THE INCORPORATION OF CERTAIN PSYCHOLOGICAL AND SOCIOLOGICAL PERSPECTIVES INTO SOCIAL WORK INTERVENTION - A GENERAL SYSTEMS APPROACH

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CONTENTS

SAMEVATTING

In hierdie verhandeling word daar ingegaan op die gebruik van algemene sisteme teorie as 'n hulpmiddel by the opbouing en verfyning van maatskaplike werk kennis en bemiddeling.

Die uitgangspunt is dat die mensbeskouing en verklaarde doelstelling in maatskaplike werk 'n klient-samestelling en -funksionering bepaal wat die maatskaplike werker genoodsaak om in sy bemiddelingsprogram gebruik te maak van sekere sielkundige en sosiologiese perspektiewe. Die formulering van perspektiewe binne hierdie twee disiplines geskied egter sonder inagneming van mekaar.

Die uiteenlopenheid van dergelike perspektiewe bied probleme by opname in die maatskaplike werk vak-kennis. Laasgenoemde word buitendien gekenmerk deur 'n ongeko-ördineerde samevatting van veronderstellings, feite, denkwyses en teorie.

Maatskaplike werk literatuur oor die gebruik van die sisteembenadering toon 'n gebrek aan gedetailleerde omskrywing van die algemene sisteme teorie en die oop lewende sisteem. Op grond van hierdie leemte is daar besluit om besondere aandag te gee aan die algemene sisteme teorie en die konsep van die oop lewende sisteem.

Daar is verder besluit om oor die sisteem beskouing van die mens te besin. Hierdie besinning bied 'n stewige basis vir die toepassing van sisteme teorie in die sielkunde en die sosiologie.

Hierna volg 'n ontleding van twee perspektiewe wat as besonder relevant tot maatskaplike werk beskou word nl. die persoonlikheidsisteem en die sosiale sisteem. Vervolgens word die klient in maatskaplike werk beskryf as sisteem, sub-sisteem en supra-sisteem. Voorsiening vir die inlywing van sielkundige en sosiologiese perspektiewe word gemaak.

Die gevolgtrekking is dat die gebruik van algemene sisteme teorie vir die maatskaplike werk voordele inhou. Dit vergemaklik die opneming van perspektiewe vanuit sielkunde en sosiologie sonder verbuiging of verdraaiing. Dit bevorder integrasie en konsolidasie van vak-kennis en dit bring die disipline in verband met sielkunde en sosiologie.

ABSTRACT

In this dissertation the use of general systems theory as an aid to knowledge-building, and the refinement of intervention in social work, is investigated.

It is held that the social work view of man, and the profession's declared objectives, determine a structure and function for the client which cause the social worker to resort to psychological and sociological perspectives in his intervention programme. However, the two disciplines concerned formulate their respective perspectives without regard to each other.

The disparity between these perspectives present problems when they are incorporated into social work knowledge. The latter, as it is, is characterized by an unco-ordinated body of suppositions, facts, thoughts and theories.

The social work literature on the use of the systems approach displays a lack of detailed description of general systems theory and the open living system. Because of this shortcoming it was decided to pay particular attention to general systems theory and the concept of the open living system.

Since a system's view of man forms a firm basis for the appreciation of systems theory in psychology and sociology it was decided to include such a consideration.

Following on this is an analysis of two perspectives held to be particularly relevant to social work, viz. the personality system and the social system.

This leads finally to a description of the social work client as a system, as a sub-system and as a supra-system. Provision is made for the incorporation of psychological and sociological perspectives in social work intervention.

It is subsequently concluded that the application of general systems theory has advantages for social work. It facilitates the incorporation of perspectives for psychology and sociology without distortion, promotes the integration and consolidation of social work knowledge, and brings the discipline into relation with the disciplines of psychology and sociology.

CHAPTER ONE

SOCIAL WORK - A CLIENT-CENTRED PROFESSION

A - INTRODUCTION

The profession of social work is characterized by an ever-present tendency on the part of its more serious-minded practitioners to reflect upon its nature and application. Such reflection includes close scrutiny and careful assessment of its tested, hypothetical and assumptive knowledge as well as the discipline's aspirations and achievements.

This ongoing process has undoubtedly resulted in considerable refinement and sophistication in respect of both theory and practice. This is reflected in the definition of the basic objectives, the methods, principles, techniques and skills. However, many serious problems remain and these need to be resolved if the profession is to attain its majority. Two of the major problems and most pressing issues are the integration of knowledge into a single distinctive body and the positioning of the social work discipline along the ordinate in the social sciences' hierarchy.

For many reasons the profession of social work found it expedient in the past to incorporate into its own structure and practice certain concepts and theories which had been developed in the disciplines of psychology and sociology. The knowledge thus obtained has mostly proved to be a worthwhile asset and the profession is likely to continue relying on these disciplines for supplementary contributions.

Inter-disciplinary borrowing is of course useful provided that the selection of

concepts and theories does not mean that the specific contexts in which they had been developed is ignored. Distortion of concepts and theories by forcing them to fit into foreign contexts must be avoided as far as is possible. The "borrowing" by social workers has not always been discreet and prudent, and one finds that social work knowledge is rather loosely ordered on a summative basis. As yet no clearly prescribed and generally accepted way exists whereby new information can be integrated into the existing body of knowledge on a constitutive basis.

It is of paramount importance that a suitable theoretical model, i.e. a conceptual tool, be found which would enable the social worker to be more selective and integrative, and, which would facilitate attempts at unifying social work knowledge into one distinctive body.

As profession social work renders a service to people and it concerns itself with their needs and the ways in which such needs are met. It aims at intervening in situations where needs are not met, or, whenever possible it tries to prevent such situations from taking place. Central to social work thinking is a client whose needs are either not met or are not likely to be met.

The client in social work is a complex organization. It may be an individual human being or it may be a group of people or a larger community of people. The social worker accordingly requires a broad frame of reference, against which the client can be viewed. Whenever the client is constituted by an individual person psychological concepts and theories would appear to be more appropriate for analytical and explanatory purposes. In the case of the larger groups of people sociological thoughts become more suitable while psychological perspectives appear to be less relevant.

No direct link exists between the individual human being and society. The connection between the two can be traced only through the intermediacy of sets

of relationships between people on different levels of organization and which range from the micro-organization of the dyadic structure, through the meso-organization to the macro-organization of national and international societies. The psycho-social approach to human living, as advocated in social work, requires such a link.

In this respect social work has a vast store of knowledge from which to draw. The lack of integration in this fund, however, reveals at times an undesirable polarization. At the one end the psychological concepts and theories are housed while at the other end one finds the sociological perspectives.

This polarization does not appear to affect adversely the work of specialist social workers. The social worker who works mainly with individual persons as clients is likely to display a strong leaning towards psychological insights and methods and may very well hold the larger society in which the client lives, to be of little if any consequence to the social work goals he had set for himself and his client. His client's social environment, under these circumstances, will be restricted to those people with whom he has strong and intimate relationships. On the other hand the practitioner who works towards social change will rely on a broad sociological understanding of social groups, social institutions and systems. Under these circumstances the individual person may not be a unit of direct concern.

The primary area of social work practice, the area of competence, is located at the interface of the person system and the environment system, at the point where individuals interact with the environment. The problematic consequences of this interaction constitute the target problems of social work, whether located in the person or in the environment or, as is most often the case, in a combination of both person and environment.[1]

Social work goals require that all practitioners should have ready access to

the methods, techniques and skills developed by their fellow practitioners. Such access could only be effected through an appreciation of the broad front covered by social work and the expertise of fellow social workers active in other areas of practice. A loosely ordered body of knowledge constitutes a serious drawback. Some practitioners may as a result elect to isolate themselves in specialist areas with little if any contact with their neighbours while others pendulate between the extremes without striking root anywhere.

The social work perspective, in fact, suggests that the individual human being is more than the sum total of his psychological and sociological ingredients. Inherent in this perspective is the notion of wholeness. The individual person constitutes a whole through the interaction between his constituent parts. In the same way any organization, in which this individual is a component, will constitute a whole as a result of the interaction between that individual and the other components.

The notion of wholeness prescribes that the social worker shall strive to make whole that which is incomplete, and, that which is hindered, in whatever way, from becoming complete. The social work intent involves not only ameliorative or remedial action but preventative action as well. This intent demands, in equal portions, anticipatory knowledge and practice experience and wisdom. Since the wholeness of the individual person is constituted by the interaction between its components, and since the person as a complete and whole organization in turn constitutes a component of another whole, i.e. a larger organizatio it follows that the phenomenon must be studied and attended to in its totality.

In this dissertation the client in social work is the central phenomenon; an organism which on one level functions in terms of the interaction between its components, and which, on another level contributes to the functioning of a larger organization because of its interaction with the other components in that organization.

The primary intention in this dissertation is to consider a way in which certain theories, concepts and perspectives formulated in the disciplines of psychology and sociology may be related and incorporated into the body of social work knowledge, and, in such a manner as to constitute a whole which would be reflective of that whole which it seeks to understand. The need for attending to this aspect will become clear once the nature and function, i.e. the objectives, knowledge-building, methodology and intervention of the profession, has been considered.

B - THE NATURE AND FUNCTION OF THE SOCIAL WORK PROFESSION

The frequently posed and still persisting question is whether social work is indeed "... something more than a grown-up system of philanthropy"[2] and which has moved from "... dedicated but non-institutionalized enthusiasm in the fight against entrenched evils to a stage characterized by a professional worker offering a regularized, necessary social service in a systematic and skillful manner."[3]

This question is answered by:

(i) defining social work according to its concerns
(ii) testing social work against the classical criteria for a profession
(iii) identifying the underlying assumptions in social work
(iv) analysing social work in terms of its values
(v) clarifying social work objectives and
(vi) describing social work principles, methods, techniques and skills.

Defining social work, particularly as a profession, has always been and still is problematic. Cogan suggested that definitions, particularly in respect of professions, are "rarely subject to rational thought." He found that reaction in definitions tended to be "... polarized toward an enthusiastic acceptance or toward rancorous and defensive rejections."[4] It is accepted that definitions

will display a bias according to the individual's interests and specialization. The risk of polarization can be minimized though as long as each explanation and each definition is considered in terms of the specific context and perspective from which it derives. Only on this basis could one hope to find the invariances, the commonalities and areas of agreement, the links between divergent views and theories, and, can one move towards a unification of knowledge.

The earlier definitions of social work all indicate that a particular service is rendered in terms of certain referents. The total organization is described as being both an art and a science.[5] One of the most frequently quoted definitions of social work is that offered by Boehm:

> "Social work seeks to enhance the social functioning of individuals, singly and in groups, by activities focused upon their social relationships which constitute the interaction between man and his environment. These activities can be grouped into three functions: restoration of impaired capacity, provision of individual and social resources, and prevention of social dysfunctioning."[6]

Prior to formulating this statement Boehm indicated that no single, then existent, statement of the aims and purposes of the professional practice of social work was either widely recognized or generally accepted. The profession could not be satisfactorily differentiated from other professions because of its fragmented historic development in the segments of casework, groupwork and community work as well as in the various fields of practice. It was also slow in developing an "overall professional organization" and there was no concerted effort at relating and integrating knowledge. Boehm also pointed out that social work definitions characteristically focused on the following concerns:

(a) the social basis of the social work profession

(b) the values, goals, functions and methods of social work.

The aspect of social work's claim to be a profession has been considered by several authors. Of these both Bowers and Eaton drew attention to the six general criteria as formulated by Flexner, and which distinguish a professional occupation from another or from a non-professional occupation. The criteria are:

(a) the activity is essentially intellectual rather than manual and it involves decision-making rather than routine

(b) professional knowledge is applied to practical objects and knowledge is measured by its utility

(c) the profession is a brotherhood; it provides social support to its members in meeting the problems of their work

(d) it has social responsibility and a system of ethics; it must exist for service and not merely for profit

(e) it has more knowledge than is readily accessible to the general public

(f) it possesses techniques of practice that can be learned and transmitted, and these techniques can be used to measure professional skill.[7]

In his statement on the nature of social work Boehm identified the underlying assumptions about the nature of social work as follows:

(a) As profession social work, like all other professions, has problem-solving functions

(b) The practice of social work is an art with a scientific and a value foundation

(c) The profession's being and development derives from its meeting of human needs and aspirations recognized by society. In this respect it "assumes some of the socialization and control functions of society"

(d) The values inherent in social work practice have been taken from those held by the society of which it is a part but such values are

not "necessarily or altogether those universally or predominantly held or practiced in society".

(e) The knowledge which forms the scientific base to social work can be separated into three categories:

(i) "tested knowledge"

(ii) "hypothetical knowledge" which needs to be transformed into tested knowledge

(iii) "assumptive knowledge" which has to be transformed into hypothetical knowledge and from there into tested knowledge.

Boehm also calls assumptive knowledge "practice wisdom".

It is further suggested that the practitioner will use all three types of knowledge and that he is responsible for knowing at any time which type he is using and the degree of "scientific certainty" attached to it.

(f) Social work's goals and functions as well as the problems it seeks to solve determine the knowledge practice requires.

(g) The professional social worker is the instrument of professional help and his internalization of professional knowledge and values is a "vital characteristic" of social workers.

(h) The social worker expresses his professional skill in his activities. Such artistic creation as he may display results from the internal processes of selection of pertinent knowledge in a given situation, fusing such knowledge with social work values and expressing such "fusion" in "professionally relevant activity".

The assumptions mentioned point at social work's dualistic function. It has to safeguard on the one hand the individual's rights and interests, and on the other hand, effective and harmonious social living in the community. It is clear that the goals sought, and the way in which the profession does so, must be congruent with the values held by society if the profession is to receive society's sanctioning. The profession should furthermore exercise adequate

control over its own functioning and so maintain professional responsibility and accountability.

It is understood though that social work's responsibility to society does not mean that it should hold sets of values identical to the predominating sets in society. As Boehm pointed out, the identifiable and operative values in society are often conflicting. There is greater pressure for conformity but this has not succeeded in ousting the "emphasis on diversity valued through all our history." Social work may therefore take a different and unpopular stand to other sections at times, and because of its particular selection of values and its interpretation, it may serve as the "conscience of society". Towle thought social work to be one of society's "instruments for enabling the social conscience to find expression."[8]

The values identified by Boehm as being essential to social work, he thought, pertain mainly to the United States and Canada. They will hold equally well for most western cultures. They centre round the worth and dignity of the individual person, society's responsibility for his welfare and the reciprocal responsibility on the part of the individual to contribute to the "common good." These values are described as follows:

(a) Each person has the right to self-fulfilment. This right stems from a "capacity and thrust towards that goal."

(b) Each member of society is obliged to seek self-fulfilment in ways that would contribute to the common good.

(c) Reciprocity of rights and duties exists, and while society is obliged to facilitate self-fulfilment in its individual members, it has the right to be enriched through the contribution of the individual members.

(d) Opportunities for satisfying his basic physical, psychological and social needs must be socially provided and safe-guarded for "harmonious development" of each person's powers.

(e) The more complex society becomes the greater will be the need for specialized social organizations that would facilitate self-actualization. Social organization should also aim at reducing the conflict between individuals and society. The interdependence between individual and society does mean that the individual has the right to "promote change in social resources which do not serve his need-meeting efforts" just as much as society has the duty of providing adequate and appropriate resources for individual development.

(f) Social organizations must provide as wide a range and variety, as possible, of "socially sanctioned" devices that would enable the individual to realize his potential and to contribute constructively to society.

The values mentioned by Boehm are essentially in accordance with those identified in the Working Definition of Social Work Practice.[9] The latter definition stresses the primary concern with the individual, the interdependence between individuals and the social responsibility they have for each other. Commonalities as well as differences between individuals are recognized and allowed for.

The working definition suggests that these values provide the philosophical foundation for social work practice. A similar tone was adopted by Boehm who held that these values constitute a minimum commitment for the social worker.

Once the underlying assumptions and the values in social work practice are understood, its purposes, goals, sanctions and methods may be considered. Before this can be done, though, it must be made clear that it will not do to merely define and describe that by which the practice may be recognized for what it <u>does</u>. As argued by Gordon, Padula and Munro[10] it is necessary to consider also what social work practice <u>is</u>.

A crucial concept in social work practice is that of the social worker-in-action. Gordon's argument would have it that even though it was not explicitly stated in the Working Definition, the basic idea of practice as the "social worker-in-action"did influence the original formulation of the definition and had "continued to be one of its conceptual strengths." The worker-in-action concept is central to all of the method formulations of casework, groupwork and community work.

To regard practice as worker-in-action specifies what social work is as well as the "functional relationships of the components to that action." As Gordon put it, the action is "directed toward some purpose, occurs under some sanction, and is under the conscious guidance of knowledge and values,and is patterned to some extent by methods." Social work practice indicates the point in the time and space concerning the client, when the worker's "existence can affect the course of events for individuals, groups and communities, if that course is to be affected at all." The worker's actions are determined by the components of assumptions, values, goals, knowledge and methods.

The purpose in social work is to prevent or to correct, or at least to minimize disequilibrium whenever and wherever it occurs in the relationship between man and his environment. In addition it attempts to "seek out, identify and strengthen the maximum potential in individuals, groups and communities." It aims at enhancing social functioning wherever the need for such enhancement is perceived.

Since it is generally recognized that a need exists for the provision of services that would meet basic needs, social work practice in rendering such services is sanctioned by the society. The sanctioning in every instance derives from one or any combination of three sources. The Working Definition lists them as:

(a) government agencies, i.e. authorization by law;

(b) voluntary incorporated agencies which feel themselves obliged to take responsibility for need-meeting activites in the community;

(c) the profession itself which governs and controls practitioners, i.e. their admission to the profession, their training, and other conditions of practice.

Social workers are authorized to use all available resources in the execution of their duties. Within the framework of practice such resources would include social work knowledge and methods. A close relation exists between the two and any additions to, or changes in, the one would result in the other being affected directly.

Knowledge derives from a number of sources. Social work practice has been, and will continue to, drawing steadily from the store of knowledge made available by the other disciplines which concern themselves with the various aspects of human behaviour and social living. Its application to certain situations of the human condition results in further knowledge being generated from its own processes. Social workers require knowledge in the following major areas:

(a) The individual human being, his behaviour, development and psychosocial make-up; his wholeness and the reciprocal influence between himself and his total environment; the way in which he avails himself of external resources and in turn is prepared to serve as a resource for another; his communication with others and the expression of self; the effect that religious, political and other cultural influences have on him; his relationships with other individuals and groups of individuals.

(b) The dynamics of social groups; interaction in the group and group functioning; the effect the group has on the individual, and the reciprocal effect the individual has on the group; transmission of cultural values and socializing aspects; the interaction between

groups and the formation of larger and more complex organizations;

(c) the structure of communities and their internal processes, growth and change, the sources it offers to groups and individuals; interaction between communities and their merging into societies;

(d) the social service structure, the methods used and overall organization;

(e) understanding of self by the practitioner in order to assume responsibility for himself, his feelings, attitudes and actions while in a working relationship with the client.

The Working Definition described the social work method as being the "...responsible, conscious, disciplined use of self in a relationship with an individual or group." The worker-client relationship is used to facilitate interaction between the individual client and his environment. The ultimate aim is to effect change through this relationship

(a) within the client. This will affect his relationship with his environment and will invariably involve some internal re-arrangement on his part

(b) of the social environment in respect of the effect it has on the client

(c) of both the client and his environment.

Once a profession's central focus and intentions have been defined, knowledge can be built up around it. The difficulties experienced in social work in this respect and the relative slow and uneven process of theory-building has been spelled out by Bartlett and others.[11]

The problems in theory-building stem mostly from the initial failure on the part of the theorist and the practitioner to distinguish clearly between knowledge and values, the development of various areas (i.e. specialist areas, e.g. medical, psychiatric, etc.) of practice, and the relatively satisfactory

implementation of the method-and-skill model.[12]

Boehm's exposition and the Working Definition offer one a firm base on which to work. Values are clearly differentiated from knowledge and the professional model has come to replace the method-and-skill model. The emphasis is still on the worker-in-action but the need for tested knowledge is recognised. Serious attempts are presently being made in relating the knowledge gleaned from various areas of specialization, into one unitary body.

It is clear that social work seeks knowledge, not for its own sake but in order to develop an "effective practice oriented towards specific purposes and goals." Social work values and purposes will accordingly set the limits to knowledge as to relevancy. It is so that it has much in common with some of the other professions and disciplines but it is unique in that it concerns itself with man's social living. It does so in terms of a "constellation of value, purpose, sanction, knowledge and method", of such content and configuration as to distinguish it from the practice of other professions.[13]

With its focus on the interactional field between the client and his environment social work concerns itself with stress, as experienced by the client and/or by his environment, as a result of needs not being met. Should such stress result in social dysfunctioning and should such dysfunctioning be the primary problem then it will be the responsibility of the profession. It then becomes the task of the social worker to identify and to evaluate the need and the problem, the client's capacity for resolving the problem, and to help the client to work towards a resolution. It matters not whether the client is in fact an individual person or whether it is a group of people. The principle remains the same and the problem has to be dealt with irrespective of whether it lies within the individual or person, or whether it is to be found in his environment.

Social work does not aim at serving as an antiseptic though.[14] It does not

set out to remove all stumbling blocks, stresses and responsibilities, for such experiences can serve a useful growth-promoting function. Daily struggle in living, particularly if successful, is likely to spur the individual on to greater heights. By placing its "primary attention on man's relationships with other human beings" the profession is very much concerned with how effective the individual is in the performance of his various social roles, and it addresses itself to any threat of impairment of any such role functioning. The social worker's task is to analyze the relationships between his client and others, and, with the co-operation of the client, to find solutions to the factors that "block social functioning."

By social functioning is meant that it includes all of the activities that are required to satisfy "relationships in the variety of social experiences in daily living." It is understood that the interaction between individuals, groups and social systems is a continuous process and that problems in social functioning will be experienced if role performance is hindered. It follows that should the individual's activities not result in satisfactory experiences, his functions will not be acceptable socially.[15]

The social worker will therefore be required to understand, and have a sound knowledge of, the individual human being, his functioning as a whole and his interaction with others; the structure and implications of social functioning. Bartlett in this respect stressed that the focus of social work is "upon the social functioning of persons in life situations, viewed with empathy and considerable objectivity, in terms of the meaning of the situation for the self-realization and growth of individuals, with balanced concern for both inner and outer factors as they affect functioning." She qualified this statement by pointing out that this is an interdependent social work characteristic and that it enables social workers to "see the wholeness of personality and situation, to assess multiple factors within the configuration, and to identify the crucial elements calling for intervention ..."[16]

Siporin pinpoints the issue when he points out that social work is not concerned with the treatment of psychopathology but rather helping people to meet stress situations, i.e. the social worker is concerned with the "... reactions of a person in a situation."[17] He sees "situation theory" as a generic and basic element in social work theory and practice; the "... person-in-situation perspective has always been characteristic of social work". He defines the social situation as:

> "... the fundamental unit of social interaction and of social behavior. It is a basic social unit for human functioning and experience, for actualization of identity, and for interpersonal relationships. A social situation refers to a social group focalized in action at a certain time and place around some crucially relevant object, person, or goal. It is a combination of people and physical objects in time-space circumstances and events that constitutes a field of meaningful experiences."[18]

As Siporin will have it, the group is any "type of collectivity in which individuals have some form of active role relationships with others and there is some common focus of attention and action." The groups are not confined to small groups and may indeed be "informal and large". He furthermore distinguishes a social situation from a social environment. The latter is regarded as being a "network of overlapping social systems and social situations, including ecological systems, cultures and institutions." This whole network, of course, will influence the person from outside and from within so far as it has been internalized. A social situation on the other hand is an "impinging segment of the social environment." It is stated unequivocally that this impinging segment has "meaning for the individual and ... is uniquely perceived and interpreted by him ..." and he also has one or more "status-roles and identities."

This conceptual construct enables the individual to identify with, and to see himself as a part or component of, a particular situation or to regard himself as an outsider to that situation. An individual or group is also said to be

in "action along several dimensions through which a situation can be identified and located in relation to its focus, space, time, boundary, structure, culture, process and definition."

The situational focus is a primary one and refers to a "center of interest and attention toward which action and relationships are oriented". The situation itself consists of the "perceptions, explanations, attributions, expectations, attitudes, and feelings about a situational gestalt and its elements: the setting the people, the interaction, the events, and one's self."[19] The social situation is also the "... means, the context, a determinant for individual and group action." It is the instrumental life space through which individuals and social systems fulfill their basic needs and actualize themselves as living entities."[20] It is further considered to be functional when it meets the needs of individuals and social systems, dysfunctional if it does not meet such needs.

The concept of social situation not only indicates the object and area of concern and which has to be understood in terms of its structure and dynamics, but it also implies that at a certain point or state in the time-spatial configuration social work intervention is to take place.

The dynamics of social interaction and the structure and implications of social functioning need to be understood. This calls for a sound knowledge of the make-up of the individual human being, his functioning as a whole and his interaction with others as well as the dynamics of social living and group dynamics on both the intra- and inter-levels. This aspect was first mentioned on pages 12 and 13 of this dissertation.

Social work knowledge and understanding derives from two main sources, viz. assumptive knowledge and tested knowledge. Assumptive knowledge can be linked directly to the goals and values to which social work subscribes. From assumpti

knowledge hypotheses are formulated and these are eventually tested in practice situations.

A strong interdependent bond exists between the practitioner and the theoretician and the one cannot survive without the other. Assumptive knowledge derives from intuitive and emphatic responses to the human condition by the theoretician who accordingly formulates a hypothesis for testing in the practice situation. The practitioner in turn informs the theoretician as to the outcome, general feasibility and applicability of a given hypothesis.

The process is by no means initiated solely by the theoretician, though the interaction between theoretician and practitioner is essentially a two-way process since the practitioner, in the course of his practice activities, will collect information and knowledge which will be additional to that supplied by the theoretician and previous experience. Any change in the situation of the one will directly affect the situation of the other, and in this sense hypothetical knowledge may be changed into confirmed and tested knowledge, and as well a new hypothesis may be formulated. This is because professional practice is never a routine exercise but each and every activity constitutes a learning situation. The scientific principle holds here, like everywhere else, and that is that no knowledge can ever be regarded as absolute and final and new discoveries and knowledge is to be expected and accommodated.

It is in the nature of science to delimit fields of study[21] but the phenomenon with which social work concerns itself defies disciplinary boundaries. Some, like Maas,[22] argued that the essential aim in social work knowledge-building is not to understand man under "any and all conditions". The concern is with man's behaviour in response to stressful conditions, and the focus is accordingly on the dynamics of stressful situations and on ways of preventing or relieving such conditions. With the emphasis on relief or prevention, knowledge will tend to be of the "methods" kind and will consist essentially of

"formulations about professionally guided social interaction, whether in case-work, groupwork or community organization." To attain socially more satisfying interactions in groups and communities in which clients live, knowledge of personal capacities and supportive social resources is required which includes the worker-client relationship.

Others like MacDonald[23] argue that social work should guard against becoming stabilized and standardized too soon. Social work commits itself to expertise around the maturational factor in human relationships. This commitment fully acknowledges the different complexities of relatedness at the group and community levels, and that needs and resources derive from these "varying patterns of social interaction." Should the maturational factor be absent or indications are that it may not be present when required, social work undertakes to provide compensatory human relationships by means of "dialogue, group and community" to counter deprivation in the encounters between man and man. Again the need for expert knowledge is stressed, i.e. knowledge of the impact of person on person, not only within the "primary context" of the dyad or small group but within the "secondary context" of group and community as well.

Padula and Munro[24] argued in similar vein but went further than Maas and suggested that social work must know what there is to know about behaviour and not only from the contributions of psychoanalysis but also from the contributions made by the biological and social sciences including political science, economics and law. For that matter social work is the only profession that consciously attempts to apply these findings to promote social welfare in "all its phases as affecting the everyday life of individuals and community."[25]

While it is accepted that social work is essentially "problem-oriented" such stressful conditions as are attended to need to be assessed against a backdrop of an expansive understanding of human nature and behaviour. Maas stressed the point that the necessary knowledge must be drawn from the many disciplines that

provide an understanding of the profession's field of action. He argued that a single perspective or commitment to a single discipline suggests a "slackening of a profession's enquiring mind, or a sense of crisis within its ranks." In this stand supportive echoes are found in Marcus who insisted that relations be kept up with other disciplines, and Abels who likewise emphasized the use of findings in other disciplines. Maas pointed at the danger of narrowing one's views to a "unidimensional perspective" on the complex phenomenon of the human scene. He suggested that one should allow for an "organizational perspective" which embraces the sociological view and the "person-focused" perspective which contrasts with the other and concerns the psychological view of man's interaction with his environment. Abels also pointed at the two worlds included in the social work context, viz. the clinical practice world and the world of social change. This is so because of the concern with the changing needs of people and because it sets out to deal with problems on many levels. Social work's borrowing of relevant ideas from particularly psychology and sociology and their modification and use to "benefit the public" is held to be one of the "strengths of the social work profession."[26]

The primary intent may well not be to understand man under any and all conditions but it is necessary to have available the findings of disciplines which set out to do just that, for such resources will facilitate social work aims. Theory-building of this sort enlightens practice, and since the latter does test the efficacy of theory, the close relationship between the two needs not only to be maintained but subjected to the closest scientific control and support.

