available scheme which makes *the dynamic structure of relationships* within a group plain and which permits its concrete structural analysis.

As the pattern of the social universe is not visible to us, it is made visible through charting. Therefore the sociometric chart is the more useful the more accurately and realistically it portrays the relations discovered. As every detail is important the most accurate presentation is the most appropriate. The problem is not only to present knowledge in the simplest and shortest manner, but to present the relations so that they can be studied.

Numerous types of sociogram have been devised. A sample of the earliest type of sociogram* portrays the pattern of the social structure as a whole and the position of every individual within it. It shows the social configurations as they grow in time and as they spread in space. As the technique of sociometric charting is a method of exploration, the sociograms are so devised that one can pick from the *primary* map of a community small parts, redraw them, and study them so to speak under the microscope. Another type of derivative or secondary sociogram results if we pick from the map of a community large structures because of their functional significance, for instance, psychological networks. The mapping of networks indicates that we may devise on the basis of primary sociograms forms of charting which enable us to explore large geographical areas.

Concepts and Discoveries

Sociometry started practically as soon as we were in the position to study social structure as a whole and in its parts at the same time. This was impossible as long as the problem of the individual was still a main concern, as with an individual's relation and adjustment to the group. Once the full social structure could be seen as a totality it could be studied in its minute detail. We thus became able (1) to describe sociometric facts (descriptive sociometry) and (2) to investigate the function of specific structures, the effect of some parts upon others (dynamic sociometry).

Viewing the social structure of a certain community as a whole, related to a certain locality, with a certain physical geography, a township filled with homes, schools, workshops, the interrelations between their inhabitants in these situations, we arrive at the concept of the psychological geography of a community. Viewing the detailed structure of a community we see the concrete position of every individual in it, also, a nucleus of relations around every individual which is "thicker" around some individuals, "thinner" around others. This nucleus of relations is the smallest *social* structure in a community, a *social* atom. From the point of view of a descriptive sociometry, the social atom is a fact, not a concept, just as in anatomy the

*See J. L. Moreno "Das Stegreiftheater," Berlin 1923, pp. 90-100.

blood vessel system, for instance, is first of all a descriptive fact. It attained dynamic significance as soon as the study of the development of social atoms suggested that they have an important function in the formation of human society.

Whereas certain parts of these social atoms seem to remain buried between the individuals participating, certain parts link themselves with parts of other social atoms and these with parts of other social atoms again, forming complex chains of interrelations which are called, in terms of descriptive sociometry, psychological networks. The older and wider the network spreads the less significant seems to be the individual contribution toward it. From the point of view of dynamic sociometry these networks have the function of shaping social tradition and public opinion.

It is different and more difficult, however, to describe the process which attracts individuals to one another or which repels them, that flow of feeling of which the social atom and the networks are apparently composed. This process may be conceived as *tele*. We are used to the notion that feelings emerge within the individual organism and that they become attached more strongly or more weakly to persons or things in the immediate environment. We have been in the habit of thinking not only that these totalities of feelings spring up from the individual organism exclusively, from one of its parts or from the organism as a whole, but that these physical and mental states after having emerged reside forever within this organism. The feeling relation to a person or an object has been called attachment or fixation but these attachments or fixations were considered purely as individual projections. This was in accord with the materialistic concept of the individual organism, with its unity, and, we can perhaps say, with its microcosmic independence.

When we found that social atoms and networks have a persistent structure and that they develop in a certain order we had extra individual structures—and probably there are many more to be discovered—in which this flow of feeling can reside. But another difficulty stepped in. As long as we (as auxiliary egos) drew from every individual the responses and materials needed, we were inclined—because of our nearness to the individual—to conceive the tele as flowing out of him towards other individuals and objects. This is certainly correct on the individual-psychological level, in the preparatory phase of sociometric exploration. But as soon as we transferred these responses to the sociogram and studied them not singly but in their inter-relations, both to and from, important methodological reason suggested that we conceive this flowing feeling, the tele, as an

inter-personal or more accurately, as a *sociometric structure*. We must assume at present, until further knowledge forces us to modify and refine this concept, that some real process in one person's life situation is sensitive and corresponds to some real process in another person's life situation and that there are numerous degrees, positive and negative, of these inter-personal sensitivities. The tele between any two individuals may be potential. It may never become active unless these individuals are brought into proximity or unless their feelings and ideas meet at a distance through some channel for instance, the networks. These distance or tele effects have been found to be complex sociometric structures produced by a long chain of individuals each with a different degree of sensitivity for the same tele, ranging from total indifference to a maximum response.

A social atom is thus composed of numerous tele structures; social atoms are again parts of still a larger pattern, the psychological networks which bind or separate large groups of individuals due to their tele relationships. Psychological networks are parts of a still larger unit, the psychological geography of a community. A community is again part of the largest configuration, the psychological totality of human society itself.

Concluding Remarks

Once the sociometrists of both domains have arrived at a full consciousness of the deep divergence of their research situations, a common core of instruments and hypotheses may be worked out. (a) The sociogram as an instrument of exploration and presentation. Towards its further development each sister science can make a contribution. (b) The statistical measurement of actual social configuration based on the deviation from chance. A comparison of human, primate and mammalian groups on this basis should be fruitful. (c) Sociometric experiments with animal groups may present and solve problems which the human sociometrist cannot undertake. (d) The discovery of chemical agents which operate between individuals facilitating either mating or lethal effects, has opened up a fruitful line of research, as pointed out by Dr. Jennings in his study of Protozoa. In human inter-personal relations this angle has hardly been approached. Recent studies in *physio*drama of the socio-chemical correspondences to tele and the warming up process may mark a modest beginning in this direction. (e) According to Dr. Allee objective studies of non-human animals suggest that in the long run the group-centered are slightly stronger than the ego-centered drives. Cooperative experiments with human groups would gain in objectivity if sociometric principles would be applied

in their formation and direction. (f) As to the possibility of establishing a common frame of reference, may I pose the following hypothesis: Human and non-human social structures formed by actual individuals have a characteristic type of organization which differs significantly from structures which are formed by "chance" or by imaginary individuals. This has been proven for the human group by experiments, statistical and mathematical analysis. There must be a factor, 'tele,' operating between individuals, (for instance, in the exploration of appropriate mates) which draws them to form more positive or negative relations, pair relations, triangles, chains, quadrangles, polygons, etc., than on chance. A parallel process should be demonstrable for non-human groups as well. It is the inter-action of the individuals which gives the groups its social reality, whatever the hereditary forces are which direct individual maturation, and the environmental forces which surround them. Their influence is, of course, not denied, but they cannot operate by via the inter-individual channels. By this measure it is possible to determine the degree of social reality of the organization of groups. Certain social configurations have a structure which may place them nearer to the chance level, other social configurations may have a structure which places them nearer the optimum of cohesion. In accordance with this hypothesis, a group of primates or a group of human infants should rank lower on the scale than, for example, a group of human adults. There may be evidence available that such a factor as tele might operate more in certain species which show a comparatively great flexibility of inter-individual relations, but less in other species which tend towards rigid and hereditary social orders. There may be some usefulness in concepts as tele, social atom and psycho-social network as primitive means of communication at a distance among higher mammalian and primate societies. The papers of Dr. Carpenter, Dr. Scott and Dr. Montague indicate that such a convergence of approach, at least in methodology, can well be expected in the near future, drawing the two sociometries into closer collaboration.

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