The knowledge required therefore pertains to a dynamic, everchanging living being which is in constant interaction with an equally alive and everchanging social environment. The emphasis is on function as constituted by interaction between two or more unique individual components. It is subsumed that such interaction is necessary for survival and growth and that the relationship between the interacting components connotes a mutual interdependence. Social

work requires an understanding of this interaction and an appreciation of the factors or conditions which would render such interaction regressive, destructive or impossible, and the understanding aims at effecting measures which would prevent or correct such situations.

The focus on the interactional field includes the behaviour not only of the primary actors but also the interaction between the primary actors and the intervening agent. The primary actors include both the individual human being and his environment in whatever way it may be present. Since the intention is to intervene and bring about certain changes it follows that the ways of doing so have had special attention in the past and will continue to receive special attention in the future with a view to further development and refinement.

Because of the close connection between knowledge and method the latter aspect needs to be considered before one can look at the incorporation of certain psychological and sociological perspectives into the social work discipline.

Social work is a process whereby the circumstances and conditions of the client are subjected to a distinct process of intervention which seeks to enhance social functioning. To the term "process" as used in social work Hofstein ascribed the following meaning: "... the recurrent patterning of a sequence of changes over time and in a particular direction."[27] This definition differentiates process from a series of "haphazard, random or chance changes that have no connection or interrelationship."

Effectiveness, direction, maintenance and professionalism in social work are determined primarily by its knowledge base and the sophistication of its methodology. Method as such constitutes the final blend between art and science. These aspects deserve to be considered more specifically for much of the profession's shortcomings and its structural and functional difficulties can be attributed to problems in these two areas.

Guided by its specific goals, principles and practice wisdom the profession came to develop a distinct methodology which has been subdivided into three major methods, viz. casework, groupwork and community work.

Some practitioners adhere strictly to this division and although they may acknowledge the existence of all three areas of focus and concern, they will confine themselves to one specific area. In contrast to such specialists there are the integrationists who speak of these methods as strategic, almost as though they were techniques of the moment and as if the generic base to social work practice were intolerant of categorizing into major methods.

The division of social work methodology into three major categories is not only plausible but inevitable for the movement of the practitioner's focus from the individual human being through the small group to the larger organization, or vice versa, will cause a change in the focus of knowledge and techniques for intervention.[28]

The crystalization of the major methods did not occur spontaneously nor evenly. Richmond's concept of social diagnosis and emphasis on the social history of the individual client, together with the contributions of practitioners like Lee and Webb, formed the basis for social casework. The formulation of a casework method heralded the move away from focusing on social conditions, which were external to the individual, to conscious social attitudes held by the individual. The shift in interests was from sociological improvements to emphasis on the psychological, i.e. the individual became the central area of concern.

This development was further encouraged and accentuated by movements in the discipline of psychology and particularly in its branches of psychiatry and psycho-analysis. The discoveries of Freud had a tremendous impact, and psychoanalytic and depth psychology found its way into casework.

In casework the focus is on the individual and the interaction between himself and his environment. Social work intervention is undertaken by means of the individual relationship between the worker and the client. In a specific instance this personal service may be extended to two or more, or all, of the members of a family. In the casework setting, through the worker-client relationship, the client is brought in as a resource system, a co-worker, and his co-operation and help is enlisted in finding a solution to his problem.

Two of the important principles in Freudian psychology which had a dramatic impact on casework were that behaviour is purposive and determined, and that some of these determinants are unconscious and not recognized by the actor himself.[29] The assumption was that the worker through his knowledge and skills would be better equipped to assess the situation and bring to the client's consciousness the hidden determinants or causes. The journey into the psyche and inner man contributed to the fragmentation and specialization which took place in casework. Some caseworkers specialized in the traditional and well-established medical and psychiatric settings while others confine themselves to other fields such as family casework, correctional casework, etc. All of these fields are recognized as organized entities of casework.

New developments in psychology combined with the practice-wisdom in social work led to further refinement, and over the years the casework method came to be host to a number of clearly defined approached and theoretical models which give shape and direction to social work intervention. Of the earlier approaches were those formulated by the diagnostic school (based on Freudian psycho-analysis and the functional school (based on the theory of will as formulated by Rank). Some of the later models and approaches are the psycho-social approach (Hollis), the problem-solving model (Perlman), behaviour modification (Thomas, Jehu), and crisis intervention (Rapoport), etc.[30]

Developments in the field of social psychology and in the discipline of sociology

and particularly in respect of role theory, made its mark on casework theory, and the latter did not remain confined to the psycho-analytic perspective. Taylor pointed at the influence, and use, of social role theory in casework. In similar vein Meier spoke of the need to consider cultural and social factors.[31]

As indicated by Timms, casework is the most established and the best covered method in social work literature. This does not mean that groupwork and community work were later developments. Both of these were in fact well established methods in practice by late in the 19th century. What had happened was that casework came to the fore at the turn of the century because of the tremendous boost given it by the increased emphasis on the relevance and importance of the individual human being together with the development of the psycho-analytic theory. Over the first quarter of this century the practice of social work took on a distinct psychological flavour. The understanding of human behaviour centred round cause-and-effect in terms of individual make-up and the reaction to both internal and external events.

Although the casework method has contributed substantially towards the realization of social work goals, it is not sufficient in itself and the profession has to employ the methods of groupwork and community work as well. Human beings, as has been pointed out earlier on, have to relate to many other human beings if their needs are to be met satisfactorily. Social groups are formed on the basis of common interests, and the individual human being relies on numerous associations and sets of relations to ensure his own nurture and protection.

In groupwork the group is used as "an instrument for enhancing social functioning of the individual as a social being."[32] As a method it is not to be regarded as a substitute for casework. It is not a kind of short-cut by means of which manpower shortage can be compensated for in that time and effort is saved since two or more clients are attended to at the same time. As method, in service given to meet a range of needs, it makes a "unique and particular contribution

to the achievement of this objective of the profession, in its expression through groups, and in services to both dysfunctioning and adequately functioning individuals."[33] This statement rests on the Working Definition of Social Group Work Practice which defined its tripartite purpose as follows:

"(a) to assist individuals and groups to identify and resolve or minimize problems arising out of disequilibrium between themselves and their environment;

(b) to identify potential areas of disequilibrium between individuals or groups and the environment in order to prevent the occurence of disequilibrium; and

(c) in addition to these curative and preventative aims, to seek out, identify and strengthen the maximum potential in individuals, groups and communities."[34]

In this sense groupwork has a wide ranging perspective and purpose. The philosophy behind the method is that the individual human being is an entity possessed with worth and dignity and should be treated as such. The method also allows for and encourages the individual's responsibility, not only to himself but to his environment as well. As Konopka put it: "While we must help people to independence and a feeling of self-worth, we must also help them to a realization of interdependence and responsibility."[35]

The groupwork method has been developed as a means of working with groups in a particular way just as the casework method has been developed as a means of working with individuals in a particular way. The concept of group process is central to this method and puts the focus on the individual member and his interaction with his fellow-members. The process includes all interaction in all of its forms, i.e. the reciprocal flow of stimulus and response, and irrespective of whether such a flow occurs on the one-to-one or one-to-many basis.

Relationships between members in small groups are more intense and intimate than those which make up larger groups. The facilitating as well as the restraining and debilitating properties of human interaction on social growth and development are crucial to social work intervention, and the size and type of social group in a given situation will be determined by the practitioner's objectives. Constructive use of the group would mean that negative and destructive interaction patterns could be terminated, or prevented, and energy could be discharged into more positive and growth-promoting activities.

From time to time the groupworker will interact directly with a particular member of the group but such interaction will not be as regular and as intense as is the case in the casework situation. Social work objectives are realized through the interaction between the members of the group and the total functioning of the group. The groupworker is not necessarily a member of the group; he has to create the situation in which the desired interaction can take place but need not be an active participant himself.

A thorough understanding and sound knowledge of the structure and function of the individual as well as the social group is required. A high degree of interdependence exists between the individual and the group and this is to be exploited by the social worker who has the well-being of both individual and group at heart. For the growth and refinement of the groupwork method social work has been drawing, and continues to do so, on the developments in both the disciplines of psychology and sociology, and particularly the contributions of those theorists and practitioners who concerned themselves with the structure and functioning of small social groups.[36]

Since social work concerns itself with social functioning and social living in all of its facets, it follows that its intervention does not confine itself to the levels of individual human functioning and the dynamics of small social

groups. It has always been concerned with the wider social issues and problems experienced in communal living. Past experiences, particularly events such as the depression of the 1930s, formation of ghettos, etc., have all contributed to the development of a specific method which focuses on the larger communities.

While casework is confined to the person-to-person relationship and groupwork utilizes the social group as a tool for effecting changes in personal and group living, community work aims at dealing with the problems and ills of a community and the community is treated as a totality.

The term community work is preferred to the commonly-used term community organization. Timms' point is taken that the term is an attempt to combine elements of community development and community organization. Community development refers essentially to the attempts made in underdeveloped countries to help people to raise their standards of living and to improve social living. Community organization refers essentially to the co-ordination of different agents and agencies in a given area and co-operative planning of social policy within that area.[37]

The term community work presents one with a number of difficulties. Timms regards it as a "loose and value-laden" concept and thinks one should not expect too much precision in the use of the term "community work". Community may refer to a number of people in a given geographic area and its boundaries will be determined mainly by physical factors. It may on the other hand refer to a functional community where the boundaries are determined by the common interests values, objectives, etc.

In social work community work may include either kind of community, and the term refers to a particular "perspective and an approach to problems different from those adopted by social caseworkers and, to a lesser extent, social groupworkers." For one thing, as Carter suggests, need-meeting activities, though as pertinent

as in any of the other two methods, are based on a concept of need which has a particular and unique flavour.[38] The focus is first of all different from that of clinical need as diagnosed in the case of the individual. Need is considered in relation to an "appropriate type of social service". This need must also be in "sufficient volume" to justify an "organized service approach".

Carter adds that need should not be confused or interchanged with services. Need derives from a specific diagnosis of the state or condition of the client and for which a particular and appropriate service must be, and can be, considered. Needs are furthermore referred to as conditions and not as problems and must not be so confined. It is likewise not to be confused with want since people frequently "do not want what they need".

A community may also require help in determining which need has priority over the next. In a given community, it must be realized that the need for a specific service would not include all of the members who have that condition of need, for not all require organized services since they may be able to cope independently and satisfactorily. Finally, while most communities desire answers about the extent and scope of a particular need condition, Carter points out that the requests for study or community projects are usually so "blurred and confusing that it is necessary to rephrase the community organization problem of need into more specific terms."

Skidmore and Thackeray identify three different connotations of community work:[39]

(1) It applies to a "state or stage, meaning the degree or amount of organization, disorganization or unorganization".

(2) It is a "field of practice, encompassing various agencies that focus on the total needs of the community".

(3) It is a "basic method or process, a way or manner in which changes can take place in the community constellation".

Definitions of community work indicate an activity or process whereby needs, problems, opportunities and objectives in a community are identified, ordered, and collective action is taken to realize the identified objectives. Baldock - unlike Ross - points specifically in his definition to the function of the social work practitioner in facilitating this process.[40] The basic aim of community work remains to effect social change which will result in a social condition that will favour, and enhance, social functioning.

Marris and Rein did point out though that not all forms of community work will lead to growth and development and that the standpoint of the community social worker is of paramount importance. The worker may well be working towards a community's acceptance of the wider society's demands or vice versa, or, the worker may look upon his activities as a form of therapy aiming at treating apathy and social disintegration, or, the worker may be biased towards an individual, e.g. a potential leader, or championing cases of personal injustices, or he may display a communal bias where his concern will be with the "neighbourhood as a mutually supportive community."[41]

They do raise the point though that some very fundamental differences exist between the individual as client and the community as client, and that the therapeutic analogy must break down. The community cannot ask for help in the same way as does the individual client, nor can it describe its symptoms. The relationship between itself and its helper is of a different order to that found in the casework situation, for the community cannot initiate nor control the worker-client relationship. The relationship between the community and the worker, and social therapy, tends towards a "paternalism which undermines the very qualities it is seeking to promote: self-confidence and self-respect."

This view, Timms suggests, points at a conflict between the "different technical assumptions that could be made within community work." In both casework and groupwork the worker's techniques are clearly defined and comfortably

accommodated in terms of the underlying assumptions to the method. This is not easily done in community work particularly when one considers the assumptions as listed by Ross. What does come to the fore, and this is seen as being an important contribution, is that in community work emphasis is placed on the "crucial place of conflict in understanding incompatibilities between ways of working and differences between groups and institutions in a society." Community workers frequently argue that many of the recognized social problems are due to "structural social inequalities" and conflict between social groups. It is suggested that such causes could be satisfactorily dealt with through bringing about major changes in social policy, and the social worker is then obliged to move onto the level of policy formation.

The three methods outlined above were formulated because of a specific philosophy, an active involvement with interaction problems on both the personal and social levels, and the building up of practice wisdom and knowledge. In the process of theory-building and consolidating its body of knowledge the profession compensated for certain shortcomings and inadequacies by borrowing from its sister-professions and disciplines. Some of the theories and concepts so borrowed were to have a direct influence on social work intervention.

The profession does not regard itself as being responsible for all eventualities in terms of personal and social problems. Its focus is on the social functioning of man in his interaction with his environment. The emphasis is on need-meeting and the linking up of, or the "creating" of, resources. Though a sound understanding of the psychological and of the sociological perspectives is required, the profession does not, and has never intended to, usurp or replace any of the other disciplines or professions. It is rather a matter of utilizing these disciplines more effectively.

To sum up, in the process of knowledge- and theory-building social work methodolo

came to be sub-divided into three major methods, each of which focuses on a particular setting for, and level of, social work intervention in social functioning. Although each method developed a set of techniques and skills, sufficiently distinct to allow for identification as a separate method, each one nevertheless is sufficiently characteristic of social work intent and generic methodology to enable one to group them together in one single discipline. This sub-division and subsequent refinement in practice did enrich the profession. As mentioned by Carter, practice contributes to theory-building in that:

"(a) it orders the experiences from practice and conceptualizes these practices; this helps to identify the important hypotheses to be tested through research methods.

(b) The second important function is at the point of verifying theory derived from research through pragmatic application in practice situations."[42]

C - THE NEED FOR A UNIFIED OPERATIONAL SYSTEM IN SOCIAL WORK

The preceding exposition on the social work profession and discipline indicates that serious problems still exist and that too much within its body of knowledge and methodology remains unconnected. The profession has not succeeded, despite considerable progress, in establishing a generally recognized and appreciated identity, and its service rendering has not realized its full potential. All attempts at finding ways of consolidating and ordering its body of knowledge and in establishing effective channels between theory and practice should be encouraged and supported.

It is accepted that the basic problem in social work will be seen in different ways by different social workers according to the leaning and bias in each individual's case. This dissertation revolves round the view that the problem is one of finding a model, or method, which will assist the social work practitioner in his attempts to:

(a) maintain a purposive and, as far as possible, an empirically verifiable course;

(b) uphold the tenet that all things are related to, and affect, each other and are as such parts of a whole; isolation of any part in contradiction to this tenet would be a futile and sterile exercise, if not a destructive and a regressive exercise;

(c) facilitate and enrich the process of transcending barriers which prevent observation, evaluation and incorporation of development, progress and discovery in the other disciplines, their specializations and hybrids;

(d) offer in his own specialization an intra- and inter-disciplinary linkage for constructive and productive contribution to the universal body of knowledge;

(e) remain in the cadre of the understanding and knowledge of the universe without relinquishing disciplinary identity and status;

(f) be able at all times, and in all situations, to communicate intelligibly and acceptably with the other disciplines;

(g) avoid partialization, specialization and study in depth at the expense of studying phenomena in breadth and in this sense to maintain an awareness of, and concern with, the holistic;

(h) realize the declared objectives of his profession, uphold its identified principles, enhance its recognized techniques and skills; to realize its full potential as a social service institution and in doing so to position it in the spectrum of service institutions.

The present-day approach to the client in social work has its roots in a fusion of compatible abstract elements precipitated - in terms of the profession's requirements - from the disciplines of psychology and sociology. This fusion resulted in the formation of a concept of a psycho-social being. The essential character of this approach is of inclusion rather than exclusion, and as conceptu construct it is regarded as one of the most comprehensive and truest reflections

of a being which is in constant interaction with its environment and which is subject to change and development as a result of such interaction.

The psycho-social model of man is analogous to a prism which refracts a light beam into a spectrum of colour according to the differing wavelengths of the various colours which together make up that light. In the same way the psycho-social model offers a spectrum of the psychological and sociological ingredients which together constitute the living human being. In the case of the light beam a filter of a certain colour will allow only colours of a certain wavelength to pass through, e.g. a red filter will transmit only light wavelengths within the red colour range. In the same way, should one approach the psycho-social being with a specific perspective, e.g. the individualistic/psychological, only the psychological components will be observed and the rest "filtered out".

The social work perspective is particularly sensitive to the amplitude of the hues where the psychological blends with the sociological. Within the full spectrum of human being and behaving the context of social functioning has the brightest lumination for and greatest impact on the profession. Even though the social work perspective restricts the discipline to the area of social functioning it remains aware of and sensitive to neighbouring perspectives of the disciplines of psychology and sociology.

It is understood that psychological and sociological concepts are incorporated into social work for the sake of expediency and efficiency and not to give social work a psychological or sociological colouring. However, the relationship between practice and theory is reciprocal in terms of stimulus and response, demand and supply. Because of the demands of practice the social work theorist often have to cross disciplinary boundaries in order to find new conceptual tools. Moving across disciplinary boundaries presents a number of difficulties though. One of the major problems - and dangers for that matter - lies in the resultant

distortion when concepts are taken from one context and placed in another as though the two settings were identical.

Transplanting perspectives under these circumstances is not a kind of cloning and the concept, in order to be of use, will have to adapt to its host setting. This may mean modification of an order where certain of its elements come to be regarded as less relevant or are even ignored. Past experiences reveal that the apprehension, ineptitude and bias of either or both theorist and practitioner frequently resulted in changing or distorting the host setting, in order to accommodate the new concept. Both theory and practice under such circumstances are transformed into either some kind of psycho-therapy or some sort of sociological engineering - clearly an unsatisfactory and intolerable situation.

Problems in theory-building and consolidation of the profession's methodology can be resolved only if a way could be established whereby the profession's true perspective can be retained and its contextual frame of reference maintained.

Continuous stock-taking and reflection has gone a long way towards helping the social work profession and discipline to position itself along the continuum of social sciences and to relate to fellow professions and other disciplines, and to avoid disciplinary transgression and trespassing.

It is necessary to have clarity on interdisciplinary relationships. It is equally necessary to have clarity on intra-disciplinary relationships, i.e. the relationships between the discipline's constituent parts. The psycho-social approach requires careful ordering in this respect, for a loosely ordered or unconnected set of components will not only offer a confusing and unconvincing picture to extra-disciplinary observers but also negate the unital being of man.

The idea of a whole being constituted by parts in constant interaction with,

and dependent upon, each other, i.e. a whole being constituted by a set of relationships, directs one's focus to general systems theory. Authors such as Hearn, Goldmeier, Maas, Pollak and Nelsen suggest that general systems theory is useful in social work theorizing and knowledge-building especially if one adopts a unitary approach to the profession.[43]

Although the use of general systems theory is widely advocated by most integrationists in social work, the available social work literature reveals a lack of adequate and satisfactory description and explanation of open living systems and general systems theory. Its application in psychology and sociology with its subsequent use in social work theory-building in mind is equally insufficient.

It is accordingly proposed to consider, in detail, first of all open living systems, their structure and functioning, and then to move on to a consideration of general systems theory and a systems view of man. Once this has been done the focus is moved to the psychological action system of the individual, i.e. the personality system, and from there to the social system.

A detailed consideration of open living systems and how the general systems theory evolved from this concept is necessary if its use in the disciplines of psychology, sociology and social work is to be fully appreciated. All three disciplines, each in its own peculiar manner, are concerned with the study of the same phenomenon, i.e. man. Each one of them confines itself to a particular aspect of man's being, becoming and behaving, and each has accordingly developed a unique perspective.

The subject matter is so complex in organization and manifestation that many singular and unique perspectives are possible as is shown by the wide range of disciplines which are classified under the broad categories of biological, social and behavioural sciences. It is deemed necessary to consider a general systems view of man prior to applying general systems theory to any specific

disciplinary perspective. In this way it is hoped to bridge the gaps which may exist between the disciplines and which are due to differences in the contextual frames of reference.

Finally, general systems theory is applied in an attempt to understand the relationship between the psychological component and the sociological component in the social work model of the client. It is further believed that such an application will assist one in positioning social work along the ordinate between the disciplines of psychology and sociology.

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CHAPTER TWO

THE OPEN LIVING SYSTEM - ITS NATURE AND ORGANIZATION

A - OPEN LIVING SYSTEMS

The biological, social and behavioural sciences are involved in the study of highly complex and multi-variable phenomena. In studies of this kind the analytic method as employed in conventional physics and the physical sciences, proved to be of limited, if any, use. New conceptual tools had to be found.

Bertalanffy (1968), Berrien (1968), Ackhoff and Emery (1972) and Miller (1971) were amongst those scientists and authors who have suggested as a possible solution to the problems encountered in the biological, social and behavioural sciences, the use of the systems approach, and in particular, general systems theory. The systems approach and general systems theory provides for a clear distinction between the systems dealt with in the life, behavioural and social sciences, and those systems found in conventional physics, thermodynamics and physical chemistry. The distinction is based on the essential differences existing between those systems that are regarded as "open" and those systems which are "closed".

According to Bertalanffy[1] conventional physics only deals with closed systems. By "closed" is meant that the system is isolated from its environment. It is implicitly stated in thermodynamics that its laws apply only to closed systems. Of particular importance in this respect is the second principle, or second law, of thermodynamics which states that in a closed system a certain quantity, called entropy, must increase to a maximum and until the process terminates in a state of equilibrium. Bertalanffy suggested that this principle could be

formulated in different ways. The most commonly used alternative is that entropy is a measure of probability and in this sense a closed system "tends to a state of most probably distribution". To use his example - it would be highly improbable to find in the instance where fast-moving molecules (those of high temperature) and slow-moving molecules (those of low temperature) are mixed in a closed space, to have the former group itself together and apart from the latter. It is more likely to find an even distribution, or mixture, of fast- and slow-moving molecules, i.e. a state of complete disorder.

On the other hand the open system avoids a state of chemical or thermo-dynamic equilibrium, i.e. maximum disorder. It maintains a steady state which allows for continuous inflow and outflow, a building up and breaking down of components This process continues for as long as the system remains open and alive. A system displaying characteristics of this kind obviously cannot be explained in terms of the conventional analytic method developed in the physical sciences.

A comparison between closed and open systems reveals that in the former its final state is always determined by initial conditions. Any changes to either the initial conditions or the subsequent process will result in a different final state. In this sense the system functions within itself and in isolation. What happens is that in the closed system, through a series of irreversible changes, entropy increases. The process cannot be reversed and it finally attains a state of maximum disorder which in its ultimate form means that the particular system becomes incapable of work. A watch may be looked upon as an example of a closed system, i.e. if no occasional or intermittent inputs are effected. While the tension is maintained in the main spring the watch will have its parts moving and keep time. Dissipation of this tension, without further inputs by way of winding the watch, must result in the process coming to a halt.

The open system on the other hand, with its continuous inflow and outflow,

and its responsing to external stimuli and feedback mechanisms, is capable of increased entropy, maintaining a steady state or decreased entropy. The steady state clearly demonstrates the principle of equifinality. It is not only capable of managing short-term reversible changes but long-term irreversible changes as well. It is particularly in respect of the latter aspect that it displays a characteristic which appears to be paradoxical to the second principle of thermodynamics. The open system, particularly in the life processes, is capable of evolving towards increased order and complexity. This characteristic will be discussed more fully when the evolution and growth of systems is considered.

Bertalanffy pointed out that the open system model has a wide application and that it is particularly applicable to phenomena which show "... non-structural, dynamic interaction of processes, such as those of metabolism, growth, metabolic aspects of excitation, etc." He subsequently suggested that in a general sense living systems could be defined as "hierarchically organized open systems, maintaining themselves, or developing toward a steady state".

The behaviour and evolution of a system, however, can only be fully understood in terms of its structure. It would only be logical therefore to turn to a consideration of the basic structure of systems.

B - BASIC STRUCTURE

Miller[2] follows Weiss and Gerard when he defines the structure of a system as being "... the arrangement of its sub-systems and components in three-dimensional space at a given moment in time". In terms of this definition the "arrangement", though it may remain "relatively fixed" for long periods, is subject to continuous change. The direction, and pace, of the change will depend upon the nature of the process in the system and is independent of initial conditions. Process as Miller uses it refers to "all change over

time or matter-energy or information". It also includes both reversible actions (on-going functions) and irreversible actions (historical actions), i.e. behaviour and evolution.

i. The Components

The components or parts of a system are those units (or sub-systems) which, because of the relationships existing between them, enable the system to carry out all maintenance and developmental functions. These units need not be alike and are in fact usually unlimited in variety.

The distinguishing feature of a component is its interaction and relationships with the other components. Berrien[3] accordingly identifies a component on the basis of "... whether or not it interacts with another component within the boundary to produce a product that is distinguishable from the interactions themselves and from the inputs".

In terms of these definitions it is not always easy, particularly in the larger and more complex systems, to distinguish between the individual components and sub-components. In the more complex systems what is regarded as a component may well turn out to be a sub-system, relating to other components as a whole or complete entity, but which itself comprises two or more components. The sub-system in this instance is constituted by the relationships existing between its own particular set of components. These components do not significantly or noticeably interact separately with, or relate individually to other components or sub-systems outside the boundary of the sub-system to which they belong. As sub-system the set of components acts jointly and constitutively.

In order to overcome this difficulty some criteria must be found on which distinctions can be based. Berrien's approach seems feasible and worth

considering. It can be summarised as follows:[4]
The relationships between components are characterised by a balance or near-balance between the "forces of mutual attraction" and the "repelling forces". Those forces which allow components to function together are classified as being mutually attractive whereas those forces which serve to preserve the identity of a given component are classified as being repellent. The suggestion is that if the mutually attractive forces overbalance the repelling forces, or should the latter be absent, the individual components will merge into a sub-system in which their "original identities are lost".

Berrien refers to Simon's[5] point made under what he called the "near decomposability" of systems. Simon indicated that in a hierarchic system the smaller units will show to be the "least subject to disintegration". In both physical and social systems one finds that the smaller system shows a more intense or higher frequency of energy/information transportation than the larger systems. The components of the smaller sub-units have a greater influence on each other and a stronger relationship exists between them than exists between them and their superiors.

Berrien's exposition then goes one step further. The system which develops "upwards", i.e. by evolving successive supra-systems, reveals that its preceding sub-systems "initially possess stronger attractive forces, are less easily disrupted and function more effectively" than the succeeding supra-system. On the other hand, those systems which develop in the opposite direction, i.e. the system develops "specialized sub-units" among its components, reveal a greater cohesion and stronger "attractive forces" than the younger offspring. By following this directive it becomes possible to distinguish between systems and their supra-systems, or sub-systems, by looking at the attractive forces between a particular system and its next-in-order system as well as the parent system's direction of growth.

It is, however, pointed out that the upward development may continue to a point where the supra-system which had initially been "weaker" gains sufficient integration to "over-power" its sub-systems. The same rule holds for those systems which develop downward. Here the sub-systems may develop greater attractive forces than their parents, which in turn may result in their "separating themselves from any major dependence upon their supra-systems". Berrien accordingly offers the following proposition:

> "... the components of a parent-system, or systems, giving rise to either sub- or supra-system initially exibit greater mutual attraction or bonding than the components of the younger systems."[6]

ii. Attributes

Attributes are the properties of the components or parts. The near-balance, or balance, between the mutually attractive forces and the repelling forces, is determined by the attributes of the interacting parts. Likewise will the dynamic processes of which a given system is capable, depend upon the relationship between the parts and their attributes.

The dynamic properties of complex living systems, capable of change over time, have been identified by Laszlo et al[7] as time lags (inertia), time delays, positive feedback (growth), negative feedback (homeostasis and regulation), stability, multiplicative and additive effects and threshold (upper and lower). These properties will be discussed in greater detail when the behaviour and evolution of systems is considered.

iii. Relationships

Crucial to understanding the concept of system is a clear and definite notion of the meaning of relationship.

I understand relationship to indicate the mode in which one component or unit

stands to itself, another or others. Subsumed is an aspect of quality (as resembling, direction, difference, etc.) which depends on the mutually attractive forces and repelling forces present, the time-spatial proximity of the components and other attributes of the components concerned.

The spatial aspect is important. It is commonly suggested that an unrelated unit or object cannot be part of a system. Rules of this sort must be applied with caution though. For example in a given set of objects or components one could not merely hold that no relationship exists because the distances between the components or units could be considered as relationships.

To avoid possible confusion and indiscretion Hall and Fagan[9] suggest adopting an approach or attitude whereby distinction is made between important and interesting relationships and trivial or unessential relationships according to the "problem-in-hand", or one's particular interest.

An approach, or attitude, of this kind will account for, and also tolerate, differences in explanation of a given phenomenon by different observers and different disciplines. This approach is seen as not only being tolerant of the differences but as one capable of making a constructive and substantial contribution to the process of integrating knowledge, and of enhancing understanding.

iv. Boundary

If one conceives of a system as a set of interacting functional relationships between components, it follows that the boundary of a system is determined by the limit or extent of that particular set of relationships.

The boundary of a physical system presents little difficulty, e.g. the wall of a cell, the skin of a living organi , the shell of an egg, etc. However,

the position is far more complicated in the case of non-physical living systems.

In the non-physical living system the boundary is demarcated by those relationships existing between, and which are confined to, the given set of components, and, those relationships which transcend these limits. In the larger organizations the boundary may be formed by a sub-system which holds together the components, protects the components from stressful environmental influences, and ensures the continuation of interactional patterns and functions between the components. To illustrate one may consider the nuclear family. The members present a set of relationships with each other which differ from the relationships individual members, or for that matter the total system, may have with others outside the nuclear family. A committee would serve as another example. Here the limits and the extent of the relationships and interactions between the members of the committee are determined by the constitution and laid-down rules and procedures. Its boundary can be clearly seen particularly in respect of the committee's functioning as sub-system within a larger organization, as well as in respect of the individual members' relationships with others outside the committee. The committee in this respect could be viewed as either system or sub-system or, in some cases, as supra-system.

In living systems, and particularly the larger organizations, the boundary, or boundaries in the case of sub-systems, present an extremely complicated four-dimensional aspect. Relationships and interaction territories may change in extent, i.e. expand or contract, in time, as result of the continuous process of inflow and outflow, interaction between one component and another, or between the system and its environment.

The boundary serves as entrance to matter and energy inputs or external stimuli and as exit to matter and energy outputs or product-responses. Both Berrien and Miller[10] indicate that the boundary has filtering properties or, as Berrie

puts it, "coding and decoding" properties. It selectively controls the flow of inputs and outputs, both qualitatively and quantitatively. Its effects on intra-system and inter-system processes will be discussed more fully when systems behaviour is considered.

A closer look at the example of the committee reveals a number of interesting aspects in respect of the control the boundary exerts over relationships on the one hand and on the other the influence relationships have over a boundary. When the committee is viewed as a sub-system of a system, it is seen as being in a position where it could exercise considerable influence over the other components particularly through the filtering of, and control over, the interactional patterns and matter and energy and information transportation. The relationships existing between the committee members have as attributes constitutional and procedural powers which will determine the boundary and in many instances rule out active participation by the ordinary component in the decision-making process. There are typically certain control-mechanisms operating which under normal circumstances will "safe-guard" and balance the relationship between the sub-system (committee) and the other components. This balance, again, will depend on the attractive and repellent forces present.

In other instances the committee could be viewed as a system which, in order to complete a particular task, may create a sub-system. The components of the sub-system (sub-committee, adhoc committee, etc.) are put in a specific relatio to each other and the rest of the system. The boundary in this case is usually determined very clearly and in terms of a particular function. Permutations of this kind of mutation are of course numerous and one may find upward or downward development which will result in changes, particularly to boundarie

v. The system and its environment

I understand environment to include all of those components and systems which

surround a given system and which are capable of influencing or being influenced by that particular system.

In this sense the immediate environment of a component or sub-system would be the system of which it is an integral part and which can, inter alia, be identified in terms of the functioning of that component or sub-system and its relationships with the other components in the set.

The question of when is an object part of a system and when does it belong to the universe is raised by Hall and Fagan.[11] To their way of reasoning no deicision in this respect is clearcut and one's subdivision of a universe into system and environment will be an arbitrary one depending on one's intentions, interests and, accordingly, one's selection of relevant objects. As example, one could consider pupils A,B,C,D and E in a class. A's environment, apart from, or including, the other physical features such as desks, books, walls, windows, etc., will be the set of pupils B,C,D, and E. Likewise B will have an environment including the set of pupils A,C,D, and E. A's class as a system, perhaps in a more distant way, will constitute a component in the environment of the nuclear family of which A is a member. A's class on the other hand will have as components constituting its environment, parents, teachers, the neighbourhood, etc. Any decision in this respect as to system or environment will obviously depend on the observer's interests and intentions.

Some theorists prefer to deal with systems according to an "hierarchical order". This means that the components of a given system could come to be viewed as sub-system and the components of a sub-system as sub-sub-systems of that system. Alternatively the system may be looked upon as a component of a supra-system which in turn may be a component of an even larger system or supra-supra-system. The example of the class of pupils serves as illustratio

My own approach is one whereby a system is recognized as such in terms of a given set of relationships; relationships which in turn define the system's boundary. The environment is recognized by the objects, or other systems, which maintain relationships that transcend the boundary of the system concerned. These objects or systems are directly involved in the flow of matter, energy or information into, or out of, the given system. As such the environment is also capable of change over time.

vi. Time-spatial aspects of system

The preceding outline of the basic structure of systems, with their time-spatial dimensions, indicates that systems occupy space of either a physical (or geographical) or a conceptual (or abstract) nature, and that this occupation may be temporal or non-temporal.[12]

Physical space has certain characteristics and constraints. Within that space maximum interaction, e.g. friction, cohesion, gravitational pull, etc., occurs between the components. The degree or intensity of the interaction will depend upon the relationships existing between the components.

Miller[12] points out that all concrete systems, whether living or non-living, are affected by physical space, and it also happens to be "common space" since it is the only space in which concrete systems exist. To this he adds that physical space is shared by all scientific observers, and all scientific data must be collected in it.

Although scientific data is collected in physical space, observers are not prevented from viewing living systems as "existing in spaces which they conceptualize or abstract from the phenomena with which they deal". As example of abstract or conceptual space, Miller offers the peck order in birds or other animals, social class space (lower, upper lower, lower middle, etc.),

social distance among ethnic or racial groups, etc.

He points out that the characteristics and constrains of the conceptual space differ from that of the physical space. Since they are either "conceived of by a human being or learned about from others" one finds that each conceptual space has its own characteristics and constraints. The way in which it is observed will accordingly depend on the bias of the particular observer. The concept of conceptual space is nevertheless extremely useful to both biological and social scientists since certain processes in the living systems are not determined by physical space, e.g. the people with like interests and attitudes relate more frequently to each other than those who just happen to be in close proximity but who do not have similar likes and attitudes.

Miller cautions that it is nevertheless desirable, if not essential, to indicate precisely what the transformations are from the other spaces, in which observations and measurements are made, to physical space since it is "only common space in which all concrete systems exist".

A system has a particular structure which permits (or in some instances prevents) a particular process at a particular instant (time). The dimension of time may also mean the "measured period over which a structure endures or a process continues". It is also pointed out by Miller that while a system can move in any direction on the spatial dimensions it can only move forward on the time dimension.

The four-dimensional nature of systems however, demand a typology of systems on which a theory of systems on all levels can be based. Miller[13] offers a distinction between three types of systems, viz. concrete systems, abstracted systems and conceptual systems and these need to be looked at before the behaviour and evolution of systems can be considered.

C - TYPES OF SYSTEMS

i. The concrete system

The concrete system is a time-space phenomenon capable of processing, storing and maintaining a balance of matter/energy/information. It is particular and empirical and, as Laszlo points out, can never be general. Its structure and processes are measurable in time. Miller's definitions has it that a concrete system is a purposeful amassing of matter-energy that occupies physical space-time and which is organized into interacting, interrelated components and sub-systems. In respect of components and sub-systems he follows Hall and Fagan's suggestions that these units are also concrete systems.[14]

Relationships of various sorts exist in concrete systems, e.g. spatial, temporal time-spatial and causal. These relationships, as well as the units, or sub-systems, can be determined empirically. Miller also points out that in theoretical statements about concrete systems the nouns, pronouns and their modifiers typically refer to concrete systems, components and sub-systems. The verbs and their modifiers refer to the relationships between the components. He does concede though that there are quite a number of instances where the reverse holds true and here the noun refers to "patterns of relationships", e.g. reflex, action, nerve-impulse, etc.

Concrete systems include both closed and open systems, living and non-living systems. The closed systems are those systems where the boundaries prevent all matter-energy or information transmissions. In the case of open systems, whether living or non-living the boundary is found to be at least partially permeable and a certain amount of input-output activities occur.

In concrete systems the boundaries are set in time and physical space according to the interacting and interrelating components making up the set and the attributes and extent of the existing relationships. The concrete system is

capable of maintaining a particular structure over a period of time and is equally capable of change over time.

ii. The abstracted system

Laszlo's interpretation is that "abstracted systems refer to the real world but abstract elements of them and maps these as components of the system model." Hence the abstracted system contains a mixture of empirical and conceptual factors. According to Miller's definition the components of the abstracted system are "relationships abstracted" or those relationships selected by the observer according to his particular "interests, theoretical viewpoint or philosophical bias". It is possible to determine some, but not all, of these relationships empirically.

The relationships selected or abstracted are those found to exist in living concrete systems. Unlike the position in concrete systems, the theoretical statements in the case of abstracted systems typically have the nouns, pronouns and their modifiers refer to relationships and the verbs and their modifiers refer to the concrete systems in which the relationships exist. To illustrate his point Miller offers for consideration the following two statements:

"Lincoln was President".

"The Presidency was occupied by Lincoln".

The first statement, he argues, points at a concrete system and the second to the relationships in an abstracted system.

Miller is also clear on the point that abstracted systems differ from "abstractions". He views abstractions as being a concept which represents a "class of phenomena all of which are considered to have some similar class characteristics. He does not see the members or parts which make up the class as interacting with each other or being interrelated.

concrete system. The boundary of the abstracted system, in terms of his definition, may at times be established conceptually and in regions which "cut through the units and relationships in the physical space occupied by concrete systems."

iii. Conceptual systems

Conceptual systems are systems of concepts and in this category would be placed "schools of thought" such as the Hegelian system or that of Newton. Miller lists as components or units of the conceptual system words (nouns, pronouns and modifiers), numbers or other symbols.

He defines relationships in conceptual systems as being "... a set of pairs of units, each pair being ordered in a similar way." The relationships are expressed by words or by logical or methematical symbols and would include those in computer simulations and programmes. As example he offers inclusion, equivalence, subtraction, implication and addition. He emphasizes the point that the language or symbols or computer programmes are "all concepts" and that they always exist in one or more concrete systems, living or non-living, like a scientist, textbook or a computer.

To this Laszlo adds that conceptual systems are always timeless and that the concepts of change do not apply to them.

iv. Miller's typology

The broader definitions of systems describe it as consisting of a set of parts (units or components) which interact with each other and between which relationships exist. From the typology offered above it is obvious that such broad definitions will include all three of Miller's distinctions, i.e. concrete systems, abstracted systems and conceptual systems. This presents certain difficulties.

Miller remarked on this and while he does not contest the value or usefulness of the "three meanings" in science, he insists that one should always differentiate between them if confusion is to be avoided. This holds particularly for instances where the boundaries of diverse disciplines are to be transcended. A combination of concrete systems and abstracted systems at such times could only result in unnecessary problems. As Miller puts it, if "the diverse fields of science are to be unified" one should have the disciplines direct themselves at either concrete systems or abstracted systems.

He accepts that it may at times be appropriate to start a scientific endeavour using a conceptual system. The conceptual system will then be evaluated by collecting data on a concrete or abstracted system. One may equally well start the other way round, i.e. collect data first and then determine what conceptual system it fits. Throughout the process it will remain necessary to differentiate clearly between the "three meanings".

Hall and Fagan also start off with a broad definition of system but as their consideration develops their definition becomes more rigorous and technical and it becomes clear that the only system that can be satisfactorily included in their definition is the one that Miller calls a concrete system. When the elements of time and space and the concepts of environment, adaptation, change, dynamics and statics are introduced, conceptual systems and abstracted systems are ruled out.

In my own thinking I initially omitted to differentiate between the "three meanings" of concrete, abstracted and conceptual systems. The subsequent confusion resulted in a fallacious conclusion that any and all systems could be explained in terms of abstracted or conceptual systems. The ensuing intolerable muddle was only resolved once I realised that I had been confusing theoretical and conceptual models pertaining to concrete systems with the structures of abstracted and conceptual systems.

It is obvious that in order to reach any understanding of the observable phenomena that concern social and behavioural scientists, certain abstractions and conceptual formalities are required. In this way are the necessary criteria for general identification, quantitative assessment and qualitative classification affected. One remains aware of the multi-variable and complex nature of open living systems and that the observer with his particular limitations and bias will concentrate only on certain variables or sets of variables. An undistorted picture and meaningful findings can only be assured if haphazard and willy-nilly selection of variables and conceptual tools could be controlled and eliminated. The only way in which this can be achieved is to make available, insist upon a particular, and standard system of selection of significant components. Only verifiable and empirically determinable theoretical and conceptual models are acceptable; personal and impulsive abstractions must be discouraged.

By abstraction I understand, and I use the term accordingly, something that comprises or concentrates in itself the essential qualities of a larger thing or several things. As such the abstraction is an expression of a property, quality, attribute or relation viewed apart from the other characteristics inherent in, or constituting an object. The abstraction can be considered apart from any application to a particular object or specific instance.

Concept, in the sense it is used here, is a theoretical construct; a generic mental image abstracted from a working rule or rules respecting the technique of and art or science.[16] It is realised that there are certain limits and constraints to theoretical and conceptual models. For one thing, as Laszlo points out, they do not possess matter, or energy, or information. They are also not capable of changing, or being changed by their environment. They are a "timeless set of quantitative and qualitative concepts which may include terms of such processes but are not the processes themselves." They may be models of systems but are not systems and should not be referred to as if they

When one looks at General Systems Theory one finds that it is not a general theory of theories about systems nor is it a generalisation of systems. It has developed a "general model of certain kinds of systems". The model is an abstraction in as much as theories and models are abstraction, but it derives from the reality of concrete systems and essentially refers to concrete systems.

If Laszlo's suggestion that "... a truly general system theory is a general theory of systems on all levels, insofar as they exhibit invariances in their structure and function" is to be met, concepts and abstractions must be regarded as theories and models and not as a system.

The term system as used throughout the rest of this dissertation therefore refers only to concrete systems as defined by Miller.

v. Type, level and intersystem organization

Since it has become clear that only concrete systems are to be considered, the term type, as an abstraction, is used to indicate groups or classes of concrete systems. The grouping or classification is done on the basis of similar characteristics observed in systems. This needs further qualification though, since not all of the observed or observable, similar characteristics are always used as basis. The selecting of relevant characteristics depends on the observer's interest or attitude.

Miller suggests that man's original attempts at classification may well have centred round issues such as edibility, threat to self and commune, susceptibility to capture, etc. This mode of classification would then have been extended and developed and present-day observations and classifications are done on the basis of "categories which are scientifically more useful".

One may consider the classification of species (a sub-class to genus) in animals, plants and other organisms. Certain systems are classified as belonging to a particular species if they differ from each other in only very minor aspects. The classification is usually done on the basis of the structure of the system, processes occurring in that system, and its interaction with other systems, i.e. its ability to relate and communicate as well as its ability to reproduce.

Some species, e.g. human species, are composed of members who may at first glance reveal a tremendous range of differences in terms of not only structure but certain processes and behavioural patterns as well. In the case of human beings one will find differences in appearance, e.g. hair, skin, eye colouring, sexual differences, shortness/tallness, fatness/thinness, some may lack certain limbs, organs, use of particular faculties, etc. Classification, however, derives from a far more complicated and scientific application of a set of criteria, and it can be undertaken on the basis of either the presence of, and/or the absence of certain components of aspects.

The similarity or dissimilarity is often a mere matter of degree. In human beings one finds a variance in pulse-rate, metabolism, blood pressure, need for rest, potential for work, etc. The similarity lies in having a structure composed of organs, tissues and bones enabling the organism to perform certain functions and carry out certain processes. The relationships between the various components are important. The veriform appendix and tonsils would appear to be unnecessary or non-essential in terms of body function and in this respect the removal of these organs does not seem to result in a significant difference between that human being and others. It is, however, a very different matter in the case of, say, the heart, or lungs, or brain. Should any irreversible changes occur and that organ stops functioning or is removed, the organism may perhaps be kept temporarily alive by external means, but the chances are it will cease to be a human being and die. When this happens

the human being type is replaced by a different classification as corpse, deceased, etc.

One finds various other "types" of systems at other levels of the hierarchy of living systems. One could, on the sub-system level, classify human beings in terms of a lack of particular components or relationships, e.g. paraplegics, mongols, cripples, divorcees, drop-outs, or in terms of the supra-systems because of particular sets of attributes, as primitive societies, industrial societies.

It is clear that the universe presents itself as a hierarchy of systems and the "higher level of system" consists of "systems of lower levels".

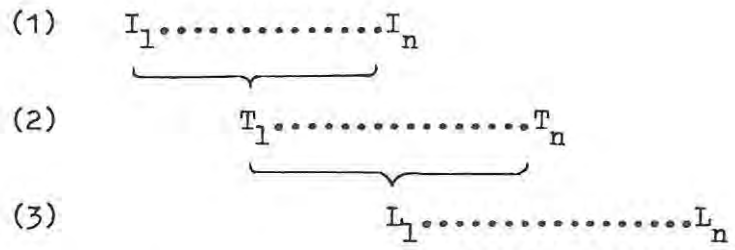
One could argue in the case of a living system that the cell is the lowest level. The next level would be that of organ, which is due to the aggragation of cells into tissue. The aggragation of organs will result in forming an organism and fr here on one moves through the levels of groups, organizations of groups, societie etc. On the higher level of systems a mixed composition of living and non-living systems may be found. It is also possible to present the hierarchy in a different way and to regard the sub-sets of living systems as inclusive of cells, organs, organisations, etc.

The decision as to what constitutes a particular level may be an arbitrary one. Miller, for example, points at the argument against regarding organ as a particular level. This argument is based on the view that no organ exists, or could exist, independent of other organs, and hence one could only have the next level of organisation. However, as to the criteria employed, Miller argues that the "extensive experience" of scientific observers has led to a "consensus" that there are certain fundamental forms of organisation of living matter-energy.

He suggests that one should closely follow the procedural rule in systems theory by identifying one's level of reference right at the outset, and that one should

not change level without a specific statement to that effect. One accordingly calls the systems at the indicated level "system" and those above, i.e. at the next higher level supra-system, and at the next, supra-supra-system. The order of descent will be indicated by identification of sub-system, sub-sub-system, etc.

The aspect of boundary is important to the concepts of level and type. One finds a greater amount of variance among species than between the members within a species. The taxonomy, level and inter-system organisation of systems can be explained in terms of the basic procedure of generalisations from one system to another, as followed in science. The generalisation is based on some observed similarity between the two systems which allows one to class them together. Miller employs the following diagram to illustrate the procedure of inter-system generalisation:



In this figure $I_1 \ldots$ to I_n represents the states of separate specific individual systems on a specific structural or process variable. In order to observe and measure the differences among the individuals, a variable common to the type T, needs to be recognized. One can for example allow for minor differences such as colour of eyes or of skin, hair etc., in the case of human beings, by using a common variable such as the physiological process of metabolism, or blood circulation, etc.

One can also generalise from type to type $[T_1 - T_n]$. As example one has cross-species generalisations of physiologists and psychologists who find structural as well as functional similarities between rats, monkeys and human beings. Although cross-species generalisations are commonly found and are

scientifically acceptable, one has nevertheless to bear in mind not only the individual differences within a given species, but also the differences between species.

The third type of generalisation as indicated in the figure above, is from one level to another. Such generalisations are based on the assumption that "each of the levels of life, from cell to society, is composed of systems of the previous lower level." Miller points out that such cross-level generalisations will usually have "greater variance than the other sorts since they include differences and variances among types as well as individuals." The valid point remains, however, that these generalisations can be made and, as he puts it, can be of "great conceptual significance."

Inter-system generalisation rests on three "logically independent" steps:

(a) between two or more systems an aspect of "comparable status" in each of the systems is identified;

(b) a quantitative identity is hypothesised between the systems;

(c) this idea is then demonstrated within a specific range of error, by collecting data on a similar aspect of each of the systems compared.

No comparison of two or more systems will be complete until such time as the statements of their formal similarities are linked with specific statements on the inter-individual, inter-type and inter-level differences which exist between the statements. The similarities which constitute the "formal identities" and variances or "dis-identities" are confirmed by research.

The importance and usefulness of inter-system generalisation lies in that, if undertaken on the basis as outlined, it is possible to describe different structures carrying out similar processes or functions, by the same formal model. Conversely, it facilitates the demonstration as a general principle of sub-system

with similar but different processes having measurable similarities as well.

D - SYSTEMS BEHAVIOUR

i. The state of the system

The state of a system refers to the arrangement of the system's components in a given pattern. This pattern is subject to change in time and the changes are brought about by the continuous flow of matter, energy of information into, and out of, the system, as well as the system's tendency to maintain a steady state.

It must be made clear that after a change in the pattern in which the system's components had been arranged, one is not faced with a different system. The state does not represent the system. It is a matter of the system being capable of a number of states for "if systems are to be adaptable, they must be variable."[18]

The state of a system is determined by a number of factors and will for the larger part depend on the number and attributes of the components present, as well as the number and range of relations each component is capable of assuming with each other.

It is not possible to determine accurately, or precisely, a system's output and internal arrangements at a given time even though one may quantitatively know the inputs and components. All outputs are basically probabilistic and for a given system the output will depend on the interferences of other systems and sub-systems.

ii. The steady state

It has been stated that in the open system there is a constant import and export of matter and/or energy and/or information. Despite the disruptive nature of

the process of continuous flow, synthesis and decay, breaking down and building up of the components, the system nevertheless tends to maintain a steady state, i.e. homeostasis.[19]

By homeostasis I understand the tendency to maintain a relatively stable internal environment owing to the co-ordinated responses of the components to any situation or stimulus which disturbs the normal condition or function. This tendency is particularly well illustrated in the higher animals. One example is the maintenance of a relatively constant body heat through a series of interacting physiological processes in the face of external heat variances. Psychologically one finds that a relatively steady or stable condition is maintained with respect to contending drives, motivations and other psycho-dynamic forces. Among groups one finds that relatively stable social conditions are maintained with respect to various factors and to competing tendencies and powers within the body politic, to society, or to culture among men.

The main attribute of the steady state is disequilibrium. The living system with its constant change and interminable activity resists all movement towards a state of complete rest, the static, uniform and still condition called equilibrium.

Miller[20] introduces an important concept when he indicates that the steady state could be unstable, neutral or stable. In cases of an unstable, steady state, a slight disturbance will elicit a progressive change from the natural state. In cases of stable, steady states, slight disturbances are counteracted and the previous state restored. In a neutral, steady state, a slight disturbance will cause a change, but without "cumulative effects of any sort".

He next draws attention to the "range of stability" which each of the many variables in living systems possesses. He defines it as "... that range within which the rate of correction of deviations is minimal or zero, and beyond

which corrections occur." Any import or export, and it matters not whether it is one of matter, energy or information, which, because of its characteristics, i.e. lack of or excess of certain attributes, forces the variables beyond the range of stability; "... constitutes stress and produces a strain (or strains) within the system."

In situations of input lack, or output excess, strain is produced because amounts in the system are diminished. The reverse, but of equal strain, occurs in instances of input excess, and output lack. As to whether a strain in any given instance can be reduced, will be dependent on its intensity, and the system's available resources. The totality of the strains that occur, according to the template pattern or programme, and the input variations, Miller calls values. The priority given to specific strains in the process of reducing them, he calls the "hierarchy of values".

It is possible for a system to anticipate stress, but this will depend on the system's learning ability and capacity for storing information. On the basis of stored information, the incoming information must be identified as a threat of imminent stress. That the system experiences threat, can be recognised by its taking steps to counteract the stress the information presages.

The effect of stresses and strains extends well beyond the boundary of a given system and external threats and stresses are reflected in internal strains. In the same way, the memory or storage of matter and energy reflects the system's past environment, albeit with certain alterations.

iii. Inputs, outputs, adjustments and feedback

(a) Intra-system processes

All matter, energy and information absorbed by or introduced into a system are called inputs. Laszlo et. al.[21] speaks of an input vector. By vector they

mean "a collection of elements or variables with the number of elements and the ranges of values depending on the characteristics of the system under study."

As they see it, the input vector to the system may consist of numerous parts and can be classified into two types. The first is that of controlled inputs where direct control can be exercised over the variables and which can be easily altered as and when required. The second class is the uncontrolled inputs consisting of variables over which one has no control and whose future behaviour one could only guess.

Living systems, in order to maintain themselves and survive, obviously require inputs of matter, energy and information, sometimes in all three forms together and at other times separately. The maintenance inputs are those inputs which energise the system and enable it to function. There is a difference between maintenance inputs and information, or signal inputs, though. In the latter instance, information is introduced into the system for processing. Signal inputs carry no energy and cannot be transformed into energy. The energy must be existent in the system before signal inputs can be processed. Splitting inputs into maintenance and signal categories may, as Berrien[22] suggests, enable one to deal with some of the problems of decay and deterioration. It is reasoned that the absence of, or lack in, maintenance inputs, accounts for deterioration. This classification also offers an explanation for those open systems which may for some time, and often relatively long periods, appear to have become closed systems. Under such circumstances one will find that the system is receiving maintenance inputs, but not signal inputs, e.g. a hibernating animal is an example, or some plants during the winter months when they are dormant, or perhaps, in an extreme case of internal constraint in the system, such as certain forms of brain injury in a human being. The plant, animal or human being will continue to inhale oxygen and expel carbon dioxide, and in the case of the human being, matter-energy inputs will continue, and one would find a certain amount of matter-energy outputs, but there will be no response to

ordinary information inputs. Hibernating animals or dormant plants will return to their normal, fully open, functioning only after a particular type of information and energy input has taken place.

Each system accepts only those maintenance and signal inputs which are appropriate to itself, e.g. the eye does not react to sound-waves, but only to light-waves. If forced to accept "foreign" inputs, the system or organism may become sick and may die. Irreversible changes can be brought by forcing a system to accept inappropriate inputs, e.g. to expose the eye to intense heat energy or bathe it in acid, etc.

The signal inputs accepted by the system for processing are compared, combined or separated according to the system's structure and nature, and the processing result in the delivery of an output to the supra-system or environment.

Berrien points out that it is not always possible to distinguish clearly between the two types of inputs, and in some systems, a complicated inter-relation between signal inputs and maintenance inputs exists. Examples of instances where maintenance inputs are sustained but the signal inputs withheld, with the subsequent deterioration of the system, are plentiful. One of the examples offered by Berrien is of rabbits born and raised in complete darkness which (as a result) display extreme degeneration of the retinal ganglion cell bodies. Another example is that of a group of people with the group well articulated, cohesive, and the division of labour clearly defined, falling apart if no work is required of it. Under these circumstances it is reasonable to conclude, as does Berrien, that "both maintenance and signal inputs are necessary for the continued life of a system."

Finally, in the case of systems capable of modification and growth one will find that the system, as a result of modifications, becomes capable of accepting a greater range of inputs and some inputs that may have been inappropriate

initially become quite acceptable in time. It is also possible under certain circumstances to have the reverse process taking place.

One may consider the case of a blind person, or even the more extreme case of a blind, deaf and mute person, where it is possible to increase the range of acceptable inputs to the sub-system responsive to tactile stimulation. The person can be taught to read braille or to communicate in sign-language, etc.

The range of acceptability, however, is not unlimited, nor is the ability to grow and modify. Sooner or later the system will reach its limits and after that it will begin to debilitate. It is my contention that the open system's potential for growth, modification and extension of its range of acceptability does not mean that it is elastic in the sense of being capable of accommodating more or less according to prevailing conditions, and that it will return to its original state when the external stimuli change. Increase in size, whether by way of "stretching" existing relationships or adding new components or sub-systems (in doing so new relationships), will have the initial effect of the system being able to cope with more (or less) by way of input. This will nevertheless mean a weakening of the overall structure. An increase in specific maintenance and signal inputs when growth and development has reached its peak, may well result in the "weakened" system being sustained for a considerable period of time. During this period it will function at the optimum level and to its full potential, but sooner or later is will start to decline and degenerate. This "downward" trend may mean that the system in the end changes from an open condition to that of being closed, where a state of entropy and maximum disorder results in the system becoming incapable of work.

It is possible to prolong the life of an open system by taking certain preventative or remedial measures. In a machine with moving parts one might reduce friction and wear by lubricating all moving surfaces which come into contact with other surfaces, and by keeping high and dangerous temperatures down by

introducing some cooling system. In the case of human beings, and for that matter certain living organisms like plants and animals, preventative medicine is employed to maintain a suitable standard of health and to ensure maximum work efficiency. When a particular part or component becomes exhausted or breaks down, it is possible in some instances to remove that part and replace it with a healthy part or at least to re-inforce its structure, e.g. the battery in a motor-car, a heart pace-maker, or heart-transplant, a set of dentures, etc.

All of these measures may result in prolonging life, but the ultimate breakdown, destruction and death of the system, cannot be allayed indefinitely. In most instances the required functioning of a particular system can only be replaced by a new and identical system. For this reason a number of open living systems are capable of reproduction.

I have difficulty in accepting Miller's distinction between toti-potential and parti-potential systems, particularly when open systems are considered. From the preceding comments it is obvious that all open systems are dependent for their survival upon the other systems in their environment. The open system may be seen as constituting a whole in terms of its structure and function, but this does not mean total independence. The open system is a sub-system of a larger organisation and as such is capable of only one relationship, which, although specific, is necessary if the supra-system is to attain wholeness.

All inputs into the system are processed by that system according to its particular structure and nature. Process, then, refers to all changes in time, to matter, energy, and information that have entered a system. Process includes all changes to inputs, irrespective of whether these are reversible or irreversible, of maintenance, ongoing or becoming, or evolutionary and historical, nature and effect. Inasmuch as the structure of a system allows certain processes to take place, will those processes of the evolutionary or historical order involving irreversible changes, effect a change in the system's structure

and function.

The system's state at a given moment in time, will depend not only on those processes that have taken place, but also those which are taking place at that moment. Before one can fully appreciate the dynamism of open systems with the temporal changes to their states, internal structures and functions, it will be necessary to consider one of the most important processes that occurs, namely that of feedback, and in particular positive feedback which is responsible for growth and development.

There are two primary types of feedback, viz. positive and negative. Feedback occurs within the internal structure of the system as well as in respect of external outputs produced by the system. Feedback essentially indicates a flow of information, and as to whether one is in fact concerned with a backward or forward flow, will depend on one's concept of the direction of causality. What is important is that the feedback process completes a loop of action and reaction.

Positive feedback refers to that type of feedback which, as Laszlo et al explain it, affects the system positively in that a change in the system's condition initiates more change. This means that a "... self-driven growth or runaway process is initiated." As examples of this process one could consider the case of compound interest, or the growth of a population, or growth in beliefs and knowledge, etc. But, as was pointed out earlier on, growth of this sort cannot go on indefinitely, and sooner or later a threshold will be reached. Once this threshold is passed the system or sub-system will become over-taxed, unstable, unable to continue with its "normal" functions and "blow up". To avoid premature seizure and maintain stability a control process, that of negative feedback, comes into play.

Feedback of this type occurs when there is an increase in the system's output.

The increase is fed back into the system. This has a compensatory effect and the action is regulatory in that the system is moved back to its previous state of balance.

In the absence of negative feedback, or if such control is inadequate, the system would grow without restraint or limit, or may vacillate to the extent of becoming unstable.

The total input into a system at any given moment in time is the aggregate of matter, energy and information that transcends that system's boundary. This does not necessarily represent the sum total of external factors exerting pressure on the system's surface, though. The boundary as described above serves a dual purpose: it is both provider and protector. As filter it selects useful inputs required for the maintenance and growth of the system as well as preventing harmful and noxious inputs from entering the system. To be effective in its dual role, an adequate feedback loop is required.

Before inter-system behaviour and outputs could be considered it is deemed necessary to take a closer look at matter, energy and information and the changes to these inputs during intra-system processes.

Anything with mass, and which occupied physical space, constitutes matter. Energy, on the other hand, as defined in physics, is the ability to do work. Medelsky's[24] definition of mass is that it is the "qualitative or numerical measure of a body's inertia, that is, of its resistance to be accelerated." He points out that Newton had held mass to be the "measure of quantity of matter the body contains." The suggestion in this respect is that mass is the "basic factor" in determining the extent of the possession of "fundamental unchangeable properties" peculiar to a given type of matter.

Mass, and therefore matter, possess the following properties:

(a) that of gravitation, i.e. every material body attracts every other material body;

(b) that of inertia, i.e. every material body resists any attempt to change its motion;

(c) that of being linearly additive, e.g. if 1 kg of flour is added to 2 kg of flour, one will have 3 kgs of flour;

(d) it is conserved, i.e. it cannot be created nor can it be destroyed.

The property of inertia means that if a body's motion is to be changed, a certain force will have to be exerted on it and the greater the inertia the stronger the force will have to be to produce a particular change. In terms of Einstein's special theory of relativity it is predicted that if the energy of the body is increased its inertia will increase as well. This means that the mass of a body increased with an increase in motion (the addition of kinetic energy) or if its temperature rises (the addition of heat) or if the body is compressed (the addition of elastic energy), and vice versa. Mass and energy are equivalent. Roller and Nedelsky as well as Miller[25] quote the principle of the conservation of energy, which states that energy can neither be created nor destroyed, but that it can be changed from one form to another. In a given system the energy present may be inter-converted among many different forms, e.g. mechanical, electrical, nuclear, etc. Roller and Nedelsky point out that the energy in a system tends to become less available in time, except in the case of a closed system where the sum of all forms of energy remains constant. Energy leaves the system in the form of work, heat, or energy in waste products. In the case of open systems where energy leaves or enters the system, the assertion of the energy principle is that the net gain, or loss, of energy in a system equals the total change of that system's internal energy.

All living systems require matter-energy in specific forms and adequate amounts. In this connection Miller states that any change of state of matter-energy or its movement over space, from one point to another, is action. This he says

is "one form of process".

The flow of energy and its conversion still presents numerous problems to scientists. In geography, for example, the flow of energy in the case of an eco-system and its tendency towards homeostatis cannot be explained fully nc can the conversion of energy in metabolism. It is suggested in some instances that conceptual tools are inadequate and new concepts should be introduced.[26]

The concept of information is somewhat more difficult to account for than that of matter or energy. Information in the way Miller and other general systems theorists use it, is not the same thing as meaning nor is it quite the same as information as it is usually understood. Meaning, as Miller sees it, is the "significance of information to a system which processes it ..." In terms of his definition "meaning" constitutes a "change in that system's processes elicited by the information." It is often a result of association made to it on previous experiences with it. Information on the other hand is a much simpler concept. He defines it as "... the degrees of freedom that exist in a given situation to choose among signals, symbols, messages, or patterns to be transmitted. The total of all these categories he calls the ensemble. The amount of information is quantitatively measured as that amount of information required to "relieve the uncertainty when the outcome of a situation with two equally likely alternatives is unknown." The units, bundles or changes of matter-energy whose arrnagement or design carries the "informational symbols" from the ensemble he calls markers.

Miller makes it clear that in recent years matter-energy flow had become as important as information flows and that systems theory deals with both information theory and energetics. Miller had indicated in an earlier paper when considering the systems of molecules, cells, organisms, individuals, groups, organisations and societies, that general systems theory focuses more on information processing than upon the energetic characteristics of each system. This

aspect will be borne out in the next chapter when general systems theory is considered.

As mentioned earlier on, Miller noted that action is one form of process. Another form of process is "information processing" or communication. Communication is the change of information from one state to another, or its movement from one point in space to another. He explains that communications, while being processed, are often moved from one matter-energy state to another, and also, if the form or pattern of the signal remains relatively constant during these changes then the information will not be lost. He concludes that matter-energy and information always flow together and that information transmissions are as essential for a system's survival as are matter-energy transports.

ii. Inter-system processes

The outputs of a system are defined as those matter-energy and information products discharged by a system into the supra-system.[27] Such outputs may be useful to the supra-system or they may not as is often the case in the discharge of waste-products. Berrien points out that this distinction is seldom made in general system theory and yet, when one considers the discharge of useful outputs into the supra-system, an important assumption is revealed.

The assumption is that if a system is to survive it will be obliged to produce outputs useful to its supra-system or environment. The production of unacceptable outputs will result in that system being forced to undergo change in its state and structure, or, under certain circumstances, the environment or supra-system may take steps to destroy and replace the rogue system.

What is regarded as output in the case of a given system will essentially constitute the input in another system, and whether one regards a particular transport as input or output will depend on one's focus at the time. It was

also indicated earlier on when the intra-system processes were considered, that there exists a mutual dependence between a system and the other systems which constitute its environment. However, when one considers the more complex organisations, it must be borne in mind that whether a system will react to a given impulse or accept a particular input, will depend on its particular structure and the attributes of its components, e.g. the eye does not react to sound, the tongue to light-waves, etc. Inasmuch as a system is capable of selecting inputs it is capable of selecting outputs. Shannon's[28] breakdown of the parts which constitute a communication system assists one in understanding the interaction between systems and their ability to select inputs and outputs. A communication system is said to consist of five parts, viz. an information source, a transmitter, channel, receiver and destination.

In the information source a message, or series of messages, is produced and the message is to be communicated to the receiver. The transmitter then transcribes the message into a signal suitable for transmission over a particular channel. The channel is that medium which is used to transmit the signal from transmitter to receiver. Berrien refers to this medium as the interface, i.e. the region between the boundaries of two systems or for that matter between transmitter and receiver. The receiver transcribes the signal into a meaningful message and passes it on to its destination, i.e. the system for which it is intended. To illustrate communication in a relatively simple form of a telex message, A has a message intended for B and uses a telex machine to transcribe the message and transmit it along a telephone line to a telex machine on the other end, which decodes the transmission into a readily understood message for B.

In the case of inappropriate or inadequate outputs one would expect the more complex organisation of the supra-system to have developed a structure that could cope with an extensive range in outputs by sub-systems. Inappropriate outputs will under normal circumstances be avoided, and should a component or sub-system break down or prove to be unable to undertake a required function it will have to

be eliminated and replaced if correction of its behaviour is not feasible. Random errors, however, must occur from time to time and the supra-system will, under normal circumstances, be able to discard such inappropriate outputs. Only persistent malfunctioning and resistance to correction will require drastic remedial and restorative measures by the supra-system.

As was pointed out earlier on, an open system operates also in terms of an internal as well as an external feedback. This is of particular importance in instances where the system is subjected to a high degree of uncertainty or limitations in available alternatives. Feedback will enable the system under normal conditions to, in the shortest possible time, produce the most acceptable output.

In the light of what has been said so far about system's behaviour, it becomes clear that each system fulfils a particular function according to its particular structure. It follows that components or sub-systems are selected and specifically arranged and ordered according to their attributes and the supra-system's particular needs.

It may well be that the processes of adaptation, addition, delimination and expansion will snowball and that the final result will not be what had been initially envisaged. The very fact that open living systems display homeostasis and are capable of adaptation means though that although one cannot accurately and precisely predict the final result one can often do so within a reasonable degree of error. The system's ability and potential for adaptation does not depend only on intra-system states but also to a large extent on the inter-system processes, availability of the required external resources and the state of the supra-system.

E - SYSTEMS EVOLUTION

All open living systems are subjected to short-term reversible changes as well as long-term irreversible changes. In the former the structure and internal processes will be disrupted but the change will be of temporary order and the system will soon return to its original state. In the case of the irreversible change, although the former steady state may be regained, the changes or modifications to the system's structure and procedures will be permanent. Irreversible changes are of particular importance since they affect the subsequent functioning of the system and as such present wide ramifications particularly on the inter-system interaction level.

F - STORAGE, MEMORY, LEARNING AND GROWTH

When the functioning of an open system is observed one finds that there is always a lapse of time between the acceptance of a given input and the production of an output. The period of time may be extremely brief and to the point where it is regarded as virtually instantaneous, e.g. reflex responses, or it may take a long time, say several years, as is often the case in, for example, the finalising and winding up of a deceased person's estate, the finalising of a third-party insurance claim in the case of a motor-car accident, etc. The point is that the lapse in time seems to indicate that the system has the property and capacity to store inputs for shorter or longer times, but a lapse longer than the minimum time required for the response to be produced. Any input, unless the reaction to it is of a reflexive nature, has to be identified and accordingly encoded before actual processing can take place. In this sense the time lapse raises the concept of memory. The identification means tracing on a memory template those patterns or imprints that will match the input and direct the encoding and subsequent processing. It may also under certain circumstances mean that a particular input, or part of it, particularly if the input is excessive in terms of the system's maintenance requirements and processing capacity, can be stored and dealt with at a more suitable or

appropriate time.

It must be borne in mind that all systems' functioning is subject to feedback influences and that this is a factor which must be allowed for when one considers aspects of storage, memory and learning. No system could store, memorise effectively and purposively, without an adequate feedback arrangement. If the feedback loop did not exist the system would not be able to maintain a steady state or stability. This would mean that no structural changes could be retained permanently or at least for long enough, to allow for storage, memory and learning.

The position is therefore one wherein the system selects, or at least accepts, an input. This input is processed in due course and an output produced. This output may, however, come to be regarded as inappropriate and therefore, unacceptable by the supra-system. If an adequate feedback loop exists this information will be fed back into the system which may, or may not, then effect the necessary corrections by way of structural changes. This process will continue under normal conditions until such time as an appropriate output is produced in return to that particular kind of input.

Should a given sub-system produce too much, the system may resort to one of a number of alternatives. The excess output may be stored in the system and used as a reserve during a drop-off in that particular output, or the excess may be dissipated or destroyed. Berrien suggests that storage in the supra-system is probably limited to maintenance surplusses and does not apply to signal functions. Systems capable of storing surpluses when the demand is low for use in lean times are more likely to survive than those which do not possess this property.

Should a sub-system persistently produce less than the minimum output required of it by the system and should it prove to be unamenable to corrective action,

the parent system will become starved and in turn will not be able to either maintain itself or develop as it ought to. In an organisation where mutual dependence exists between the components, the malfunctioning of one component will affect, directly or indirectly, all other components to a greater or lesser extent and will jeopardise the overall functioning and survival of the system. Survival, therefore, is only possible if the system possesses the ability to adapt to both reversible and irreversible changes. The aspect of reversible and irreversible changes due to storage, memory and learning functions require closer consideration.

I view the open system as being in a constant process of becoming and this means that it changes continuously. In this sense a reversible change would refer to the event of the system maintaining a particular state against a "foreign" or more intense than usual input. If the system cannot cope by way of filtering the input, storing excess input, increasing output, etc., more drastic measures will have to be employed. The system may have to re-arrange its internal structure and may release, create and draw on new resources by linking up components or sub-systems into new combinations. The success of such link-ups will depend on the attributes of the specific components or sub-systems and the subsequent increased inertia of the new combination. Once the input has been reduced or processed, the system may revert back to its original structure or internal arrangement of components. The change then had been temporary and is normally referred to as a reversible change. Should it however become obvious that the new structure allows for the maintenance of the steady state and the continuation of all previous necessary processes and functions, the new structure will be retained. The reversible change, nevertheless, does not mean that the successful problem solving did not leave a record or imprint, no matter how singular and unique the particular event may have been. Once new combinations are tried and their effectiveness becomes known, the relationships between components change and this change is irreversible.

Memory is attributed to such irreversible changes and since learning depends on storage and memory it is clear that these three functions depend on structural changes of a more permanent nature. The set of relationships that constitutes the open system possesses a dynamic elasticity which enables the system to maintain a steady state. The continuous flow of matter, energy and information into and out of the system demands storage properties and maintenance functions. Storage and memory are greatly facilitated by a continuous feedback operation. A particular imprint or record may become obfuscated by other imprints due to subsequent changes and in order to prevent certain memory lapses or fadings the system may require particular signal inputs to be maintained for longer by the appropriate maintenance inputs.

A particular record, or for that matter structure, will be retained and maintained only for as long as it remains relevant to the system's functioning.

The growth of a system is a somewhat more difficult aspect to explain. Berrien suggests that there are three ways in which growth can occur. It may come about by the addition of individual components or by the self-generation of new components or the "merger" of one system with another. As he sees it, it is the addition of components that characterizes the change labelled as growth.

It would appear that growth in open living systems is triggered off or initiated by, as Berrien puts it, the "introduction at the critical time of some especially unique input that permits a semi-organised system to organise itself, whereas previously the elements of the system were non-functional." An input of this kind is certainly not the same as a maintenance input or a signal input. As an example he mentions a true catalyst, viz. a hormone in a biological system. The hormone undergoes no change to a new chemical form, nor does it become part of the cell. The coming together of the sperm and egg is another matter, though, for here it is not only a necessary addition, but it becomes part of the system. There are other examples as well where the catalysts become

"integrated" or are "consumed as sub-systems in their own creations". One can think of a person who forms a new welfare organisation and comes to serve as a component or sub-system in that organisation. In time the founder may disappear, but the organisation may continue to function and the founder then obviously is no longer essential to the life of the organisation. Also that sub-system or founder has an existence apart from the organisation and, as Berrien indicates, it is his "concepts, influence, fundamental values and points of view" that are the critical inputs. These inputs do not "nourish or energise" the system, for once growth is triggered off it continues under its own volition.

G - CONCLUSION

In the biological, social and behavioural sciences the observer is confronted by highly complex organisations that defy study by way of the analytic method as developed and refined in the natural sciences. By using a systems approach a clear distinction is provided between the closed systems dealt with in conventional physics and its allies, and the open living systems encountered in the biological, social and behavioural sciences.

Open living systems comprise a set of components which relate to each other in a characteristic and unique way. The system as such has a boundary which is determined by the range and properties of the relationships and the whole is characterised by a continuous flow of matter, energy and information across its boundaries. The system relates as unique and autonomous organisation to other systems in its environment or supra-system and this relationship clearly indicates interdependence for survival between system and environment. The system is capable of maintaining itself in a steady state. Its structure is also capable of adapting to temporary reversible changes and permanent irreversible changes, storage, memorising, learning and growth. Its potential and capacity for development and growth, however, is not unlimited and it may

become exhausted, debilitated or be destroyed. As counteraction it is capable of reproducing open living systems of its own kind and in this way ensures the continuation of life processes. The open living system occupies space and this occupation may be temporal or non-temporal.

These qualifications indicate that the open living system is a concrete system. As model it contains certain abstractions and concepts but it is nevertheless clearly distinguishable from abstracted and conceptual systems.

The systems model enables the observer to approach a given phenomenon from any angle, permits entry at any level of structure and function, and also to subsequently move in any direction as dictated by the observer's bias and interests.

The systems approach demands the development of a general model of certain kinds of system. Inasmuch as all theories and models are abstractions must this model conform, but it must derive from, and essentially refer to, concrete models. This has been achieved by the general systems theorists, and the logical step would therefore be to consider general systems theory before attention is focused on specific disciplines in the social and behavioural sciences.

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CHAPTER THREE

GENERAL SYSTEMS THEORY

A - INTRODUCTION

Of all the explanations of the term general systems theory encountered by the author, the one offered by Boulding[1] is found to be the most succinct and pellucid.

According to Boulding, the name general systems theory came into use to describe "a level of theoretical model-building which lies somewhere between the highly generalised constructions of pure mathematics and the specific theories of the specialised disciplines."

He argues that mathematics attempts to organise highly general relationships into a coherent system, but this system has not any necessary connections with the "real world around us". He concedes that it studies all thinkable relationships abstracted from any concrete situation or body of empirical knowledge. He also admits that apart from the advanced "classical" mathematics of quantity and number, a mathematics of quality and structure is being developed. He nevertheless contends that mathematics is the language of theory and it does not give one content.

At the other extreme the separate disciplines and sciences, each one with its own distinct body of theory, are found. His conception of discipline tallies with the generally held view that discipline refers to the way in which a phenomenon is studied and that it arises out of the particular point of view and not from the phenomenon studied. For Boulding each discipline corresponds

to a certain segment of the empirical world and each discipline develops a theory which has a particular applicability to its own empirical segment.

He explains that general systems theory sets out to satisfy the increasing need for a "body of systematic theoretical constructs which will discuss the general relationships of the empirical world." It does not aim at establishing a singular, complete-in-itself "General theory of practically everything - a theory that will replace all the special theories of particular disciplines." In this sense its charge is to find the greatest or most favourable degree of generality for each purpose and at each level of abstraction, a position somewhere between the "specific that has no meaning and the general that has no content."

Boulding sums up the objectives of general systems theory in terms of varying degrees of ambition and confidence when he states:

> "At a low level of ambition but with a high degree of confidence it aims to point out similarities in the theoretical constructions of different disciplines, where these exist, and to develop theoretical models having applicability to at least two different fields of study. At a higher level of ambition but with perhaps a lower degree of confidence it hopes to develop something like a 'spectrum' of theories - a system of systems which may perform the function of a 'gestalt' in theoretical construction."

For Boulding and his colleagues general systems theory is the skeleton of science in the sense that "it aims to provide a framework for, or structure of, systems on which to hang the flesh and blood of particular disciplines and particular subject matters in an orderly and coherent corpus of knowledge."[2]

Grinker,[3] when considering the increasing attempts being made to develop unifying theories for all sciences, particularly the biological, social and

behavioral sciences, as well as Boulding's definition, adds that general systems theory may be called a metatheory which is a "conceptual overarching global theory that embraces several limited theories."

General systems theorists are concerned with the re-synthesis of knowledge of the universe into a meaningful whole, representative and as ordered as, the whole to which it pertains. To achieve this goal Rapoport[4] holds that general systems theory has to provide a general conceptual skeleton; a structure which could accommodate a scientific theory or technological problem without any loss of the essential features of the theory or the problem.

The structure of general systems theory in terms of organisation, function and purpose is best understood when viewed against its origin and early development. A brief resumé is offered accordingly.

B - DEVELOPMENT OF THE THEORY

The father of general systems theory, theoretical biologist Ludwig von Bertalanffy, started his life as a scientist when biology was involved in the mechanism-vitalism controversy.[5] In biology the mechanistic procedure meant analysing and breaking down of the living organism into its components and partial processes. The organism was viewed as an assembly of cells. The cell, in turn, was seen as an assembly of colloids and organic molecules, and behaviour as the sum total of conditioned and unconditioned reflexes. Those who adopted the mechanistic approach tended to ignore or bypass the problems of organisation of the components in the service of homeostatic equilibrium of the organism.

The mechanistic approach derived from traditional theoretical physics and in particular its branch of mechanics. Theoretical physics and its branch of mechanics, two centuries ago, had become so steeped in mathematics and its

principles that mechanics, particularly, appeared to be a "realisation of the rationalist program - the derivation of knowledge from first principles by deduction alone." The method of physics was essentially the analytic method, i.e. the examination of the relationships between pairs of variables at a time, and construction of mathematical theory in which the casually interrelated factors were combined into single equations. Rapoport suggests that the maturation of mechanics led to a commonly held notion that all the laws of being and becoming were manifestations of mechanical laws.

A comparison of the science of biology to that of physics reveals that the former had been, up to the middle of the nineteenth century, an "almost wholly descriptive - at most an inductive, hardly ever deductive, science."[4] It was generally understood and accepted, considering the absence of both verbal confirmation of challenge, that life is a "phenomenon sui generis, apart from events governed by mechanical law." Few serious attempts were made to derive life processes from mechanical laws. Biology also used terms such as organism, reproduction, death, etc., for which no counterpart existed in physics.

The nineteenth century saw the maturation of chemistry and the formulation of the laws of thermodynamics. These discoveries and developments resulted in a changing relationship between the physical and the biological sciences. Both Rapoport[6] and Berrien[7] point out that with the development in chemistry scientists, particularly physiologists, began to look for analogies and isomorphisms between chemo-mechanical and biological systems. Their examinations revealed no differences between basic living processes and similar events taking place in non-living environments. According to Rapoport it was particularly the validity of the laws of conservation of matter and energy in living organisms which made these organisms appear as a machine to the physiologist. This resulted in the emergence of the reductionistic point of view. Rapoport defines reductionism as being essentially a programme which seeks to derive events occurring at one level of organisation from those occurring at another,

presumably to reach both a simpler and more fundamental level. The reductionists not only devised a procedure, or theory, for reducing complex data or phenomena to simple terms but applied their procedure and theory to non-living and living matter alike and as if no differences existed. The adherents in physics were very successful in reducing chemistry to physics and it was only natural for them to attempt reducing physiology to chemistry as a pre-emptive move to reduction to physics and the application of physical laws.

The vitalists objected to this and maintained that life is a phenomenon that could not be classified with others, and in support of their stand made particular use of the apparent purposive or teleological nature of some life processes. For this they relied heavily on Driesch's so-called principle of equi-finality and the fact that living organisms tended to defy the second law of thermodynamics. However, when they attempted to explain organisation of the parts and the behaviour of the organism, they could do no better than to ascribe the phenomenon as being derived from the action of "soul-like factors - little hobgoblins as it were - hovering in the cell of the organism."[8]

Dissatisfaction with the antithetical positioning or polarisation of the natural and biological sciences led Bertalanffy, and other colleagues, to what became known as the organismic point of view. This point of view holds the organism to be an organisation of interrelated parts. He subsequently attempted to implement the "organismic programme" in various studies on metabolism, growth and the bio-physics of the organism. His direction resulted in the formulation of the so-called "theory of open systems and steady states" which was basically an enlargement of conventional physical chemistry, kinetics and thermo-dynamics. His movement snow-balled into further generalisation which he called "General Systems Theory".

He first presented his theory at a philosophy seminar in 1937, but the unfavourable attitude towards theoretical biology prevented him from publishing

his paper till after World War II. He noted at the time a change in intellectual climate which made "model building and abstract generalisation fashionable." Upon publication he found not only interest in his theory but also that it did not stand in isolation. His theory was supported by those of many other scientists who had developed similar lines of thinking in other fields, e.g. Wiener (cybernetics), Boulding (economics), Rapoport (mathematics), Miller (physiology and psychiatry), etc. It turned out to be neither isolated nor a personal idiosyncracy.

As theoretical biologist, Bertalanffy appears to have been more concerned with the struggle for truth than the possession of truth. What motivated him and led to his postulation of a general theory of systems can be summarised as follows:[9]

In the field of science attempts at establishing a system of laws which would both be explanatory and predictive were acceptable and encouraged. Theory-construction followed the Newtonian approach of observing and demonstrating and building from the facts, or roots, upwards to a conceptual system capable of corroboration by others, as opposed to the working from the branches down, or by way of armchair reflections. These nomothetic endeavours were practically identical with theoretical physics. This gave the impression that physical reality was the only reality accepted by science and only a few of the attempts to formulate an explanatory and predictive system of laws in non-physical fields gained general recognition. It also led to the claim of reductionism; that on principle, biology, the behavioural and social sciences, be handled according to the perfect model of physics; it be reduced ultimately to concepts and entities on the physical level. However, the entities with which physics concerned itself turned out to be more ambiguous than previously thought and this resulted in problems in the reductional and physical tenet. It became necessary to develop new conceptual models for considering certain phenomena of observation. At the same time the life sciences or biology, and the

behavioural and social sciences had come into their own. The concern with these fields on the one hand, and the pressing demands of a new technology, made "a generalisation of scientific concepts and models" necessary. This resulted in the emergence of new fields beyond the traditional systems of physics.

The predominant problems existing in the behavioural, social and biological fields were either not considered, or neglected, in classical sciences. Living organisms reveal an "amazing order, organisation, maintenance in continuous change, regulation and apparent teleology." Likewise when one looks at human behaviour, even if it is done in the strictest behaviouristic sense, goal-seeking and purposiveness cannot be ignored. The so-called mechanistic view of the world which was based on classical physics, considered concepts such as teleology purposiveness and organisation as being metaphysical or illusory. The specific problems of living nature, for example, appeared to be beyond what was regarded as the legitimate field of science.

Because of the fact that many problems, especially in biology, behavioural and social sciences, are essentially multi-variable, new conceptual tools are needed. The essential concern in classical science with the analytic method of mechanics failed to offer explanatory and predictive solutions. As Weaver puts it:

> "Classical science was concerned with either linear causal trains, that is, two-variable problems; or else with inorganised complexity. The latter can be handled with statistical method and ultimately stems from the second principle of thermo-dynamics. However, in modern physics and biology, problems of organised complexity, i.e. interaction of a large but not infinite number of variables, are popping up everywhere and demand new conceptual tools."

Bertalanffy did not regard his own statements as being either metaphysical or philosophical contentions. He also did not attempt to erect barriers between

inorganic and living nature, or between biology and the behavioural and the social sciences. Neither did he suggest that biology is in principle irreducible to physics because tremendous progress had been made in explaining life processes physically and chemically. What he tried to make clear is that there existed no appropriate tools serving for explanation and prediction in the life, behavioural and social sciences as compared to physics and its various fields of application.

Those aspects which are not, or cannot be, dealt with in physics and which "happen to concern the specific characteristics of biological, behavioural and social phenomena" apparently require an expansion of science which meant the introduction of "new conceptual tools".

Bertalanffy argued that every science is a model in the broad sense of the word. The system of physics is but one model dealing with aspects of reality and, he hastened to point out, a very successful one at that. However, it need not, and should not, have monopoly, particularly since it cannot cover all aspects and has limitations, as biology and the behavioural sciences show. One should therefore attempt to "introduce other models dealing with aspects outside of physics."

It was while implementing his organismic programme to the studies of metabolism and growth that a further generalisation became apparent - that of open systems and steady states. He also found that in many of the biological, behavioural and social phenomena, mathematical models and expressions were applicable. Such models and expressions did obviously not solely belong to the "entities of physics and chemistry". The structures of these models revealed similarity and indicated isomorphisms in different fields. Also those problems of order, organisation, wholeness, purposiveness, etc., which were excluded in mechanistic science appeared central in these models and expressions. Out of this the idea of "general systems theory" was conceived.

The favourable reception and support his theory had upon publication led to a realisation that it was in fact but one in a group of parallel developments such as cybernetics, information theory, game theory, factor analysis, decision theory and topology or relational mathematics. Closer examination revealed certain common features which he listed as follows:

(1) Emphasis on the need to have something done about those problems characteristic of the behavioural and biological sciences, but which are not dealt with in conventional physical theory.

(2) Each one introduces models and concepts which are new, and often strange, to physics, e.g. the concept of information compared to energy in physics.

(3) Each one of these theories is particularly concerned with multi-variable problems.

(4) The models offered are interdisciplinary and they transcend the conventional fields of science, for example a thermostat which maintains a certain temperature by way of feedback, finds its parallel in similar schemes operating in many biological phenomena of regulation or behaviour.

(5) In mechanistic science the concepts of wholeness, organisation, teleology and purposiveness appeared to be metaphysical and unscientific. These concepts today are taken seriously and are regarded as being responsive to scientific analysis. In some cases conceptual models, and in some cases even material models, have been developed to represent "those basic characteristics of life and behavioural phenomena."

Bertalanffy emphasised the point that none of the approaches mentioned, i.e. information theory, game theory, etc., should be considered to be mutually exclusive or monopolistic. As he perceived it each scientific construct is a model representing a certain aspect or perspective of reality. Not only are the various "system theories" not monopolistic since they are models

reflecting different aspects of phenomena, but they can be, and often are, applied in combination to explore, describe and explain. Even theoretical physics is included as a model.

Bertalanffy clearly opposed the antithetical positioning of models and disciplines, but also did not favour a unification of sciences into a singular science, as he was equally opposed to authoritarianism. He would rather have his models side by side, each studying in their own way particular phenomena or facets of reality. His approach is "mirrored" by that of the social scientists, Gillen,[11] who rejected what he called a "Monolithic State" and instead proposed a "Federal Union" of specialities dealing scientifically with human behaviour in society. Gillen, of course, was more concerned with the social sciences, and therefore did not include the biological and physical sciences as did Bertalanffy.

Since all life processes pertain to open systems one should not come to regard any model as absolute or final. Systems which are subject to growth and change will always present problems to the analyst or theorist unless the model employed is flexible enough and has the ability to adapt to changes in the system.

Bertalanffy was evolutionary explorative and not revolutionary conclusive. In the 1920s he became aware of the potentials of developing a general theory of complex phenomena. This awareness he shared with fellow biologist Paul A. Weiss and philosopher Alfred North Whitehead. Bertalanffy and Weiss worked towards a general theory of biological systems while Whitehead attempted a general philosophy of organism.[12] During the 1940s and 1950s they were joined by a small group of scientists who had also become concerned, on both theoretical and practical grounds, to develop a general theory of behaviour. The group subsequently formed, and which led to the eventual founding of a society to investigate the potentials of a general systems theory, included

Miller (influenced by Whitehead), Boulding, Rapoport and physicist, Enric Ferini.

The forming of a working group in the early 1950s and its subsequent coalescence into the formal Society for General Systems Research in 1954, meant that for the first time a concerted effort was being made at interdisciplinary teamwork and sharing. Accordingly a scientist or specialist gained access to, and could avail himself of, the knowledge and theoretical constructs in 'foreign', and what had hitherto been 'closed', disciplines. It did not mean the loss of autonomy by any one discipline, dressing-up in the garb of another, or a merger of disciplines. It meant that attempts were made at establishing a common base or platform with universally understood, and used, body of terms and references.

The advocates of general systems theory agree on two central issues. In the first instance that it is the generally acknowledged analytic method of the natural sciences which, although it is extremely successful in explaining and predicting the phenomena occurring in the physical part of the universe, is powerless to deal with the more complex organisation of living organisms. This is the field of the life scientist, the behavioural scientist and the social scientist. It is they who became acutely aware of the need for an expansion of science and the introduction of new conceptual models.

Bertalanffy continued to play a leading role in the affairs of the Society for General Systems Research until his death in 1972. It was he who summed up the aims of general systems theory in reference to the following points:[13]

"(1) There is a general tendency towards integration in the various sciencies, natural and social.

(2) Such integration seems to be centred in a general theory of systems.

(3) Such theory may be an important means for aiming at exact theory

(4) Developing unifying principles running 'vertically' through the universe of the individual sciences this theory brings us nearer to the goal of the unity of science.

(5) This can lead to a much-needed integration in scientific education."

Laszlo points out that the stated aims include corresponding ideals:[14]

"(1) To investigate the isomorphy of concepts, laws, and models in various fields, and to help useful transfers from one field to another;

(2) To encourage the development of adequate theoretical models in fields which lack them;

(3) To minimise the duplication of theoretical effort in different fields;

(4) To promote the unity of science through improving communication among specialists."

The coming into being of a Society for General Systems Research meant that authorities in various and diverse fields and disciplines could pool and centralise their contributions whether these be theoretical knowledge or research findings. The focus within the Society was initially, and necessarily so, on the formulation of a general theoretical construction that would facilitate pooling, centralisation and processing of information. It did not matter whether the individual contributor's background was that of mathematics, materialism, organism, positivism, reductionism, mechanics, or whatever. The common factor and linkage was the need for integration and synthesis of knowledge within the specific discipline as well as its linking up with other disciplines in order to end non-productive and meaningless isolation.

The coming together accordingly required that a way be found whereby diverse, and apparently disparate, contributions could be assessed, compared and made meaningful in terms of the whole. Bridging the difficulties on both

the intra- and inter-disciplinary levels would serve a dual purpose. On the one hand the contributions, knowledge, methods and techniques of other disciplines would then become available to the individual researcher. On the other hand, the individual researcher will be placed in a position which would enable him to contribute, fruitfully and effectively, his own knowledge, theory and methods. This would lead to the enhancement and consolidation of not only his own specialisation, but also that of his discipline, and firmly position the latter in the constellation of sciences.

In the light of what had been put forward in the previous chapter in respect of living open systems, the movement towards the founding of a Society for General Systems Research makes sense. The movement was triggered off in the biologica and related natural sciences and even the earliest formulations and postulations by its pioneers proved to be attractive to researchers and practitioners in the social sciences, especially those who were concerned with problems similar to those of Bertalanffy.

It had to follow that the growth of the Society and its theory building had to lead to the development and refinement of a unique method.

On the primary level the aims and ideals remained the formulation of a general theoretical construct capable of finding analogy between disciplines. This led to the spelling out of a method which would allow not only comparison but also purposive selection of relevant aspects without destroying or endangering the identity and autonomy of any of the disciplines involved. Strict rules are adhered to when abstracting and abstractions that did not originate in, or cannot be linked to reality, are discouraged.

On the secondary level the nature and form of the theoretical construct is such as to allow the individual scientist to approach his subject, and also to process his findings and knowledge, in such a way as to facilitate intra- and inter-

concerned.

Laszlo,[16] in accordance with Miller, states that the empirical objects of investigation of general systems theory are concrete systems. He bases his view on a classification of systems into seven principal types which, in turn, are distributed on the three major levels (i.e. sub-organic, organic and supra-organic) of the hierarchical organisation in the biosphere. The seven types are:

(1) Physico-chemical systems which include atoms, molecules, etc.

(2) Biological systems which include uni-cellular, and multicellular organisms, viruses coupled to hosts, etc.

(3) Organ systems which include the specialised organs of all more complex multi-cellular organisms.

(4) Social ecological systems which refer to all of those systems formed by the niche structures, energy and mass transfers of organisms within a geographic region. These systems also include eco-systems and intra-specific (non- or pre-cultural) social systems.

(5) Socio-cultural systems which include all forms of human social systems which are distinguished by a cultural, i.e. a "symbolic communication system, extra-skeletal memory stores and the associated bound-up capacity to acquire, code and hand down gathered information."

(6) Organisational systems. These include all specialised role structures formed by human beings within their socio-cultural systems for the carrying out of specific tasks and realisation of particular objectives whether they be private or public, business, educational, political, or social service, etc.

(7) Technical systems. These systems refer to those systems made of sub-organic components by organisations to carry out special purpose tasks within socio-cultural systems. Such systems would include for example mechanical, thermal and hydraulic systems and are capable

of processing matter and/or energy and information.

As Laszlo sees it, concrete systems are investigated through three distinct approaches, viz. systems engineering, the systems sciences and systems philosophy. The first sub types mentioned above are investigated by the various branches of systems sciences and the last type by systems engineering. Systems philosophy on the other hand "considers special problems connected with human beings and human society as with the other systems approaches themselves." With this classification in mind, Laszlo defined general systems theory as "... a general theory of systems". His definition includes special system theories as special cases, e.g. cybernetic systems theories, information systems theories, biological systems theories, etc. He is also adamant that general systems theory is not a theory of general systems, nor a generalised theory of some variety of systems, a theory of the most encompassing system or a metatheory.

In respect of his view that general systems theory is not a metatheory, Laszlo appears to contradict Grinker, as mentioned earlier on. Laszlo's stand is clear, though, in that he argues that general systems theory is a general theory of systems, and concrete systems at that, and that it is not a theory of theories of systems. It is obvious that the two use the term metatheory in slightly different contexts and therefore are not necessarily in disagreement.

Rapoport[17] points out that the methods which are applied in the study of the behaviour of both living and non-living organised systems reveal three perspectives, viz. the enquiries concerning the 'structure' (being) of the system, enquiries concerning the 'functioning' (acting), and enquiries concerning the 'evolution' (becoming) of a system type. These three perspectives contain the "broadest scope of a general systems theory."

Rapoport argues that once it is recognised that structure, function and evolution

are fundamental aspects of all organised systems the concept of organism can be further expanded to include 'whole' complexes of living organisms, plus the inanimate artefacts functionally related to their structure, behaviour and development. He conceives in the broadest sense of such wholes as being societies.

He draws attention to the fact that societies sometimes reveal a striking similarity to organisms, e.g. in the case of a bee-hive or ant-colony where some bees or ants have reproductive functions, others maintenance functions, some food-gathering functions, others defence functions, etc. In the case of human beings one finds that certain groups like families, communities and nations, all exhibit the features of organised systems. In the same breath, he adds that the degree of organisation varies, and also the viability and strength of the system, so that to speak of the 'pathology' of such systems makes sense.

Rapoport presents an acceptable argument when considering the necessity of learning the 'discipline' of scientific enquiry when studying man. In the process the analytical method in the physical sciences ousted the system point of view with its, as he puts it, "heavy reliance on the directly perceived analogies and teleological explanations." Both biologists and social scientists took to concentrating on investigations based on controlled experiments where one variable is assessed against another with no reference to "how the relationship obtained can be fitted into a 'picture'".

Although he readily admits that these developments were not only inevitable and indispensable, it all the same resulted in a narrowing of the field of vision for each researcher. The subsequent rapid increase in the number of disciplines sub-disciplines and specializations poses a serious threat in that the scientific community could, and in some respects has, become fractionated into mutually isolated territories, unable to communicate with each other. He, like many others such as Berrien, Ackhoff and Emery,[18] have done, points out that this

results in an avalanche of "findings" which in their totality and lack of relatedness and integration do not add up to either knowledge or wisdom.

The systems point of view is a response to this threat, and, an attempt at synthesis and integration into a whole, or the re-establishing of an holistic approach on the one hand, and an avenue for the movement from the whole back to the individual specialities on the other, while maintaining scientific vigour. It is clearly pointed out that it is not a return to the "older ways". The analogies found in systems theory are not the mere metaphors found in the analogical way of old, but are "rooted in actual isomorphism or homomorphism between systems or theories of systems." In this sense system theory is an attempt to "make the study of man both scientific and meaningful."[19]

C - THE METHODS OF GENERAL SYSTEMS RESEARCH

In discussing general systems research Bertalanffy turned to Ashby[20] who outlined two possible ways or general methods in systems study. The first method is the so-called empirico-intuitive method. Ashby acknowledged that Bertalanffy and his colleagues had gone far in the development of this method. This method involves taking the world as one finds it and examining the various systems (i.e. zoological, physiological, social, etc.) as they occur in it. From this examination is drawn up "statements about the regularities that have been observed to hold." This method is seen as being essentially empirical. In respect of this method Bertalanffy said that it has the advantage of remaining "rather close to reality and can easily be illustrated and even verified by examples taken from the individual fields of science." Its disadvantage is that it lacks "mathematical elegance and deductive strength" and for this reason it is viewed by the mathematically minded as being naive and unsystematic. Hearn[21] calls this method analogistic. One begins with a system at a given level, observes the system and then determines which properties or parts bear a certain relation to one another. The next step is to move to

a system at some other level, and test, to determine whether the same properties or the same relationships are present. In this way a "fact or a phenomenon at one level may suggest a hypothesis to be tested at other levels." Theory building takes place through analogy.

The second method starts at the other end and Bertalanffy referred to it as the deductive systems theory. Instead of studying systems individually and successively, one considers the set of all conceivable systems and the set is then reduced to a more reasonable size. Hearn calls this method the "generic approach". It involves the development of a "master" model which would be capable of describing each system at each level separately or all of the systems together.

Bertalanffy pointed to limitations in this approach and in particular the use of differential equations when describing phenomena. He agreed with others that description by using differential equations is not only clumsy, but, in principle, inadequate to deal with many of the problems of organisation. He emphasised that there is no "royal road" to a general systems theory and that it will have to develop by an "interplay of empirical, intuitive and deductive procedures."

He conceived of general systems theory as a working hypothesis. The main function of theoretical models, as he saw it, lies in the explanation, prediction and control of phenomena which are as yet unexplored. He readily conceded that others may have an equal right to emphasise the importance of the axiomatic approach (e.g. the theory of probability, non-Euclidean geometrics, information and game theory etc.) as was first developed as deductive mathematical fields and later applied in physics and other sciences.

In respect of both approaches or methods, i.e. the empirico-deductive and the deductive, Bertalanffy cautioned against the danger of considering too early

the theoretical model as being closed or definitive.

He emphasised that general systems theory is not an investigation of hazy and superficial analogies, for he considered the latter to be of limited scientific worth. One may succeed in finding similarities between different phenomena but will most certainly find differences as well. To overcome some of the limitations associated with the empirico-intuitive approach, he stated a number of "system principles". The main principles are wholeness, sum, centralisation, differentiation, leading part, closed and open system, finality, equifinality, growth in time, relative growth and competition. These principles are used in many ways and he cites as examples, general definition of system, types of growth, systems engineering, etc.

For conceptual model building one cannot rely on analogy but must turn to the level of homologies. These, Bertalanffy held, are "... present when the efficient factors are different, but the respective laws are formally identical." He was particularly concerned with logical homologies and explained himself as follows:

> "If an object is a system, it must have certain general system characteristics, irrespective of what the system is otherwise. Logical homology makes possible not only isomorphism in science, but as a conceptual model has the capacity of giving instruction for correct consideration and eventual explanation of phenomena."

His suggestion accordingly was that general systems theory could serve as a regulatory device to distinguish between analogies and homologies, meaningless similarities and meaningful transfers of models. He thought that this function applies particularly to science such as demography, sociology and large fields in biology, which cannot be fitted into the framework of physics and chemistry, but where there are nevertheless exact laws which can be stated by application of suitable models.

The point is taken that the homology of system characteristics is not mere metaphor or analogy, nor does it imply "reduction of one realm to another and lower one." Bertalanffy was clear and concise when he stated "... it is a formal correspondence founded in reality inasmuch as it can be considered as constituted of "systems of whatever kind."

The organismic approach in general systems theory however presents a number of problems. Gerard's[22] formulation of the general systems theory programme, which has "system" as being primarily a living system, illustrates some of the difficulties. For him, living systems are those in which an organisation, known as life, is maintained. His programme includes a hierarchy of systems in which the smallest system may constitute a sub-system or component of the larger system, e.g. the individual as a system may be looked upon as a sub-system of the family, the family as a sub-system of the community, etc. The relations between individuals from which the ultimate system classification is derived can be subjected to a further differentiation between social arrangements and the biological arrangement of species.

On the level of social organisation one finds social institutions, political units and societies as constituting the collective characteristics of human beings. In respect of biological organisations the organism and populations clearly stand in "symbolic, predatory and parasitic relation to each other." In this way they form an ecological system. It is clear that viewing such an eco-system as an epi-organisation is more than mere metaphorical analogy, for one can trace the metabolic cycle and chains as accurately through the biological community as can be done in a specialised cell in a single organism. Plants serve as food for some animals, the latter are preyed upon by other flesh-eating animals, etc. Under the right circumstances the eco-system may reach a balance similar to that of the "homeostatically maintained metabolic equilibrium of the individual organisms."

Gerard's hierarchical scheme of living systems, i.e. from cell to society, constitutes one dimension. His programme, however, presents a matrix, horizontally represented by hierarchical levels of organisation and vertically supported by three aspects of living systems, viz. structure, behaviour and evolution. The structure of the system is a functional concept in Gerard's terms since it is determined and described in the context of the arrangements of the parts and their potential influence on each other; their inter-relations. By behaviour he means the response of the living system to environmental stimuli, short-term reversible changes of state and its functioning in the maintenance of a certain steady state. The third aspect, evolution, refers to long-term, irreversible changes and includes phenomena such as growth, history, evolution of the species, etc. He calls these aspects "being" (structure), "acting" (behaviour) and "becoming" (history).

According to his matrix, particular fields of study are determined by the intersection of hierarchical levels of organisation (molecule, cell, organism, group, population, etc.) along the ordinate, and their properties (being, behaviour and becoming) along the abscissa. This is illustrated by Rapoport's examples of anatomy being the study of structure at the level of the individual, history being the study of development at the level of a society, embryology as a discipline being in the same column as history but at the level of the individual in his early stage, etc.

Rapoport assesses Gerard's programme as supporting the contention that general systems theory is not a scientific theory in the strict sense but rather an outlook. His matrix of levels and their properties does not constitute a "theoretical assertion" but an outlook. This outlook, with its suggestions of analogies and dependencies, Rapoport concludes, may be a "fruitful" way of viewing living systems. It is supported and complemented by Miller's[23] programme of listing hypotheses concerning similarities and differences between analogous events occurring on different levels of systems organisation.

The organismic approach based on levels of organisation is not favoured by all and objections to this approach resulted in the formulation of an altogether different approach: one founded on mathematical homologies. Rapoport suggests that if one follows the definition that a system is a "specified set of entities and a set of relations among them" then the method of mathematical homology is the most "natural foundation of a general systems theory." He holds that an "exact specification of relations is practically synonymous with a mathematical specification." He continues:

> "The system is specified as a particular mathematical model and is seen at once to be isomorphic to all systems specified in terms of models of the same type."

He argues that the most fundamental feature that distinguishes a system from its environment is that it can be described in purely "structural terms". Structure as far as he is concerned is not confined to physical features or specific components and includes relations. Since a system, to be recognised as such, is defined in terms of the relations between the components then general systems theory should concentrate on "purely relational isomorphisms that are abstracted from content."

Rapoport defines isomorphism as being the "strictest mathematical homology - two mathematical objects are isomorphic if there exists a one-to-one correspondence between the elements of one and those of the other and if the relations among the elements are preserved by the same correspondence."

As an example of isomorphism he offers the obeyance of the same mathematical law by a mechanical harmonic oscillator and an electric circuit with an inductance, a resistance and a capacitance. The former's differential equation is:

$$m\frac{d^2x}{dt^2} + r\frac{dx}{dt} + kx = f(t)$$

where x is the displacement of the mass m; r is a co-efficient of friction;

k is the elasticity modulus, associated with the returning force, which may be a function of time.

The differential equation of the electrical system is given as:

$$L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + Cq = E(t)$$

where q is charge, L the inductance, R the resistance, C the capacitance and E(t) an impressed electromotive force.

Isomorphism is not only clearly and convincingly demonstrated, but Rapoport points out that a fundamental set of "homologies" is established between mass and inductance, between electrical resistance and friction, etc. Had one been concerned with "specific content of the events" rather than with "mathematical structure" these homologies would in all probability have remained unobserved.

In Rapoport's argument the classification of system derives from a classification of mathematical models and it is feasible to have ecological systems, in principle, represented by systems of differentiated equations. It is possible also to derive from these equations their characteristic features. Whenever homological laws are exhibited by the phenomena, translation of concepts from one field to another becomes possible.

This method also provides a way of resolving controversies regarding terminology and Rapoport contends that its translational propensity greatly facilitates the "integration of knowledge stemming from disparate disciplines."

He does admit that the method has a serious drawback in that a precise specification of entities and relations, required to define a system, may well prove to lie beyond our own knowledge. He suggests, though, that "... to be precisely specified a system need not even be deterministic" and a consideration of probabilities will suffice. In this respect one may well find that the organismic

approach with its emphasis on levels of organisation may be used to by-pass the obstacles to mathematical analysis.

Bertalanffy stated that general systems theory is "ultimately a logico-mathematical science of wholeness and its rigorous development is 'technical' = mathematical, but 'verbal' descriptions and models ... are not expendable. Problems must be intuitively 'seen' and recognised before they can be formalised mathematically. Otherwise, mathematical formalism may rather impede exploration of very real problems."

It has been frequently asked whether general systems theory is mechanistic. To this question Berrien[24] offers a substantive denial. It is held that the root concept in the mechanistic view is cause and effect or that of stimulus and response and, as has been indicated earlier on, such a rigid approach could not offer solutions to the problems presented by open living systems where it may be very difficult, if not impossible, to distinguish between stimulus and response. Berrien argues that our empirical data and interpretations oblige us to view the subject-matter of all sciences as comprising "interdependent circular transactions among linked systems" which prevents distinction between cause and effect. The nature of such transactions is probabilistic and this rules out the view of the universe as being a "clockwork machine". In addition to this there are the aspects of feedback which promote self-control and direction, and aspects of teleology, all of them contradictory to the mechanistic approach.

However, the more complex the structure and organisation, the higher the degree of uncertainty. Heisenberg's[25] principle of uncertainty whereby a phenomenon is said to become distorted whenever attempts to measure it are made, cannot be ignored. The distortion is attributed to the observer and the constraints on the "coupled observer-object system" caused by the observer's decisions as to what is relevant or important. Locker and Coulter[26] paid particular attention

to this aspect and their endeavours offer positive guidance to the general systems theorist towards resolving some of the problematic issues.

Their stand is that it would be misleading and a mistake to ascribe objective reality to any system without taking into consideration the "mode of cognition" of the observer. Systems exist everywhere and nowhere and a phenomenon, or part of a phenomenon, is identified and described in terms of the organisational structure of the human observer. As such each system will offer at least two images of the human being, viz. that of the observer who is in no way responsible for the design and structure of the system, and that of the designer who is actively involved in the conception, design and construction of the system; and secondly, the system will partially reveal to the observer some of the concepts that contributed to the definition and construction of the system. To this they add though that the "qualities of reality" excluded from the definition and construction will have a strong constraining influence on the system's image. They object to a simple and naive approach to a view of systems, i.e. that it is an entity capable of maintaining some sort of equilibrium and renewal and of processing information. Such a view would hold only as an initial approximation. The aspects of the systems coming into being, its history and teleological nature, are important and must be taken into account. Underlying these aspects is the goal and all goal-directed activities.

In their attempt to resolve these difficulties they first of all turn to an examination of the relationship between the system and the observer. Two perspectives are revealed, viz. a naive perspective of the observer viewing an objective system, and a more complex perspective of the observer viewing himself as viewing a system. From the latter perspective a number of facts emerge which they list as follows:

(1) The observer is a particular and self-referencing person who differs from most other systems because of the self-referencing quality. This characteristic is frequently a source of paradoxes and confusion.

(2) The mental processes of the observer become the object of observation and attempts are made to relate these to objective system.

(3) The observer as such is a subjective entity and if viewed objectively one finds that it becomes more difficult to distinguish between object and subject. As to how objective the observer is will depend on his perspective. No system is inherently objective: "A system is an object because it has been endowed with the property of objectivity by the observer..."

(4) Systems are analysed by the systems scientist in terms of cause and effect. Attempts are made to understand why the system behaves in a particular way. However, to do so in terms of purpose may prove to be a handicap and some scientists tend to ignore the notion of purposive behaviour. Purpose or motive clearly cannot be excluded since the observer himself is motivated by the purpose to understand the system in a "particular way, according to the mode of cognition he is using."

(5) The second and more complex perspective indicates that a repeating process of reflection is involved and that this process may continue indefinitely. At any stage of repetition one will, however, always find that there is a "higher perspective that cannot be objectively known by the observer ..."

Locker and Coulter define a mode of cognition as a "procedure for defining observables and manipulables of a system". Observable in this sense means a "class of objects, processes and relations for which it is possible to define a characteristic function and a discriminant". Definition of characteristic function and discriminant is essential if the observer is to be able to "determi whether or not a particular object, process, or relation is a member of the class as well as to "distinguish the object, relation or process from other members of the class". By manipulable, they mean a "class of objects, processes, or relations which enable the observer to change one or more

observables of the system".

It is argued that no system can exist independently of the observer. The particular elements or relations selected for observation or the set of variables chosen or created will depend on the observer's particular mode of cognition. However, this does not mean that those variables excluded from a particular abstraction do not, as concealed parameters, have an influence on the observation. Any system identified and described will be "only one of a large variety of possible views" and that system can and must be coupled to the particular observer.

The argument is taken one step further when Locker and Coulter compare a local view to a global view. In the case of the former the context is very restricted and while one will be able to see the details the overview is lost. Adherence to such a view can be overcome by focusing on the other levels of reality and ultimately through assuming views comprising more in terms of both context and content one will arrive at a global perspective. This view, though it may also be rigorous in content will be "locally vague". As such the local viewpoint is seen as "a favouring of consideration of the system in terms of causality, the global in terms of finality".

It is suggested that a "unique description" of a system could not be attained for any description or definition selects one aspect for observation and neglects or ignores a large number of other aspects. A different definition of system will result in the selection of a different aspect. According to Locker and Coulter the process of selection of relevant aspects, define, describing and prescribing can be understood if one considers "how the modes of reflection of a human subject are related to the modes of description he uses, and how language is involved in this process."

A description is usually capable of being complexified or simplified. This

depends on the process of reflection and whether during such reflection a new set of observables can be defined and whether, accordingly, a different description of the system becomes possible. In the process one may move to either a higher or lower level of description. However, the freedom of movement along a particular level is limited and the addition of new sets of observables, or the revealing of new sets of details, must tend towards a global view. Two sets of mutually effective constraints operate and influence the descriptive level: the observer through his definition, selection and powers of reflection and the system's effect on the observer.

The movement from one level of description to another invariably involves neglecting some of the features of the former level and considering new features of the second level. This also means that significance of the previously made description will change. The nature and extent of the change will depend on the constraints set by the new descriptive level and perspective.

Another important relationship to be considered is the relationship between the "setting of a new constraint and the forming of a new context".

By context Locker and Coulter mean the patterns or arrangements of a "set of symbols representing sets of particular variables". Accordingly a local mode of description is said to have a context of its own. Those things left out of the description remain meaningless or insignificant. Like the local mode the global mode has a proper context. As such it also not only delimits the local mode but embraces it as well. This also means that from the global point of view one looks at each local element in the context of its relationships with its fellow elements. This is not the case when the local mode of description is engaged when one of these local elements is observed. Here one would concern oneself essentially with the sub-components of the system and the interrelations that exist between such sub-components. For this reason it is said that the global view exposes the "connectedness of constraint

and context" and the global view is accordingly seen as being a final mode whereas the local view equals a causal mode.

In terms of this argument the system is then "the framework to which elements and relationships belong and to which the different modes of description refer." The framework referred to is conceptual and created by means of the description employed by the observer or designer.

The "hierarchy of semantic levels" is established when constraints are applied to formed alternative descriptions which have "permanently widening contexts". Contextual territories are created through consecutive reflection and at each stage the widening of the context goes hand-in-hand with a decrease in the contents of certain descriptions; a "paradigm for the simplification process". The hierarchy of description tallies with and is accompanied by the hierarchy of language; the higher the level of the interplay of context against content the more comprehensive the language.

It is necessary to study some of the properties of language, particularly in respect of transcendental reflection because language is the medium whereby the mind can extend and explain itself, and also, because thought and language "condition each other".

Locker and Coulter confine themselves to the three basic features of language as described by Bühler. Each feature refers to a particular function and they are:

(1) the representative function which enables one to describe something, e.g. a system;

(2) the expressive function whereby "activity or behaviour is manifested";

(3) the appellative function which enables "one subject to influence another, e.g. by way of command".

The first function allows for description while the third function allows for prescription.

It is also possible to make a distinction between "object language" and "meta-language". Object language deals with observable entities, the relations that exist between these entities and in a given mode of description, reflection is excluded. As such it is descriptive in nature and is associated with causality. Metalanguage on the other hand has object language as referent, but permits reflection on the process of description and is associated with finality. It is suggested that object language and metalanguage be used jointly at "each application of language".

Of equal importance is the role of observer, for in his use of language he makes an important contribution in distinguishing between systems that may be classified as "taciturn systems" and those that may be called "language oriented systems". The essential difference between the two systems is based on the ability to observe itself and to communicate about the self to external observers. The former system cannot communicate either about itself, or to an external observer, but is capable of communication, in object language, between its components. The latter system can communicate about itself and can observe itself and consequently its process of observation.

The observer in turn needs to be assessed in terms of being passive (unconcerned) or active (designer). The language used by the former is mainly of the descriptive kind whereas the latter's language tends to be prescriptive. The differences between the mode of operation in the two forms of observation are that in the case of the unconcerned observer one finds that he "must start with a local view since he has only details available. The designer on the other hand starts with a global view since one of his basic aims is to construct a system capable of performing a given task. The two, therefore, begin at opposite directions. It is possible that the unconcerned observer may through

the process of reflection eventually arrive at a global view and with a simplified description. The designer on the other hand, once he has conceived of a global view will conduct a "process of increasing complexification and concern for detail" in his attempts at constructing a system. In their use of language, though, both designer and unconcerned observer will resort to both object language and metalanguage.

It is necessary at times for designer and observer to assume temporarily the attitude of the other if the models (i.e. descriptive and prescriptive) of a system are to achieve their aims. What happens is that the observer designs a model for his description and he follows his own prescription by a "kind of watchful prescription". Throughout one will find a "mutual interplay" between description and prescription. Even if one had not created the system one is describing, certain deductions could still be made from one's description about the prescription of the system.

Locker and Coulter suggest that their analysis indicates that "a description is identified mainly by the use of causal terms" and that "a prescription is based on the ... formulation of goals". They accordingly state that "... the ultimate causes of the performance of a system, which may be causally viewed as a process by an unconcerned observer from the local mode of view, are to be found in the global mode of cognition as goals set by the designer."[27]

By drawing on Pask, Locker and Coulter finally point to three different types of systems that emerge from the descriptive mode. These types differ from each other according to the mode of context expressed by the description. They are:

(1) The processual system. In this system its "behaviour is expressed by equations of motion, chemical kinetics, or the like". As an example the kinetics of cellular processes is given.

(2) The functional system. This is a hierarchical system whose behaviour

can be described by plotting the input-output configuration in the network of components. As an example there are physiological systems where the function of organ is described on a higher level than that of the molecular. The latter is of course included, but what takes place here is that "simplifying constraints" are imposed on the processual system included within the components.

(3) The organisational system. Its behaviour is described in causal terms as well as in terms of underlying goals. It equals a language oriented system and the language used is that earlier on described as metalanguage. In order to understand or describe this system in its totality the observer is required to have adequate knowledge of the "previously prescribed goals". Such systems can be further sub-divided into:

(a) Teleonomic systems. Systems of this type behave according to a goal which is induced or "designed into the system at set points" by the designer or an external agent.

(b) Teleozetic systems. In this system the underlying behaviour-determining goal is induced or designed in the same fashion as under (a) with the exception that this system has not only a "single, preassigned goal, but a repertoire of goals from which the system can select."

(c) Teleogenic systems. Systems of this type are capable of generating new goals for themselves. Such goals are in addition to the goals the external designer has set or formulated. Systems belonging to this category include those under (a) and (b). In terms of context this system has the broadest context, the teleonomic the narrowest context, and the teleozetic lies somewhere between the two.

Locker and Coulter conclude then that the description of systems depends on the observer, the prescription of systems on a designer and that the one influences

the other. They continue: "The simplification necessary to achieve a global description of a system has its counterpart in the complexification inherent in going from a global prescription to a detailed and specified one. The counter-position and intrinsic togetherness of the causal and final views have been traced through the classification of system types. The reflections inherent in every description and prescription are possible only because language can widen the context concomitantly with the steps of reflection."

D - CONCLUSION

General systems theory does not present one with a new all-embracing theory or discipline aimed at replacing any or all of the existing theories concerned with the study of natural, biological, psychological and sociological phenomena. Its focus on systems has led to the formulation of a theoretical model that enables the observer, whether passive or active, to move from the specific and detailed to the general and global. At each step of the process of moving along the hierarchy of systems the model allows for assessment of the content as well as the contextual modes, the delimitation, constraint, complexification or simplification inherent to that particular level of perspective and concomitant with the movement to that level.

General systems theory aims at dealing with those phenomena with which the natural sciences and their analytic method fail to deal satisfactorily. It set out to, and succeeded in creating new conceptual tools while maintaining scientific vigour and credibility. It never intended to become a science in its own right but rather to develop into a sound and acceptable skeleton for all sciences. Its ambition is not to merge the physical, biological, behavioural and social sciences into a singular new science. It strives to unify the sciences into a whole where each science as component of the system will occupy its own and rightful position, relate significantly and meaningfully to each other and constructively contribute to the much-needed synthetising

and integration of knowledge into a whole reflective and worthy of the whole that it represents.

It is an extremely useful analytical tool particularly where the boundaries between different approaches or levels of perspectives need to be transcended. In the process of transcribing or encoding knowledge or information into generally understood symbols or language it does not distort since it does not aim at changing, replacing or negating any disciplinary approach or perspective.

Social work apparently offers just the kind of problem for which general systems theory is intended. Social work's position in the spectrum of helping professions based on specific scientific disciplines appears to be nebulous, sometimes contentious and often inconsequential. Its internal structure and body of knowledge displays a disorderly and poorly integrated constellation of concepts, theoretical models and knowledge "borrowed" from sister-disciplines and in particular the disciplines of sociology and psychology. Its own creations of theoretical constructs appear flimsy and weak. This may account for the persistent view of a conglomerate of psychological and sociological thoughts being presented to achieve some measure of respectability.

Lacking internal order, synthesis and integration, the "input" from other disciplines is seldom encoded or processed to satisfy the aims and goals to which the discipline purports. Social work is practice oriented and concerns itself only with those phenomena which fit into the category of concrete systems. Its peculiar psycho-social perspective on human nature and behaviour, however, demands of the social worker the ability to move from a narrow local or microscopic view to a general, global, or macroscopic view.

I therefore intend to apply general systems theory to the disciplines of psychology, sociology and social work in order to

(1) elucidate and assess the transactions taking place across the

boundaries between these disciplines;

(2) facilitate internal order, integration and synthesis in social work so as to ensure more effective and purposive processing of inputs and production of outputs;

(3) position social work as discipline in the spectrum of social sciences.

The disciplines of psychology, sociology and social work are all man-oriented but occupy different levels from each other on the hierarchy of perspectives. In order to understand their connectedness or interrelations it is necessary first of all to consider a systems view of man.

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CHAPTER FOUR

A SYSTEMS VIEW OF MAN

A - INTRODUCTION

No single discipline concerned with the history, or being, or behaving of man is capable of rendering a descriptive and prescriptive picture of man as a whole and complete organization. One could go one step further and suggest that the science of man, which would include all of those disciplines concerned with the history, being, and behaving of man, present a broken image of fractionated and poorly integrated parts. As yet it is incapable of interdisciplinary linking up of what has become known, and of forming an integrated whole, representative of that which it seeks to understand.

The examination of man's structure and function, and the attempts at finding an answer to the cardinal question of why man behaves in the way he does evolved from a general or global view into a more specialised and local view. However, the classical analytical method of the physicist and the earlier attempts at reductionism failed to pave the way between the general and the specific. Too many variables are involved and individual investigators, or schools of investigation, either could not or had no desire to follow in each others footsteps and instead elected to concentrate on pre-determined variables or particular components. The method may initially have been the same but had to be, and was, modified and adapted in each instance by the success, or failure, attained in uncovering information and knowledge.

Increased knowledge led to changes in perspective and often re-definition of the contextual frame of reference. Particular fields and aspects for microscopic scrutiny and depth analysis were demarcated. This, plus the development and

refinement of particular methodologies, resulted in the emergence of separate disciplines, each with its own unique and characteristic approach, focus and method.

The process of descent from the general view with little content to the local view which is crammed with detail resulted in an information explosion. As each discipline probed deeper and deeper into an ever-narrowing context the findings and knowledge in each area became more difficult to relate to that of the other disciplines, or sometimes even to fellow sub-disciplines. The deeper a discipline had probed, the more entrenched and distant from its fellow disciplines it became.

Detailed knowledge of a part, if it cannot be related to knowledge of other parts has limited meaning and the threat of being swamped by the vast and chaotic array of facts, knowledge and theories, is a real one.

Man's knowledge of himself and his universe may be factual and truthful in respect of certain parts but in its totality it is presented in a chaotic, disorganised and factually unrelated way. This runs contrary to, and is a distorted reflection unworthy of a world which is remarkably well-ordered and one which strives towards greater organization. From time to time attempts are made to place specific approaches, foci and disciplines into relatively broad categories such as the natural sciences or the physical sciences, the biological sciences, the social sciences, the humanities, etc.[1] This is done in an attempt to relate and integrate knowledge, theories and concepts, but, such distinctions are broad, rather loosely ordered and offer numerous problems. One may, for example, consider the case of Geography which is regarded by some as belonging to the social sciences and by others as being a member of the physical sciences. Another example is that of psychology which may be grouped with the social sciences or biological sciences depending on which field of study in the discipline one has in mind. If the laboratory and the behaviouristic fields

in psychology are considered it is clear that there is a wide overlap into the field associated with the biological sciences. Biology, itself, may on the grounds of its study of metabolism be linked via its explanation of certain physical processes, to the physical sciencies and yet, because of its use of concepts such as birth, death, growth, organization, etc., it distinguishes itself from the physical sciences and shows an affinity with central concerns and concepts in the social sciences.

It was with this aspect in mind that I referred from time to time in the previous chapters to "biological, behavioural and social sciences" in order to include all of those disciplines or approaches which concern themselves with studying those phenomena regarded as open living systems.

The system's view with its emphasis on completeness or wholeness, and purposive interaction between its components appeals to the observer who is anxious to understand a functioning man and his world. It is even more attractive when the observer is concerned with establishing links between the local specific and the global general perspectives.

B - A SYSTEMS VIEW OF MAN

A systems view of man is a non-anthropocentric view. This does not mean though that the systems view is not a humanistic one.[2]

As Laszlo points out, the ancient philosopher-scientists held that in order to understand human beings one must understand their world. They viewed the human phenomenon in a cosmic context, i.e. the universe is an orderly and integrated whole and man but an integral part. However, as science developed and matured, the scientists began to divide and examine the general questions concerning human nature into "specific problems". Such problems could only be dealt with in terms of specialized research involving particular methods,

research techniques, etc., hence the proliferation of disciplines. This development led to numerous theories on man's nature and function, and while this was good in that more had become known and methods of research could be refined, it did result in a "fragmentation of our understanding of man."[3]

Man and his universe, structurally and functionally, constitute a whole which stands in opposition to those phenomena which structurally and functionally could be described as heaps. By heap is meant that the overall structure and function is not affected by the addition or removal of an item, or items, of the ingredients except that the size will accordingly increase or decrease. Heaps can be created or destroyed, though, by the removing of most, if not all, of the ingredients or by putting together more items than a given minimum number. In this sense the existence of a heap depends on the number of essential items present and its basic nature is collective and summative.

In contrast to the heap the integrated whole reveals that all its parts together, through their inter-relationship with one another, express the character of the whole. The structure and function here is of a constitutive order and will be affected if a component is added, or removed, from the whole. The parts are not identical to each other although some may display a high degree of similarity and the relationships that exist depend to a large extent on the attractive and repellent forces operating. Because of the threat to its survival, systems of this sort have developed certain self-regulating or homeostatic mechanisms.

Large and complex organizations, or supra-systems, are created by and continue to exist and function on the basis of, a well-constructed hierarchy of multi-level sub-systems. Each level on the hierarchy reflects a whole for it consists of a set of relationships between a certain number of identifiable components. This whole, depending on the attractive and repellent forces operant, will relate to a number of other wholes and in so doing become the component of the whole reflected by the next higher level, etc.

Because of the processes of complexification and delimitation it may be quite possible to find some direct links between sub-system and supra-system without due consideration of the intermediate system. The links may not be very strong but obvious enough to lead the observer occasionally into the temptation of rash generalixation or over-simplification. This happens frequently where the perspective and context on one level adumbrates that of the next two levels.

The concept of man presents one with this problem. Under certain circumstances the concept man will include the global view of all mankind or it may refer to the singular, narrowest and most basic unit of the individual human being. Since the one emerges out of the other, the observer and theorist alike may be tempted to use the concept in an all-embracing or interchangeable way. Conclusions based on an ill-defined use of the term man may, though not necessarily erroneous, be fallacious and distorted in respect of the contextual and intrinsic meaning and the reality of a particular phenomenon.

In the case of human society the very basic unit or component, i.e. the individual human being, is structured so as to allow for biological, psychological and sociological functions. This adds a further complication because these three aspects are closely inter-related and each one is capable of being considered on any one level of a hierarchy of multi-level perspectives. When linking up the different aspects casual cross-level linkage must be avoided for this could cause considerable confusion and distortion. The contextual and delimitational aspects of a given mode of perspective need to be clearly defined at all times for should the variables pertaining to one level be included informally and haphazardly, on another level such inclusion will not only obfuscate one's vision but also increase the risk of illusory theorizing.

The systems approach offers a solution to the problems mentioned in that it allows for viewing, as and when necessary, man either in his singular or individual form as a complete system, or as a component or sub-system of a

larger organization. It is a generalized theoretical construct which allows the observer to perceive of a hierarchy of multi-level systems, the identification of linkages and relationships between components or sub-systems, and to move from one level to the next.

The individual human being's structure is so intricate and complex and allows for such an extensive range of activities that it appears at first glance to be a self-sufficient and self-contained unit. A closer look, however, reveals that although it is capable of independent functioning and behaviour, the individual human being is nevertheless an open living system and is in constant interaction with other systems in its environment. As such it is capable of receiving and processing inputs, producing and transmitting outputs, store matter energy and information, growth, negative feedback and maintaining homeostasis. Although it is capable of all of these and other activities it nevertheless relies to a large extent on its environment and external resources for its nurture, protection and survival.

Despite its dependence on and continuous interaction with external sources the individual human being is all the same too complex an organization to view only in the context of being a component or sub-system of the larger system or eco-system of human society.

Singular man must be studied in the context of being a recognisable and unique organization of a specific set of components which stand in a definite relationship to, and interact with, each other. His boundaries are definable in terms of occupying physical and non-physical space at a given moment in time. The phenomenon faced on this level is an organization of interrelated components which in totality form a recognisable whole.

A study of man on this level will also reveal certain differences when individual are compared but there are enough similarities and invariances to constitute an

attractive force strong enough to render human beings capable of being viewed in a collective and broader text. Not only can one generalize on the existing invariances but human beings interrelate with each other to the extent where the individual wholes will merge and form larger wholes, i.e. systems interrelate with each other and because of such sets of relationships supra-systems are established.

Systems and components emerge from each other and have meaning only in terms of each other. The significance of either society or the individual human being can be fully appreciated only when the one serves as referent for the other and each needs to be studied accordingly.

C - MAN AS A SYSTEM

When man is viewed as an open living system he is not seen as a special creation, one that occupies the central position and which is superior to all of the other organisms which constitute his world. He is instead looked upon as being an integral part or component of a very large organization where each part is dependent on one or more of the other parts for its nurture, protection and survival.

Although the system of the individual human being displays many of the properties and attributes characteristic of those systems pertaining to the orders of the plant and the animal kingdoms, it reveals certain other properties and attributes which distinguish him from the other systems. As was indicated earlier on, the systems view is a non-anthropocentric yet humanistic one. Although it does not favour one organization to another nor rank one as superior to another, it does appreciate differences between systems and allows for degrees of complexity in both structure and function.

The human being cannot be readily understood and fully explained solely in terms

of psychological and/or sociological referents. The picture can never be clear nor comprehensive, and one's understanding will remain wanting unless the physical referent is included as well. The physical, psychological and sociological aspects constitute, each within itself, a component or sub-system of the total system of human nature, whether it be in the local and narrow context of the individual, or whether it be on a more general collective level.

These components or sub-systems are connected and a strong correlation exists between them. They influence each other strongly but the relationships between them are not causal. A study of any one component will not result in the reflection or explanation of the structure and function of either one or both of the other components.[4]

Of the three sub-systems the physical part of man appears to be the most amenable to formal scientific study, description and prescription. Its boundary, structure and spatial-temporal aspects are well defined. It can be broken up into components or sub-systems and on the physical level the grouping of the sub-components and their inter-relationships are relatively easily discernible. In this respect Gerard's[5] conception of parts, wholes and levels of integration offers an illuminating and reasonable explanation.

The basic rule for Gerard is that the whole comprises of a set of interacting components and each whole constitutes a "kind of individual". Individuality depends on interaction between the components and not mere co-existence. The more vigorous the interaction, even to the point where sub-groups are developed in the group, the stronger the individuality.

Each individual is composed of sub-ordinate units. Interaction individuals in a certain group or class will together constitute an individual on the next and higher level. In the same way as the systems theorist speaks of supra-systems, system and sub-system, does Gerard speak of super-ordinate, ordinate

and sub-ordinate.

Gerard furthermore suggests that the important levels are those whose entities are relatively enduring. A further point raised is that the individuals interact with each other not only on the basis of identical structures but according to their innate properties and attributes. One must therefore take into consideration the properties of each part or unit.

Following his line of argument if the atom is considered as unit, its sub-ordinate units are neutrons, protons, etc., and its super-ordinate individual is the molecule. From the level of molecule one could proceed to the level of the crystal, colloid or other aggregate. The iterant process leads one from colloid to cell, cell to multi-cellular organization, e.g. tissues, organs, species and the larger organizations of taxonomic categories. On the level of species one may substitute man, and on the superordinate to man social groups, communities and the eco-system.

One can thus present a picture of man comprising a hierarchy of levels along the ordinate, viz. atom, molecule, cell, tissue, organ, group, community, etc., and along the abscissa one will find the properties of becoming, being and behaving.

In a system the property of becoming refers to a "regular change, normally progressive ... along the time axis ..."; that of behaving to "repetitive perturbation along this secular line ..."; that of being to "instantaneous status".[6]

Gerard concludes that his suggested hierarchical mapping allows for ranking or classifying the disciplines concerned with populations starting at the level of the molecule. His hierarchy displays two major branchings:

"(i) above the molecule level, into more organized entities with or

without the collective properties that describe the living, and

(ii) above the organism level, into entities based on human or non-human components."[7]

Biology can accordingly be considered super-ordinate to physics and chemistry and on its lower levels as co-ordinate to the earth sciences. It is in turn sub-ordinate to the social sciences in general and co-ordinate to the social sciences at its "higher levels".

The whole of man is too complex an organization to be studied, explained and understood in any other way but by breaking him up into his constituent parts. Gerard's approach offers a spectrum of different levels, each related to each other, either directly or indirectly through one or more intervening levels. Since each level can usually be linked to a specific discipline or sub-discipline, disciplines can be plotted on a corresponding hierarchy of levels along the ordinate and according to their properties along the abscissa. Disciplines will accordingly stand as subordinate, ordinate or supra-ordinate to their neighbours at the higher or the lower levels.

When individual man is viewed in the context of being an organization comprising of physical, psychological and sociological components, a number of salient features emerge:

(a) As individual man is super-ordinate to the middle and lower level organism and ordinate only to the higher level organisms studied in biology.

(b) As individual man is sub-ordinate to the middle and higher level organizations and co-ordinate only to the lower level organizations studied in sociology.

(c) The individual man's psychological component is super-ordinate to the physical component except at its lower level where it is co-ordinate to the higher level of the physical component.

(d) The individual man's psychological component is sub-ordinate to the sociological component except at its higher level where it is co-ordinate to the lower level of the sociological component.

(e) On the co-ordinate levels the three components appear to be well-rooted in each other and man's individuality is secured by these strong relationships.

Subsumed to any of the three components are the other two; a triumviral construct which permits approach and study in any of a wide range of contexts and perspectives. The systems approach with its focus on components, their relationships and properties, enables the observer to appreciate the individuality of man and his relationships with sub-ordinate and super-ordinate systems.

When the properties of the system man are considered the following invariances crystalize:

(a) The system is capable of growth, i.e. it develops through a series of clearly observable stages, viz. from the fusion of two parts, sperm and ovum, to a highly complex system capable of dealing with an extensive range of matter/energy/information inputs and delivering an equally extensive range of matter/energy/information outputs.

(b) The system initially is highly dependent on its environment for its nurture, survival and protection, and as such is relatively undeveloped and primitive in terms of structure and functioning as compared to its ultimate adult form.

(c) As the system grows, re-arrangement of, and addition to, its components take place and it increases its capacity for effective and autonomous processing of inputs, outputs, storage and memory. Feedback and self-regulatory mechanisms are developed and employed to effect homeostasis.

(d) At any given time the system's state will reveal nodes of stability; "... the residues of past action, the molecules or organs or

institutions that have become fixed, yet which also carry the cumulative changes of becoming".[6] These residues are carried forward by, and can be found only in, concrete material entities, e.g. the person, or a group of persons. Two carrier elements exist, that found in the genes and the element of culture. The former is internal to the system while the latter exists in the relationships between individual systems. A society and its culture comes to be what it is through the learning abilities of the individual. The individual's learning in turn is subject to his innate abilities and to the opportunities for learning granted him.

(e) The system of the individual man will show a number of invariances and constants when compared to other men. The agreement is significant enough to justify taxonomic categorization. There exists, however, certain variances and deviations from the normative to justify a view of a singular man being unique and an individual system unto himself. The boundary of the individual system, though subject to shifts and changes along the time axis, is normally clearly definable in the context of specific relationships.

(f) The system is teleogenic in nature and its behaviour is teleological. Its purposive behaviour derives to a large extent from external goals that have been internalized particularly through the process of socialization and learning. For the larger part the system's responses are self-regulatory and homeostatic in nature. Physical components are maintained within certain effective operational margins. Exceeding either the upper or lower limits of the margin, wherein effective functioning occurs, will result in undesirable behaviour of malfunctioning. Such behaviour will affect the relationships between components adversely and bring about counter-productive changes. Changes of this sort are to be eliminated or overruled if not prevented. Self-regulatory and homeostatic functions involve expending energy or matter and such losses are to be replaced if the survival and continued

growth of the system is to be ensured. There is a limit to expanding and growth and sooner or later the system will reach a point where its maintenance functions, even at the optimum level, no longer succeeding in compensating for losses and in replacing worn-out parts. Debility sets in and the system can no longer adequately re-inforce its own structure. The process of decline ends in death. Since death is inevitable, the system perpetuates itself by reproduction and in the process maximum use of made of the carrier elements of genes and culture. For some reason or other some individual systems are unable to use one or both of the carrier elements and reproduction is ruled out or at least severely restricted. Loss in such instances is offset by the other systems which produce more offspring than their own beings require or who will assume greater responsibility for socializing new systems and exploiting the carrier element of culture.

(g) The functioning of the system is determined by its being or structure. The structure in turn is determined by the history of the system, i.e. the history of its sub-systems and their components. Function relates the sub-system to the system and the system to the supra-system.

(h) The system of individual man is not only sensitive and responds as a whole but it has the ability to reflect on its sensitivity and responses and it is therefore capable of self-awareness. It is able to determine its own significance by relating itself and by equating itself to sub-ordinate and super-ordinate organizations.

The system of individual man, however, cannot be fully appreciated until it has been considered in the context of being a supra-system as well as in the context of being a sub-system.

D - INDIVIDUAL MAN AS SUPRA-SYSTEM

As system man's behaviour at any given moment of time can be rarely attributed solely to a particular one of his three sub-systems. The relationships between the three sub-systems are intense and even though, as was mentioned earlier on, the one does not cause nor reflect the other, they exert such strong influences over each other that the system's action will always carry, to a lesser or greater extent, a flavouring of all three sub-systems. The three components may be present and exert equal or near equal force in a given action and their boundaries will accordingly be rather obscure and hard to determine. The interaction between components and the motive behind a particular response is best clarified by the reflection and explanation of the responding person. Van der Merwe[8] offers the simple example of crying to illustrate this point. A mother, upon being informed of the sudden death of her daughter, bursts into tears in her distress and grief. The tears do not cause her sadness nor can her grief be measured by determining the salinity of her tears. The sadness and grief she experiences at the time is primarily a subjective and conscious experience. Crying, however, can be caused by other factors as well, e.g. hayfever, the sharp olfactory stimulus by an onion, etc. Only the crying person could give the reasons for crying. The observer who deduces motivation for crying without reference to the person's explanation or relating that person to a situation or set of circumstances is likely to arrive at erroneous conclusions.

Numerous obstacles and problems are encountered when attempts are made to separate the three sub-systems, and to deal with them individually. I therefore decided to follow Gerard's approach of implying the properties of becoming, being and behaving along the abscissa to determine the hierarchical levels along the ordinate. The three sub-systems will accordingly be positioned along the ordinate. Such positioning does not involve superiority or even priority ranking, nor is it based upon causal linkage. The advantages of

this approach are that it

(a) facilitates determining of boundaries;

(b) emphasizes inter-level relationships;

(c) allows accordingly for inter-level movement;

(d) firmly positions each level as sub-ordinate or super-ordinate to the next;

(e) allows for any sub-system to be subsumed to any other sub-system;

(f) presents a context in which man is constitutively all and more than the three sub-systems of physical man, psychological man and sociological man.

The three sub-systems are seen as the major levels along the ordinate and they cover the organizational spectrum of man from the tangible and empirically verifiable physical to the intangible and meta-physical. It is possible to include in the breakdown sub-systems such as politics, economics, etc. These sub-divisions, however, have different boundaries and transcend the levels indicated. The perspectives delineated by such sub-systems are useful in that certain components have their inter-relationships more clearly revealed and particularly those of the trans-boundary kind. However, since these sub-systems pertain to only certain of the sub-components of the sub-systems on the three major levels their positions are regarded as sub-ordinate to each one of the three sub-systems mentioned. To avoid possible confusion they are therefore not considered in this dissertation.

Before the three sub-systems can be considered it is deemed necessary to briefly reflect on the three properties of becoming, being and behaving.

The property of being refers to both the system's structure and its function over time. As I see it, being refers to the system's state, i.e. its internal arrangement of related and interacting components. The state may prove to be relatively stable or unstable but will change over time due to the continuous

flow of inputs and outputs and other transactional processes taking place on both the intra- and inter-levels. The substance and existence, i.e. the being, of the sub-system, is inextricably linked to the properties of behaving and becoming. Whatever changes occur in the being, whether they be reversible or irreversible, will further depend on the attributes of each sub-system's components. These attributes, e.g. inertia, feedback, threshold, etc., also account for the similarities as well as the differences encountered when the sub-system of one human being is compared to the same sub-system in another human being.

The human system's behaviour can be classified into two broad categories. The first category includes actions and responses ranging from the primitive reflex to the more complex instinctual. Such actions are usually involuntary. The second category includes voluntary, intentional and wilful actions. Decisions taken by the system in actions of this sort are determined by the processes of learning and maturation. Actions in both categories are always goal-directed and aim at promoting growth; restoring and maintaining balance and the tension required for work; prevent and when necessary correct, malfunctioning and deprivation; solve problems that will hinder the system's movement towards greater organization.

While actions and responses in one category may be subsumed to actions and responses in the other category, such influences are not necessarily causal or the primary determinants. However, inasmuch as effective functioning in the one area will enhance effective functioning in the other area, so will malfunctioning adversely affect functioning in the other area.

The average system's history reveals a movement from a state of semi-autonomy and high dependence for its survival on the outputs of sympathetic systems in its environment, to a relatively autonomous and self-sufficient structure capable of balanced inter-dependence with other systems. It is initially capable of performing only the most elementary and essential processing of

matter and energy required for survival. It starts off though with the potential for growth and to increase its range and complexity of activities. Its growth and development is facilitated by its ability, and capacity, for storage of matter, energy and information.

During prosperous times surplus matter and energy inputs are stored for use during times when the necessary inputs are either not forth-coming or are insufficient qualitatively and quantitatively, or when an increase in outputs are called for without a commensurate increase in inputs.

Its ability to store information and to recall information from its memory bank enables the system to learn gainfully from its past experiences. The storing of information enables the system to build up an extensive repertoire of experiences which in turn form the basis for reflection and decision-making. As the system develops and matures it becomes capable of taking on a greater variety of tasks and its behaviour becomes more complex; through its properties of becoming, being and behaving it escalates into an active, integrated and efficient open living organization.

Of the three sub-systems the physical component proves to be the more amenable to the conventional scientific methods of observation and study. Its components and their boundaries can be identified fairly easily and their relationships can be assessed in terms of measurable attributes. In-depth study and the extensive plotting of the physical sub-system's properties resulted for many scientists in the crystalization of an approach that the clue to the whole lies here and that the other sub-systems are of a lesser order, if any order at all. The physical component then comes to represent the whole of man. This is unsatisfactory for the psychological and sociological aspects of man cannot be explained in terms of the physical features.

Much is known about this sub-system's properties and a reasonably comprehensive

description and explanation has been formulated on all aspects of structure and function during the full life-span of the sub-system. The knowledge gained has in fact enabled the observer to describe not only with a high degree of accuracy but even to prescribe to a comfortable degree of credibility.

The psychological and sociological sub-systems are more difficult to define and describe in terms of boundaries and interacting sub-components. The task becomes impossible when these two sub-systems are approached in the same way as the physical sub-system is approached. Bertalanffy[9] pointed to the model of the reactive organism as expressed by the Stimulus-Response scheme, i.e. that the goal-direction of behaviour is towards gratification of needs, release from tension, re-establishment of homeostatic equilibrium, etc., being replaced in the systems approach by a consideration of man as a primarily active psycho-physical organism. Man is seen as being actively involved in the creating of his universe and is not a mere passive receiver of stimuli coming from the external world.

The normal system man is capable of walking and talking, working and playing, eating and sleeping, reflecting and reasoning, etc., and it is aware of itself as being an individual system with specific attributes. As to how it becomes aware of its uniqueness and develops a sense of for example worth and pride, or shame, or ambition, or disappointment, Sprott,[10] being strongly influenced by the views and theories of Piaget, Gesell and George H. Mead, attempted an explanation.

For Sprott the human being starts off being dependent on other human beings for his nurture and protection. The developing infant gradually becomes aware of the fact though that he is a separate entity and he begins to distinguish between himself and other objects, particularly people. He also becomes aware of the relationships that exist between himself and these objects and his behaviour accordingly becomes more purposive and goal-directed. The infant initially

meets his needs by way of making spontaneous primitive gestures. His learning ability and growing self-awareness, however, enables him to develop a more sophisticated set of signals for indicating his needs and wants, satisfaction and dissatisfaction. These realizations lead to an appreciation of himself as being an object of worth. The gestures or signals employed are meaningful and intentional in that they are calculated to elicit a certain response. The goal-directed and deliberate behaviour in the mature human being reaches a degree of sophistication which puts him in a super-ordinate position to other animals. As Mead pointed out, the human being is calculating and intentional because he is able to "take on the role of the other". The development of this ability comes about in the following way:

Through his interaction with others and his reflection on past failures and successes man builds up a conception of his own nature as well as the natures of those with whom he interacts or had interacted. The processes of feedback play an important part in enabling him to see himself as others see him. In the same way will his capacity for storing information, his ability to recall and to learn from past experiences, play a decisive role in the building up of a conceptual image of his nature. The operant attractive and repelling forces will crystalize for the individual similarities and variances and he will develop in time certain generalities about himself in relation to others. With the expansion of his interactional field and the involvement of more people his generalizations about himself will come to embrace the responses of not just one but many others.

Self-regard, or the attitude towards self, incorporates the attitude of another towards oneself, and, through the process of socialization the general attitude of others. The psychological and sociological components of the system man lie in these refledtions and the development of a notion of self-in-relation-to-another, or to others on a collective basis.

The psychological system does not arise sui generis. It may be looked upon, in the broader sense, as being the co-ordinate between the physical sub-system and the sociological sub-system. As such the psychological sub-system is firmly anchored in the physical sub-system for it is the latter which, through its structure and function, ensures that certain psychological processes can take place. The presence and development of the sense organs, the brain, the nervous system, etc., serve as illustration to this effect. Learning initially takes place on the physical level and stems from behaviour of the reflex/instinctual type. However, with the development of the physical faculties and through the building up of a memory and experience bank, behaviour becomes more complex, anticipatory and purposive, and clearly comes to exceed the bounds of conditioned physical learning.

The physical sub-system is not the sole anchorage though for the external also exerts considerable influence over the developing organism. The external world, or society, initially acts directly on the physical sub-system and not on a psychological sub-system. Out of the physical sub-system's propensity and its interaction with society arises a functional structure which in time grows into an organization which is identifiable as a whole and which is capable of behaving as such.

Once established the psychological sub-system proceeds along self-generative and integrative principles of its own. It is triggered off by a particular event, or series of events, but ultimately comes to be more than any of the forces that contributed to its conception. As it were it comes to represent, through the relationship between the physical sub-system and its external environment, more than the sum total of the attributes of either the physical or the social agents. The psychological sub-system is a teleogenic organization and is capable of responding to, as well as influencing, its fellow sub-systems.

The psychological sub-system, however, reacts to, and acts upon, the external environment in a way indicative of an awareness, and appreciation, of the state of interdependence and the reciprocity of rights and obligations that exist between the two organizations. The relationship and its mutual need-fulfilment is made possible and greatly facilitated by:

(a) the former organization's internalization of certain elements and attributes pertaining to the latter organization;
(b) the latter organization's sympathetic attitude towards a growing and developing organization;
(c) flexibility, adaptability and tolerance to change by both organizations.

The extraneous elements and attributes introduced through this relationship into the system by the psychological sub-system grow into a recognizable sub-system through various additive and constitutive processes; a sociological sub-system is formed. This structure enables the system to distinguish between self and others; to blend the invariances and harmonious ingredients of self with that of others; to synchronize its individuality with the individuality of another or the collective individualities of others; to become a social being. It allows for both variances and invariances and the system becomes capable of distinguishing between me, we and them.

In time the sub-system comes to serve as carrier and transmitter of cultural values and social norms. This sub-system, however, is not only exposed to the network of relationships existent in its external world but it is at the same time influenced by its psychological fellow sub-system and it therefore carries a strong flavouring of both. This sub-system's boundary, because of its evolution, its structure and behaviour, may appear at times to be rather fuzzy and depending on one's approach or contextual perspective, the psychological features may either dominate the scene, or be so distant as to be obscured by the social elements. Failure to acknowledge firstly this sub-system's position

on the ordinate and secondly, its position as co-ordinate between the psychological sub-system and the external social world, results in widely divergent and apparently incompatible descriptions, explanations and prescriptions of the whole and its separate parts.

The sociological sub-system serves as facilitator and mediator between man and his environment; offers man an entry into society and offers society access to man.

E - INDIVIDUAL MAN AS A SUB-SYSTEM

The development of a sociological sub-system completes the whole and enables a teleological man to relate to his environment in a deliberate and meaningful way. Inputs delivered by the environment can be accepted and processed, if necessary stored in whatever convenient a form, and outputs are in turn delivered to the environment. The flow of inputs and outputs and the intermediary processes in one system will influence to a greater or lesser extent the flow of inputs, outputs and intermediary processes in the related systems.

Stronger, more sympathetic and supportive relationships exist between like systems than unlike systems. The invariances in structure and function and the shared interest reinforce the delicate balance between the attractive and the repellent forces. It allows for linking up with its fellow organizations and for co-operative functions without loss of identity and autonomy.

As a grown and mature system the human being is a whole and complete organization in the sense that it is capable of accepting the necessary maintenance and signal inputs, processing these and delivering outputs. However, it is incomplete in the sense that it is not sufficient unto itself and for its protection, nurture and reproduction must turn to other systems, viz. male and female systems for reproduction and rearing families, dependence upon specialists, tradesmen

or technicians with specific expertise, e.g. the medic, the plumber, the communications engineer, etc.

For these reasons the human system establishes an intricate and extensive network of relationships and in this way it strengthens itself, ensures survival and the continuation of the species. On the lower level the system links up with fellow or resource systems in order to meet the needs arising out of its maintenance functions. In this respect its actions are self-directed and aimed at satisfying its own welfare requirements. However, as it grows and extends its relationship network, the system becomes capable of a greater range of activities. Realizing its potential in this way means that the system must ensure that sufficient and adequate relationships can be and are established and maintained. Malfunctioning or dysfunctioning is undesirable, presents a threat and prevents adequate maintenance functions and therefore needs to be avoided or, whenever it occurs, corrected.

Depending on the nature of a specific task a system on its own may not be capable of providing either remedy or prevention of undesirable contingencies. Under such circumstances it will be obliged to combine with other systems and to pool its resources in order to establish the stronger structure required for resolution of the negative situation. The system thus joins up with another or several other systems and as such becomes part of a larger organization; a supra-system. In this way the individual human being can be viewed as a subsystem.

On the higher levels a system's linking up with other systems occurs for purposes which extend beyond the primary needs of that system. It may link up in order to provide a resource organization for the sake of enabling another, or several other systems, to carry out their maintenance functions. As example one may consider a father and a mother together raising their children or in the case of a single-parent family where the assistance of an outsider such as a

counsellor, lawyer, etc., may be called where and when necessary. On a different level one may consider the instance of an organization of people employing a team of professional, skilled and semi-skilled workers to build an old age home in a community with an increasing population of aging persons in need of accommodation and car , etc. On yet another level one may consider instances where the government of a country appoints a team of specially equipped people to study particular phenomena or needs and to work out the necessary remedial or preventative programmes.

The system's primary needs derive from its internal maintenance functions. Its secondary needs derive from inter-system maintenance functions, i.e. ensuring that the other components in its environment will deliver useful outputs. Should the resource system in the environment be incapable of delivering the required or desired outputs individually, they have to be encouraged to combine into units capable of overcoming the inadequacy.

In respect of demands made on this basis strong reciprocity exists between the rights and duties of each system. The rights of a system will prove to constitute the duties of its fellow-system and vice versa. A given system, if it is to realize its full potential, is obliged to merge with others, or at least interact actively with others, and to participate in communal affairs. To prevent loss of identity and autonomy such mergers usually occur in prescribed ways. The interest of the individual is safeguarded as far as possible, for the effectivity, durability and security of the whole lies in the soundness, health and maturity of its components.

Forming larger units is not a selfish action in the sense that it serves to the advantage of either an individual component or in the interest of the supra-system. It is necessary if tasks on all levels higher than those attainable by the individual component are to be undertaken. Again the attractive and repellent forces stem from the nature of the required action and the attributes

of the available components and will make possible the required combinations.

It is understood that each individual human system has a threshold in respect of the number of inter-system relationships it could sustain. It is also understood that the quality and the quantity of the exchange of inputs and outputs between systems will determine how soon a particular threshold is reached. It is also clear that in small organizations the relationships between the components will be more intense than in the case of large organizations.

Through its own growth and development the human system increases its range of manageable tasks. This also means that he becomes capable of an increased network of relationships with other human systems. To protect him it is therefore necessary that each and every relationship will have built in a certain degree of definition and prescription. Lacking sufficient qualification may well result in overtaxing a specific system or too weak a relationship structure which will not only sustain the components but fail to reach its secondary objectives as well. It is essential that both system and sub-system be aware of the need for balanced relationships and that both will strive to effect a fair and harmonious exchange.

Individual needs and attributes determine the frequency and intensity of the functioning of individual man as a sub-system. Individual variances account for some systems relying for their nurture and protection on "mergers" of intimate and intense relationships with only a few other systems while others may indulge in many "mergers" of less intensive an order. The absence of the desired resource systems in its environment accordingly may result in a system temporarily resorting to either less intensive relationships or more intensive relationships.

By viewing the system man as a sub-system in a larger organization, his wholeness is accentuated and a new perspective of his structure and function is gained.

His inputs, intra-system processes and outputs, may in a given situation and at a given moment in time be more pronounced on a particular one of the three levels of his physical, psychological and sociological being. However, as long as the relationship between his components is acknowledged and understood, his integrity and autonomy will remain intact. It is the integrating and teleological nature of the relationships between the components that allow man to relate to other systems and in so doing to become an integral part of his universe.

F - APPRAISAL

A system constitutes more than the sum total of its parts and this holds equally well for man irrespective of whether he is viewed in the context of being a supra-system, a system, or a sub-system. As system man's relation to his environment, at any given time, is determined by the overall blend of the interaction between his components. However, each one of these components stands in relation not only to each other but also to their complementary or supplementary fellow components in the system's environment. They influence, and in turn are influenced by, these external components. As a whole the system, therefore, relates to the external world on any one or any combination of its three levels constituted by its sub-systems. To understand and explain the system one has to take into consideration not only the network of intra-relationships but also the network of inter-relationships.

Since inter-system interaction between human beings is extremely complicated and the observer is obliged to dismantle the whole into more manageable parts, the advantage of the systems approach is obvious for the relationship between any one part and another, or others, and ultimately the whole, remains the central concern. Because of the hierarchical ordering in the systems approach, movement along the ordinate, i.e. from one level to another, is possible. As long as the rules of complexification and delimitation are adhered to, distortion is avoided and movement from the global to the local, and vice versa, becomes

feasible and acceptable. It does not matter whether structure and function are studied by looking at the human being as either a supra-system, system, or a sub-system. The point of departure could be positioned on any one of the three levels since movement along the ordinate is possible and one could relate that particular level to the next in line. The attention paid to relationships and contextual referents ensures that the processes of dismantling and re-assembly cause as little, if any, distortion or disintegration.

Descriptions, explanations and prescriptions are necessarily subject to, or confined to the boundaries as determined or defined by either the observer or as established by the phenomenon itself. It is essential that one's boundary be clearly defined irrespective of whether one is concerned with the actual phenomenon itself, i.e. the concrete system, or, whether one is concerned with the contextual frame of reference, i.e. the discipline or way in which the concrete system is studied. The discipline itself constitutes an abstract or a conceptual system. The distinction between the concrete and the conceptual present a number of problems particularly when one is confronted with aspects such as changing or moving boundaries, time dimensions, predictability, reliability of method, etc.

On the basis of his behaviour the concrete system of individual man can be regarded as being a non-stationary system. At a given moment in time this system assumes the quality of life, i.e. it becomes capable of meaningful exchange of inputs and outputs with like and unlike other concrete living open systems; it becomes capable of growth and development; it becomes capable of undergoing a series of changes conducting to a definite end; it becomes capable of reproduction; it becomes capable of death and re-birth.

While the description of, or any statement as to a system's being present little if any difficulty, problems are experienced in respect of retrospective and predictive statements regarding any transformation in and of the system in

time. Taschdjian[12] argues that retrospective statements are usually called explanations since they "explain the present state by linking it up with some past condition". The further back one travels into the past, though, the greater are the number of contributory causes that are revealed and one finds that in fact many "different starting points" in the past could have resulted in the present state. The transformation, therefore, could be a homo-morphic or "many-one transition".

For this reason he suggests that "... to be acceptable as relevant, an explanation has to link up the effect with a proximate, not with a distant cause." The homo-morphic transformation offers a problem for if one were to use it for "predictive purposes" one would have to assume that the relationship network which held for the past will remain unchanged in the future. This underlying ceteris paribus assumption of Wold's[13] is unsatisfactory particularly in the light of the teleogenic nature of the system man. Taschdjian continues by pointing out that "... Only in the immediate past and the immediate future is time on approximately straight linear dimension ..." and the more distant future events should be discounted for they cannot be accurately predicted. It is possible in the instance where a system in "asymptotic equilibrium" is disturbed to predict that it will eventually return to equilibrium but it is not possible to say when exactly it will do so. In this respect it is easier to foresee the behaviour of a non-stationary system in the short run.

However, the systems model not only sets out to explain the system's past but also to forecast the system's future. This means that its reliability has to be testable. A comparison between the behaviour of a concrete system and the behaviour of a conceptual system reveals that the latter is more predictable than the former particularly if the conceptual system does not allow for the time dimension.

Taschdjian holds that "an individual phenomenon is predictable only insofar as

it can be imbedded as a member of a class" and "... Imbedding is possible only if all the members have some common attribute." He concluded that since the past behaviour of a system can usually be explained by more than one alternative model one should choose the model on the basis of its ability to make confirmable forecasts. Following Zadeh he uses the example of a fulfilled prognosis which validates the diagnosis of the patient's condition at a given moment. It is pointed out that a prognosis only forecasts a short-range development and does not attempt to charter the whole future life of the patient.[14]

The system model of man is general enough and on the conceptual level ignores the time dimension to the extent where one could safely forecast changes in and to the system, in the long run. No specific moment in time is predicted. And yet, as such the model pertains to a concrete system. The generalizations and abstractions from which the ultimate model derives though are based on the essential substances of the observed and observable processes. Although these processes occur over time the actual duration or specific moment in time is not regarded as sufficiently important or relevant to be included.

However, the real test for the systems model lies in its applicability to not only the general but the specific as well. When one traverses from the global to the local the processes of abstraction are unfolded and at each step the aspects of delimitation and complexification will be displayed. The systems model acquits itself well all along the line. As one gets closer and closer to the individual phenomenon, certain additional features are revealed. Behaviour becomes less predictable and one also finds that the time dimension becomes more prominent.

The states of individual human systems, while alike enough to allow for classification into categories or classes, are unlike enough to uphold individuality and uniqueness. Dissimilarity is usually attributable to differences in the number of components or sub-components, differences in the relationship area

on both the intra- and the inter-levels as well as the quantitative and the qualitative aspects of inputs and outputs.

Observing the behaviour of individual systems in a given class, and comparison of the retrospective statements in respect of each instance will lead to predictive statements if invariances to an acceptable and pre-determined degree are found.

The above exposition on systems reveals a conceptual model which can be applied to human phenomena for the purpose of procuring retrospective as well as predictive statements. The model's predisposition towards synthesis and integration of parts and elements makes it particularly useful when attempts are made to correlate foci within a discipline, or between disciplines. An added advantage is that it seeks not to replace or dispose of well-tried and established methodologies and theories but rather to interpret these along universally acceptable lines and with the minimum distortion of both fact and finding.

G - CONCLUSION

The systems view of man can make a substantial contribution towards finding a solution to the problem of relating perspectives formulated in the disciplines concerned with man. It enables one to view any perspective, developed in any of the disciplines belonging to either the biological, social or behavioural sciences, as constituting a component or sub-system of the system man. Once a perspective is thus identified it can be related to the other perspectives which in totality constitute the system man. Social work is client-centred and the client is a person or a group of persons. The discipline is also problem-oriented. Since the focus is essentially confined to the relationship between the person and his environment the social work practitioner concerns himself with problems in and of this relationship.

The relationship between the person and his environment consists of a two-way flow of inputs and outputs. In terms of causality a given problem may originate in either or both "regions". To be able to describe, explain and prescribe, in short to understand, would demand of the social work practitioner the inclination, and the ability, to start at either end of the relationship and move to the opposite end. To be able to do so would require special knowledge, skills and analytic tools.

The dualistic approach to the person and his environment resulted in the formulation of the so-called psycho-social view; and awareness of, and concern with, both the internal state of and the external state to, the person. For augmentation of its knowledge, skills and analytic tools the discipline came to draw heavily on the disciplines of psychology and sociology with the resultant confusion.

It is my contention that the system model will not only assist in clarifying the social work perspective and contextual frame of reference, but will also assist in imbedding psychological and sociological concepts within the framework. I also expect that once the ordering and imbedding of psychological and sociological concepts can be indicated clearly, one would be able to position the discipline of social work along the ordinate, between the disciplines of psychology and sociology.

I now propose to look at the human phenomenon by applying the system model respectively to the disciplines of psychology and sociology, and then to the discipline of social work. In the case of the latter the analysis will be undertaken on the basis of the three major configurations of the client, i.e. the individual person, groups of persons, and large communities of persons.

For the purpose of this dissertation it is not regarded as necessary to deal specifically with the physical aspect of the human phenomenon. This aspect

features strongly in both psychology and social work but in each instance in a specific context. As was indicated above the physical component can be subsumed to the psychological and social aspects. Since the disciplinary levels will be plotted along the ordinate, the focus need not stray beyond either the psychological level or the sociological level. Confining the focus in this way will not result in distorting the phenomenon since the relationships remain acknowledged and the primary concern, i.e. the context of psycho-social structure and function, does not negate any other contextual frameworks.

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3. Ibid, p.79.

4. cf. van der Merwe, A.B., Disintegrasie van Gedrag, Stellenbosch, Kosmos Uitgewers, 1977, p.15.

5. Gerard, R.W., 'Units and Concepts of Biology' from Modern Systems Research for the Behavioral Scientist, ed. by Walter Buckley, Chicago, Aldine Publishing Company, 1968, pp.51-58.

6. Ibid., p.54.

7. Ibid., p.57.

8. van der Merwe, op. cit., p.15.

9. von Bertalanffy, Ludwig, General Systems Theory - Foundations Developments Applications, London, Allen Lane, The Penguin Press, 1971, pp.204-206.

10. Sprott, W.J.H., Human Groups, Middlesex, Penguin Books Ltd., 1958, pp.23-38

    cf. Douglas C. Kimmel, Adulthood and Aging, New York, John Wiley and Sons, 1974, pp.46-54.

11. Taschdjian, Edgar, 'Time Horizon: the Moving Boundary', Journal of Behavioral Science, Vol. 22, 1977, pp.41-47.

12. Ibid., pp.45-46

13. Wold, H.O.A., 'Time as the Realm of Forecasting' in Interdisciplinary Perspectives of Time, Ann., N.Y., Acad. Sci., 1967, pp. 138, 540-541, 547, 555, 557.

14. Taschdjian, op. cit., p.42

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CHAPTER FIVE

THE PERSONALITY OF THE INDIVIDUAL AS A PSYCHOLOGICAL SYSTEM

A - INTRODUCTION

The development in psychology of a perspective of personality had a marked influence on social work's understanding of the structure and functioning of the client system. The relevance and usefulness of the perspective can be appreciated when its evolution from psychological insights and theorizing is considered. Such a consideration is necessary for it reveals the contextual frame of reference in psychology and, while doing so, provides interdisciplinary linkages and relationships.

Descriptions and definitions of psychology will have it that the discipline studies the behaviour of the individual human being. Most definitions accordingly point at psychology as being a science of behaviour.[1]

As discipline it concerns itself with the study of the individual human being's continuity of behaviour, along with many changes throughout his entire life span. The emphasis is mainly on mental activity but not exclusively so since it is acknowledged that mental activity is at the same time bodily activity in which the brain, other organs and muscles, participate to some degree.

Psychology characteristically bases its findings on comparisons, and determining the degree of difference between one individual and another. It is interested in establishing general laws of activity for all individuals, e.g. laws pertainin to growth, learning, thinking and emotion.[2]

Psychology furthermore seeks to understand behaviour in the same way as do all other disciplines which employ scientific methods. Related to understanding is the notion of explanation which frequently presents itself in one of two forms:

(a) developmental explanation in which new behaviour is related to an "established sequence of behaviors";

(b) interactive explanation which refers to the instance when behaviour is accounted for by "describing its position in the organization of the present situation and using the known laws relating to that present situation."[3]

Developmental explanations are also viewed as being historical in a sense since some knowledge of the historical sequence of the particular behaviour and similar behaviours is required. As illustration one may consider the instance in which the appearance of some behaviour in children may be explained by comparing such behaviour to "known knowledge of the timing or sequential development" of the behaviour in similar situations. Interactive explanations, on the other hand, do not require knowledge of past events; the present situation is all that matters; the behaviour which is to be explained is "fitted into the present interaction of events".

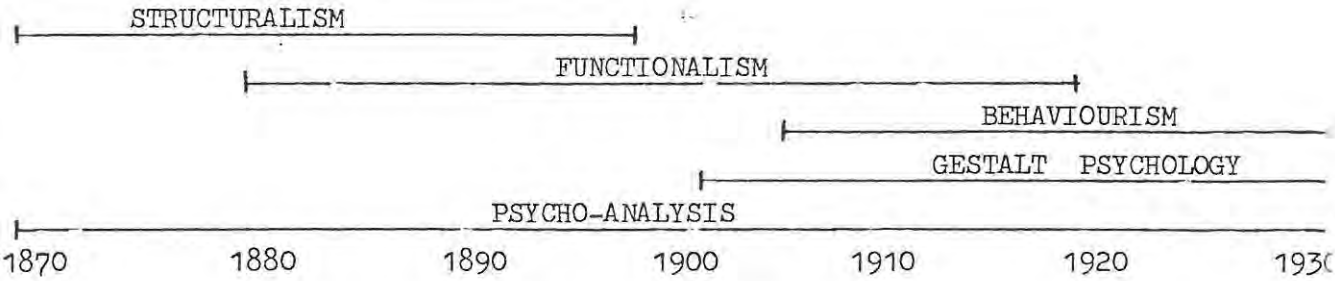
Psychology also seeks to predict what behaviour will occur under what circumstances, and to exercise control over behaviour, i.e. to harness certain behaviours for particular purposes, prevent other behaviours, or to produce them when required.[4]

The matter of the applicability of psychology is by no means a straightforward issue. Hadley raises the question as to whether psychology is an art or a science.[5] The same question has been posed in other applied disciplines, notably that of social work. As Hadley sees it, a science is "an exact and systematic statement or classification of knowledge as to facts, laws and

approximate causes, gained and verified by exact observation and logical thinking." An art on the other hand may be regarded as "the practical application of knowledge, natural ability, skill, dexterity, facility or power."

The argument round this issue arises out of the historical development of the discipline. Historically psychology has been viewed as a science but the inclinations, interests and pursuits of individual psychologists led to views and approaches that are highly divergent and frequently contradictory. Watson, for example, thought that the essence of science was that its material must be observable and measurable. Psychology, therefore, has to confine itself to the relations between responses and stimuli. Since consciousness, feelings, images and mental processes are private and unobservable they could not be part of a "science of psychology".[6] Others in the fields of psychology outside the "pure" realm of the laboratory would seem to disagree for in their application of their discipline, particularly in the clinical, counselling and psycho-analytic settings, that which is regarded as private and unobservable plays a decisive role and must be reckoned with not only on the part of the observer but also on the part of the observed.

A lucid synopsis of the successive areas of general viewpoints in psychology and located on a time scale is offered by Edwards:[7]



These viewpoints give direction to aspects of present-day psychology and most certainly that branch which will be offered for specific consideration below and which Murray referred to as personology.[8]

Structuralism is regarded by some to have been the first psychology which did not identify with philosophy. Its subject matter was held to be experience which was analyzed by introspection and broken up into elements called sensations. Psychologists holding this view set out to study what they called "facts of the mind as they existed ..." This view was overtaken by functionalism which concerned itself with the "functions" of the mind. Like the structuralists, the functionalists employed introspection but the focus was on the "adaptive function of mental processes" rather than their "structure", and they also included in their description the goal or function of the mental activity.

Edwards points at a modern viewpoint which is also called functionalism and which concerns itself with "functional relationships". It has its origins in the earlier functionalism and aims at identifying laws "relating behavior to situations and variables". It emphasizes the usefulness of the relationship rather than "theoretical considerations".

However, behaviourism usurped functionalism as the dominant view in American psychology. It discovered introspection and, as has been indicated above, Watson held that psychology must confine itself to the observable and measurable. Present-day behaviourists are not as extreme and reactive, and they appear to be more tolerant of views which allow for causes that cannot be directly observed and measured.

The Gestalt Psychology came to displace structuralism and was developed by German psychologists. It concerns itself with "organization as the dominant mechanism in mental processes" and the focus is on perception and the experiences as reported verbally by "untrained and naive subjects".

One of the strongest influences on present-day psychology is that of psychoanalysis. According to this view behaviour is influenced by "unconscious

motivation processes" and such causes can be noted only "indirectly through their effects" and are not directly observable.

Irrespective of the method of observation or measurement used, the subject matter in psychology remains human behaviour as manifested in the individual human being. Murray argued that "personalities constitute the subject matter of psychology, the life history of a single man being a unit with which this discipline has to deal." His view was that one could not possibly study all human beings nor all the experiences of one human being. At best one could only select "representative or specially significant events for analysis and interpretation." Some observers confine themselves to one episode or aspect at a time and this has become the generally accepted modus operandus.

Murray warned that one must under these circumstances recognize that one is observing no more than a "part of an operating totality, and that this totality, in turn, is but a small temporal segment of a personality." The task of psychology is to build up a conceptual construct which would encompass the complete developmental course of the individual. Such a framework should render any individual or single episode pertaining to an individual measurable and accessible. Following his argument it would also be required of this conceptual scheme to enable the observer to make retrospective as well as interactive statements, and, also for that matter, predictive statements.[9]

In this respect one immediately comes face-to-face with the problem of individuality or uniqueness and generalization. Holt points at the pioneering work by Allport in which he attempted to resolve the dichotomy between nomothetic procedures (procedures which seek general laws) and idiographic procedures (procedures which deal with structural patterns).[10]

As point of departure Allport offered the American Psychological Association dictum in 1959 that the psychologist is committed to increasing man's understand

of man in the general as well as in the specific sense. The psychologist accordingly could quite truthfully state that he was deeply concerned with the problem of human personality and at the same time be deeply concerned with the problem of an individual's personality. Both would lie within the area of concern even though the one would be far apart from the other. Because of the distance between the two some argue that if one were to generalize, sight of and contact with the individual will be lost. Others argue in favour of the exact opposite, i.e. that general propositions for all mankind must be strived for. One may start with the individual and from him derive some hypothesis that would cover most contingencies on a broader front. Allport regarded it as being too easy a way out to either regard the individual system as unique and that only the general laws of the functioning of these beings could lead to understanding. As he put it, "... The human system unlike all others possesses a degree of openess to the world, a degree of foresight, and self-awareness, a flexibility and binding of functions and goals, that present a unique structural challenge far more insistent than that presented by any other living system."

Allport preferred the terms dimensional and morphogenic procedures instead of nomothetic and idiographic procedures. The commonalities in personality, i.e. the common traits e.g. achievement, anxiety, creativity, extraversion etc., and the common processes, e.g. learning, repression, identification, aging, etc., are the horizontal dimensions that run through all individuals. He pointed out that one should not focus exclusively on the horizontal dimensions but explore the vertical dimensions as well. As he saw it, individuals were often known essentially by their deviations from, or conformity to, universal norms or group norms and the individual's private and unique qualities are held to be only the "residual peculiarities left over when we have accounted for most of his behaviour in terms of general norms." Allport felt that even though individuals can be, or are, described on the basis of common dimensions, each individual's traits may be, and are, morphogenically unique.

Holt argues that personology grew out of differential psychology, i.e. the psychology of individual differences. Like Allport he indicates dissatisfaction with the notion that only general laws of functioning could effect understanding and he also advocates taking a closer look at the internal individual.

Both Allport and Holt refer to Kluckhohn, Murray and Schneider[11] who expressed the thought that every man is

(a) like all other men (universal norms)

(b) like some other men (group norms)

(c) like no other man (idiosyncratic norms).

The first two characteristics allow for generalization to various degrees and explanation and understanding in terms of the horizontal dimensions. The last mentioned characteristic allows for individuality and the retention of the completeness and autonomy of a separate and unique entity. Such a conceptual construct enables one to view the individual as a concrete and actual whole, capable of comparison with other individuals. It enables one also to view the individual as an active and integral part of a much larger organization.

Allport favoured traits as a descriptive tool and as unit of study for personality. Although the traits are common to most, if not all people, they are in each instance clustered together, arranged in such a fashion, and relate to each other in such a way as to render the individual unique. For him individuality was not a "residual ragbag left over after general dimensions have been exhausted."[12]

The psychologist bases his generalizations on that which is common to at least some, if not all individuals or groups of individuals. However, such generalizations do not lead to a collectivistic notion in which sight is lost of the individual. The individual cannot be explained nor understood in terms of that which he has in common with all others, and any attempt to do so will

render an incomplete, if not a distorted, picture. The narrow demarcation of the common bond should rather serve as a basis against which his individuality, uniqueness and complexity could be viewed and appreciated. Holt indeed argues that the common traits and processes which constitute the horizontal dimensions in individuals form the basis for a differential psychology, i.e. the psychology of individual differences.

However, as has been pointed out, the aim of psychology is not merely to und stand and explain but also to predict and to control. As indicated by Allport, predictions based on "general or dimensional information" i.e. actuarial predictions, are surprisingly accurate. The actuarial prediction by insurance companies on the number of deaths by suicide, or by road accidents, even when broken down into categories of age, sex, income, etc., are accurate to an acceptable degree. However, such information has little use for the individual for although statistical generalizations may hold with small error for large populations they will be found not to hold for any given individual. To predict accurately in the case of the individual would require a complete understanding of his personality, his present and past circumstances, the way in which these are perceived by him, etc.

It is obvious, despite contrary claims by some, that the observer cannot get by on general laws. It would, however, be equally ludicrous to suggest that for each and every individual a separate law be formulated.

Meehl suggested that a combination of the actuarial procedure and the clinical procedure would be superior in predictive power than when either method is used on its own. This combination he called a "configural procedure".[13] That such a procedure would improve matters is not doubted but in the light of what had been said on prediction in the preceding chapter one must have doubt as to whether the problem could be fully eliminated.

Only the observer who, like Wold, uses the ceteris paribus assumption will experience no disquiet or discomfort when making predictions about the individual's behaviour. Such predictions are further facilitated by the observer stationing himself at the extreme ends of either generalizing or particularizing. Attempts at generalizing or at studying the specific in depth should not be discouraged or dismissed as having no reliance or importance. Such endeavours should each be viewed in the light of the specific context and in respect of variables lost, ignored or held to be constant.

Since the discipline of social work, in its attempt to understand, predict and control, draws heavily from the branch of psychology which concerns itself with the human personality, the focus may accordingly now be turned to that area.

B - PERSONALITY

Theories of personality result from the attempts at understanding, explaining and integrating, the many facets of human behaviour, as well as the motivation underlying human behaviour. Personality theorists are interested in "unifying the multitude of activities and binding them together into a functioning whole."[14] The search within oneself and others contains a strong subjective colouring since the perspective, direction and theorizing will depend on the specific abilities, skills and capacity of the particular observer. Because of this theories are frequently identified by the observer's name and vice versa, e.g. Freudian psychology (psycho-analysis), the Jungian School (collective unconscious) etc.

Bischoff states that personality theory "... concerns itself with motivation as a prime mover in life and throughout life for both men and women, in all cultural climates: they are designed to grapple with over-all aspects of man's behaviour in all kinds of situations."[15] He does not offer a definition of personality but underlying his insight into personality are the assumptions identified by

Bell:[16]

(a) that the personality is never fixed or rigid but a dynamic and moving force and subject to continuous change;

(b) that the personality "consists of something", constitutes more than the mere physical body of the person and is of a "structural nature";

(c) as something the personality behaves and reacts and is seldom at rest or static;

(d) there is more to the personality than what shows on the surface.

Sanford suggests that personality in its "most widely accepted technical sense" refers to the person's dispositions which help to "determine his behavior and that differ from one person to another." The focus for him is on the dispositions which lie behind the behaviour and not on the observable behaviour itself. He admits being influenced by Murray (1938) but also points out the two basic assumptions which include the definitions of Goldstein (1934), Angyal (1961), Maslow (1954), Rodgers (1959), Cattell (1950), Bertalanffy (1951), i.e.:

(a) that general psychological laws which do not take into account "relatively enduring personality processes" cannot be formulated because all behaviour depends on both "varying processes in the person as well as on the situation";

(b) that particular processes e.g. establishing a condition reflex, perceiving another person, etc., can only be fully understood in the context of a total system of the person.

With these assumptions as basis various definitions and theories of personality were considered. The intention was not to offer any of these in detail, to compare them as did (for example) Bischoff, but rather, to select, in terms of the primary intent of this dissertation, a definition which is comprehensive enough and against which a systems approach to personality could be considered.

(i) Definition

Murray defines personality as follows:

> "A personality at any designated moment of its history (in middle life, for example) is the then-existing brain-located, imperceptible and problematical hierarchical constituion of an individual's entire complex stock of inter-related substance dependent and structure-dependent psychological properties (elementary, associational and organizational). Each elementary property is a differentiated (selectively focused), situationally oriented disposition (readiness) and capacity (power) to participate as a process in conjunction with other processes (each in its own way) in a variety of functional exercises or endeavours which will presumptively enhance that individual's feelings of well-being in this world."[18]

For Murray psychology deals only with motion, i.e. processes occurring in time and therefore none of its formulations can be static. His view of the person is that of a goal-directed being whose functioning is determined by both internal and external factors. His definition rests on certain primary prepositions re individuality, wholeness, rhythms of activity and rest, and the concepts of "unconscious regnant processes", needs (or drives), energy, divisions of personality (id, ego and super-ego) and behaviour which had become habitual or automatic.[19]

Murray emphasized the physiological base to personality - "no brain, no personality" - but made it clear that the need structure is first founded upon physiological appetites, and once these are met the personality becomes more than an "existing organism: he becomes a societal creature."

(ii) Personality as system

As Freeman[20] suggests, human behaviour can be viewed in a systems context. This context is similar to other traditional system concepts and the behavioural

processes are described in terms of "input/output relationships and control functions". His contention found indirect support in Herbst's theory of simple behaviour systems.[21] The latter suggested that a behaviour system has to obtain inputs from its environment and that the system reciprocates by delivering some kind of output. A "positive dependence cycle" is said to be established and any event which interferes with this cycle constitutes stress.

Bertalanffy[22] dealt with the fundamental questions as to whether general systems theory is not "essentially a physicalistic simile, inapplicable to psychic phenomena" and also whether such a model has "explanatory value when the pertinent variables cannot be defined quantitatively as is in general the case with psychological phenomena". In respect of the first question he argued that the systems concept is abstract and general enough to allow for its application to entities of "whatever denomination". The notions of, for example, equilibrium homeostasis, feedback, stress, etc., can be applied to psychological phenomena with as much success as in the case of their application to technological or physiological systems. He pointed out that systems theorists generally agreed that the concept of system can be applied to any "whole consisting of interacting components" and that it was not restricted to material entities.

In answer to the second question he suggested that should quantization be impossible and even if the components of the system were ill-defined, that it could at least be expected that "certain principles will qualitatively apply to the whole qua system." If nothing else at least one would be able to offer an "explanation in principle."

He also drew attention to the openness of the human behaviour system and thought that "internal activity, rather than reaction to external stimuli is fundamental." The human system is basically active and capable of engaging in certain functions and behaviour irrespective of the presence or absence of external stimuli.

Allport[23] also dealt with this aspect and used Bridgman's definition of a system being "an isolated enclosure in which all measurements that can be made of what goes on in the system are in some way correlated." Though some theorists implied that certain personality theories "operate with the conception of closed systems" Allport suggested that closed systems had better be left to the domain of physics.

Murray's definition of personality, when viewed in the light of systems definition and general systems theory as outlined in the preceding chapters, presents an integrated and functioning whole which fits the scheme of a concrete living open system. This notion of personality as a concrete living open system needs to be explored further particularly in terms of the aspects of structure (being), function (behaving) and evolution (becoming).

(iii) The structure, function and evolution of the personality system

Presenting the three aspects individually was considered initially but they are so closely related to each other that separating them would involve the risk of unnecessary, and possibly confusing, repetition and overlap.

Before these aspects could be discussed two points, which are to serve as a directive, need to be made. The first is that the concern is with a phenomenon which mediates between a stimulus and a response, and secondly that the systems approach in psychology aims at relating behaviour to the "organizational aspects of its underlying structure." System is understood in terms of the definitions formulated by Miller and Bridgman and its openness requires specific consideration.

Gochman[24] draws attention to Allport's notion of the degree of openness on the four levels of openness found in psychological systems:

(a) On the first and lowest level are those systems whose relations

with their environment consist of no more than mere engagement in an exchange of matter/energy inputs and outputs. On this level behaviour is basically reflexive, unmediated and generated by external stimuli. Gochman sees the behavioural models of Windt, Watson, Skinner and others of the psycho-physic order, as pertaining to this level.

(b) On the second level are those systems which, in addition to relating as does the lower level system, have attained, and maintain, homeostatis. It is suggested that Hull's learning theory and also Freud's psycho-analysis view behavioural systems at this level. On this level the importance of the system's internal state is fully appreciated and behaviour is regarded as being "adjustive and representing some form of mediation".

(c) On the third level are those systems which display, in addition to the properties found in level two systems, increasing organization among their internal components. The emphasis here is on growth and development, particularly of a mediating agency, in addition to behaviour aimed at adjustment and the reduction of tension. The gestalt theorist, ego-psychologist and Jungian follower view behavioural systems at this level.

(d) On the fourth level are those systems which are not limited to mere responding or reacting but which are capable of acting with considerable autonomy upon their environment. Gochman points out that such acts must be seen and understood with due consideration of the environment in which they take place, i.e. the culture. He cautions though that care must be taken not to place too much emphasis on cultural influence so as to lose sight of the personality.

Systems on the first level of openness offer little notion of personality since the focus is essentially upon measuring input and output. As Allport points out systems on the second level seem to be well reflected in the majority of

current personality theories, but on this level the emphasis is more on stability than growth, i.e. more on being than on becoming. Personality systems of this order are rather biologistic since they acknowledge only the "two features of an open system that are clearly present in all living organisms." He suggested that the system on level four is more acceptable if one is to overcome the limitations of the biologistic system on level two, and the "integumented" system separated from the "context of its living" on level three. Following the arguments of Allport and Gochman, as well as that presented by Parsons[25] personality as a psychological system stands between the organism and the object-system presented by its environment. Personality in this sense also refers to the "total system of behaviour" of that organism.

That the personality system is a system of action and processes finds further support in the arguments of many others, e.g. Katz and Kahn, Hunt, Kanton, Harvey (et al)[26] etc. But, as Parsons argued, a system of action needs to be further analyzed and he identifies two sets of processes, viz.

(a) the internal processes which involve the components of the system and the relations between these parts or units;

(b) the "boundary processes" which involve the relations between the system and its environment.

As such the two sets of processes are often extremely difficult to separate in terms of action and the boundary cannot always be readily demonstrated or observed. To demarcate a boundary, according to Gochman, one has to rely mainly on the different frequencies and the intensity of interchange between events; "... where one set of events demonstrate greater inter-change within itself than with other events, or sets, a boundary is said to exist around it." In addition one may look at boundaries in terms of the "extent to which they permit interchange between regions of a system and between a system and its environment."

Berrien[27] suggests a third criterion for establishing the boundary and that is the discrimination between "me or mine" and events "out there", i.e. things not mine, or, other people. He adds that this discrimination would initially be less clear but becomes more pronounced as the individual matures. In this respect his views show a strong resemblance to that of George Mead[28] on the development of a concept of "me" and a concept of "other".

As system of action the personality consists of units based on the need and/or disposition to act.[29] The components of all such units are either cathetic or cognitive and they are hierarchically organized according to recognized values. The basis for its being, its behaving and its becoming could be outlined as follows.

The organism delivers certain inputs to the personality system and these inputs facilitate functioning. Such inputs are not the only facilitating inputs but they are of primary importance.

(a) In the first instance the organism can be held to be the source of all energy which "underlies all processes of action". Parsons suggested that this phenomenon underlies tension and should be treated in terms of the concept of inertia, i.e. "as a flow which tends to remain constant unless increased or decreased by special factors impinging on it."

(b) The organism second facility is the "perceptual capacity". It enables the personality system to "assimilate and organize information" not only that coming from external objects in the environment but also from the organism itself through "proprioceptive" processes.

(c) The third facility is the capacity to "utilize the structures of the organism" (particularly the skeletal-muscular structures) for "physical manipulations of the environment". Parsons referred to this facility as the "performance" or "response capacity".

(d) The facilities which assist in the integration of the other facilities

with each other and with the needs of the psychological system. Parsons thought of pleasure as a primary integrative facility and of being closely associated with the capacity to learn. This he saw as constituting a "proprio-preceptive reward mechanism which can, by learning processes, be associated with the attainment of the goals of the psychological system."

There exists though, an interdependence between the organism and the personality and the latter not only receives inputs from the organisms but delivers certain outputs to the organism as well:

(a) Of these the most fundamental is what Olds[30] called "motive force". The motive force is that part of the energy input which is fed back by the psychological system to the organism. Such energy is fed back to "motivate instrumental processes" and can also increase the "performance potential" of the organism when it is subject to control by the psychological system.

(b) A second type of output is what Olds calls a "directional component". In certain "relatively specific situations" specific motivational structures of the psychological system take control of the facilities of the organism. Control of this sort is purposive in nature and intent.

(c) A third type of output is called the "expectation" component. It essentially refers to the attitude or expectation that "organic interests will be well served by going along with the psychological system i.e. satisfying psychological needs." This relationship if disturbed results in the more serious and complicated forms of psycho-somatic problems.

Parsons saw the "organic security" as being dependent on the whole relationship between the organic and psychological systems and that the stability of the organic energy flow to the psychological system depends on this security.

The organism and psychological systems are "analytically distinguishable relational" systems but are interpenetrating since they constitute "partial determinants of process in a concrete empirical system".[31] Interpenetration implies that in all psychological and psycho-physiological systems "identifiable physiological mechanisms" of all processes will be found to be operant. Such processes will, however, not be analyzable in terms of either of the two systems identified but rather in terms of the interaction between the two systems. Parsons held this phenomenon to be closely related to internalization. Inasmuch as objects can become internalized in the personality certain psychological structures can become internalized through the processes of learning. Under such circumstances the organism's structure becomes modified so as to allow for "ordered responses to stimuli" without the learning experience having to be repeated. The altered structure on the part of the organism may be spoken of as the "physical basis of memory" and in respect of performance patterns one may speak of skill.

On the basis of the relation between the organism and the psychological system, their distinguishable organizations and aspects of processes of control, a boundary between the two systems can be discerned.

What has been discussed so far in respect of the personality system's structure, function and some implied aspects of evolution, refers only to what Parsons considered to be the boundary relations of the interchange of facilities between the psychological system and the organism. As indicated earlier on, the structure, function and evolution of the personality system derives not only from trans-boundary inputs but also from the relations and interactions between its components. Before the internal structure could be considered it is seen as necessary to look at the trans-boundary relations between the psychological system and objects in its environment.

The Parsonian tenet is that the psychological-object interchange "involves

primarily an exchange of rewards" when the object concerned is itself an action system. A physical object constitutes a special case since the relationship between it and the psychological system is rather one-sided. As Parsons put it, what constitutes a reward for the psychological system constitutes for the physical object a "state of affairs".

Inputs and outputs across the boundary are maximized in the "goal-attainment state" of the system. Goal-attainment refers to the system delivering a specific output, of the required quantity and quality, to a significant object in the environment. This is done to establish an optimum relation with the object and to receive from that object an input which will effect gratification or reward in the system. As long as optimum relations of this kind are maintained the system will have its needs met by external objects and in this sense the environment can be regarded as being supportive of the processes in the system.

Such inputs of support are evaluated and in the process may be broken down into components. Evaluation is undertaken by either the system or external object, or both. The principal components listed by Parsons are:

(a) Immediate goal gratification. This component can be evaluated independently of any of the conditions on which its continuance, repetition, etc., may rest.

(b) Predictable and possibly controllable conditions in the situation, independent of any features of the relationship linkage between the psychological system and object or which the continuance and/or repetition of the gratification may depend.

(c) Integrative link between the psychological system and the object which effects a sense of belonging and a sociological collectiveness.

(d) Shared system of cultural values which "define legitimate expectations in the relationship."

Parsons preferred to call the psychological system's output to the external

object achievement. He emphasizes the "decisions" or commitment of the "agency of the system" to the goal state, as a factor in bringing about that state. Commitment may range from a situation where the system merely "enjoys a goal state freely presented to him without effort or foresight on his part", to a situation wherein the system "succeeds" in attaining the goal state only in the face of the "most formidable obstacles". Achievement Parsons breaks down into the following components:

"(a) simple acceptance of the optimal situation as gratifying

(b) manipulative control of the conditions of the optimal situation which are independent of the relational tie between ego and alter and of the common values they share

(c) maintenance of the integrative tie by virtue of which ego and alter are bound together

(d) conformity with their shared values."

The first two sets of inputs and outputs listed pertain to the system's relations to non-social objects while the last two are always involved in a social relationship. Parsons also pointed at the double contingency which consists of the fact that the system's attainment of a goal depends not only on its own actions in relation to the object but also the object's responses to these actions and the consequences of such reactions for the system's goal attainment.

A further distinction between seeking of pleasure and goal gratification can be made. Pleasure is associated with the "state of the organism in relation to the psychological system". Goal gratification is said to be a state of the personality in relation to the "external object system". Once a psychological system is well established and it could treat the organism as an external object it may learn to treat the "arousal of pleasure sensations from its own organism as a goal."

Personality then consists of a complex set of sub-systems of different types.

This complex set derives from the relationship between the organism and its environment, and, through the processes of interpenetration, internalization and integration. The process of internalization is illustrated by the establishing of an "enduring structure" which "corresponds to every category of objects which the individual has experienced ..." It is also borne out by the"phenomena of memory" and the "continuities of behavior". Both physical and social objects can be, and are, internalized.

Not only are physical and social objects internalized but so are cultural objects. Internalizing cultural objects results in changes in the state of the psychological system for the inputs and outputs connected to cultural objects are not facilities or rewards as such but "regulatory cues' which have a primary bearing ... on the internal integration" in the system. Such processes "facilitate or obstruct the adjustment of the units within the systems to each other" in the case of both psychological and cultural systems. Parsons suggests that "... cultural values are parameters which establish certain perceptual and action thresholds and other forms of selectivity", and the system's functioning is rendered "subject to normative patterns". The internalization of cultural objects has a stabilizing effect and further enhances the establishing of an enduring structure.

Personality in this sense, then, is shaped to a large extent by the physical object, the social object and the cultural object. It is neither predetermined nor exclusively moulded by any one or all three of these object systems, but rather grows constitutively out of the relationships between the three object systems, the irreversible changes induced by such interaction and the homeostatic tenure of the lower and upper thresholds for functioning in each of the three environmental object systems.

The personality system as discussed here displays all of the characteristics pertaining to open systems. These characteristics are listed by Katz and

Kahn[32] as:

(1) Some form of energy is imported from the environment in order to survive.

(2) The system contains a "through-put" process by which the imported energy is transformed. Through this process new products are created, services are provided, behaviour is affected and changed, etc.

(3) Some product is exported into the environment.

(4) The system consists of a cycle of events.

(5) Negentropic features are displayed.

(6) A steady state and dynamic homeostasis is maintained.

(7) The system becomes more elaborate and differentiated over time.

(8) It is characterized by the principle of equifinality.

(9) Its energy inputs, information inputs, negative feedback and coding processes are all inputs of an informative character.

The personality system is teleogenic in nature. Its structure and function is to a large extent influenced by the goals implanted in the system by its external environment, but as it grows into a more complex organization it becomes capable of generating its own goals. As such it is not only acted upon by its environment and is also not only responsive according to the environmental programme installed in it, but, is capable of pro-acting and moving along in terms of the goals that had been generated within itself.

Personality in this sense constitutes a conceptual meeting point for social structural forces and individualistic organismic forces, and, as was indicated above, it cannot be analyzed in terms of either the one set of forces or the other. It can be analyzed only in terms of the interaction between the two systems or sets of forces.

Since the interaction between the three object systems mentioned involves an extremely wide and divergent range of inputs and outputs, it follows that the

structure and function of the personality system will ultimately develop into an equally complex organization capable of receiving these inputs, processing them and delivering appropriate outputs. This was acknowledged by Murray[33] who then suggested that the personality system can be divided into:

(1) A psychosomatic system which consists of all the needs and activities concerned with the growth and welfare of the body, the procurement and incorporation of water and food, transportation and allocation of of food particles, differential construction of frame and organs, the excorporation of water and waste, etc.

(2) A psycho-material system which consists of all the needs and activities concerned with the acquisition, restoration and construction of a territory and/or a habitation ("stead and shell"), as well as the acquisition, restoration and construction of implements or machines, utilization of these implements, development of technical skills, defence of property, etc.

(3) A psycho-sexual system, consisting of all needs and activities concerned with erotic love, stimulations and interactions, the formation and continuation of an erotic dyad, conjugation, conception of offspring, etc.

(4) A psycho-social system, consisting of all the needs and activities concerned with non-erotic social reciprocation, transmissions and receptions of affections, of food, money and material entities, of information and evaluation, of orientations and ordinations, directions and compliances, development of social skills, etc.

(5) A psycho-representational system, consisting of all mental, i.e. cognitive and ordinate, needs and activities associated with the abovementioned systems, acquisitions of knowledge, explanations and postulations, as well as mental needs and activities concerned with impersonal symbolic systems, with law, art, science, morals, ideology and religion, and the development of mental skills.

A division of this order aims at grouping together the different kinds of needs and activities into broad categories, each of which pertains to the whole in respect of a particular area of becoming, being and behaving. It can never reflect the whole but it does enable one to analyze in greater detail, measure more accurately and compare one personality with another.

Adopting the systems approach offers one not only a sound base for collecting, assessing and comparing empirical findings but also greatly facilitates conceptualization, abstracting and theorizing. This in turn points at the basic aim which is to analyze and explain, and to reach an understanding which will not only enable one to describe and explain the history of the system but to predict its future behaviour as well.

Analysis, explanation and prediction rely heavily on the identification and verification of invariances and the systems view offers an invaluable theoretical construct for this very purpose. As Shooster[34] points out, the systems approach introduces a general theory potentially capable of providing an organizing scheme to deal with measurement of the external condition. To this one could add that the internal condition likewise becomes measurable when the system is divided into sub-systems or components and their interactions are considered. In his argument Shooster follows Bertalanffy, Berrien and De Green particularly when he suggests that a person be considered as being imbedded in some operational system or work system so that the person's performance is intimately connected to systems performance. As he puts it, "... no person can be assumed to function independently of the operational system in which he is imbedded; or more directly all persons must function in some system." He quotes Pervin's statement that any part of a system is dependent on the other parts of the system, that parts are not acted upon by other parts but that there exists instead constant reciprocal relationships between the parts and finally that action in any part of the system has consequences for other parts of the system. He further suggests that:

(a) From a systems theory view there can be no artificial separation between the person and the operational system; the contribution of systems variance influencing person performance requires equal measurement emphasis.

(b) As persons may be ordered on some measurable trait attribute so also can operational systems be ordered on some trait attribute. Consequently, it is just as possible to attempt predictions from operational system measurements as from only person measurements.

(c) Person prediction in an operational system is always relative to a given period of time.

(d) To measure persons and systems appropriately, it is necessary to make operational measurement distinctions between person internal measurements and system external measurements.

(e) Person measures should be balanced against system measures to check on the plausibility of results and to avoid drawing contradictory and inconsistent conclusions from the use of person measures exclusively.

The evolution of the personality system abides by the general rule pertaining to open living systems, viz. negative entropy, a tendency towards greater organization and a marked increase in the range of inputs and outputs which the system becomes capable of handling. Even the crudest of observations reveals that the personality over time grows from an organization capable of little more than the lowest degree of system openness described above, to the fourth degree of openness.

C - CONCLUSION

The individual human being, though unique and different in many ways in his becoming, being and behaving, shares enough commonalities and invariances with his fellow human beings to enable the observer to measure, compare, generalize, conceptualize and theorize.

In psychology the focus is essentially on the individual and the interaction between him and his fellow individuals. This implies that a relationship, or relationships, exists between him and others. The primary concern, nevertheless, remains with the individual's interaction with others and the underlying organization, or structure, on the part of the individual, which makes possible whatever actions take place. Needs and activities are central to an understanding of the cycle of events.

The total manifestation of the individual's structure and function is contained in the concept of personality as formalized and employed in the discipline of psychology. It is beyond the scope of this dissertation to consider in detail the postulations and merits of any of the specific theories of personality, or for that matter to justify or prove any particular theory. It is generally agreed in the discipline that the interaction between individuals reveals the existence of a general functional structure, which is common and constant to a degree, and which encourages abstraction and description by way of theoretical constructs or models. On this basis the systems model was applied to the phenomenon of the individual human being identified in psychology. It was borne in mind that the observer in psychology strives to analyze, describe, explain and predict on the strength of empirically verifiable data.

The total individual human being consists of a set of relationships which exist between the systems components, i.e. the physical object, the social object and the cultural object. In the total being one finds that of the three objects mentioned, the physical object is the most readily observed, measured and verified in respect of its needs and activities.

The physical organism relates to other like and unlike physical organisms. Out of this interaction arises a functional structure which, through its dynamic organization, invites assessment in terms of the open living systems model.

Over time, another object system - that of culture - arose out of the interaction between system and environment. Through its controlling influence it serves as stabilizing factor and enhances and reinforces the homeostatic property of the personality system. The enduring character of the personality system is further reinforced by the processes of socialization, interpenetration and internalization perpetuation is ensured by the properties of learning, storing and memory.

The personality system is not caused by a particular environmental object but is imbedded in the interaction between these objects, and this relationship network will determine the structure, state and function of the system at any given moment in time. The system's components, the intra-system relationships and the cross-boundary transports are readily discernible. It is divisible into sub-systems and under certain circumstances it can in its own right be viewed as a supra-system.

The systems approach and systems model as outlined in the preceding chapters is applicable to the psychological phenomenon of personality, irrespective of the particular theory. In each instance each of the numerous views of human behaviour derives from, or is based upon, the isolation of a confinement to a particular variable or set of variables. These stand in an identifiable and characteristic relation to each other, and it is this very relationship or set of relationships which forms the basis to the particular explanatory model or theoretical construct. As mentioned earlier on, the systems approach seeks not to usurp or replace any specific theory. It is essentially concerned with the building up of a body of knowledge representative of that whole which it seeks to understand. It is applicable to any situation wherein one object relates to one or more other objects and where, as a result of such interaction, a definite concrete phenomenon is created.

General systems theory can be successfully applied to any theory which sets out to explain cause and effect; becoming, being and behaving. Its advantage

lies in that such application will result in the proper positioning of that specific theory along the ordinate of human behaviour. No one theory of personality succeeds in describing or explaining all of the human phenomenon despite the attempts of the holistic view and other integrative perspectives.[35] The concepts of structure and function, isomorphism, hierarchical ordination and cross-level linkage, render general systems theory an extremely useful tool for relating behaviour and personality theories, and getting closer to a so-far eluding explanation of the whole.

Though it can be used to focus on the specific and on the individual system, both in terms of intra-system and inter-system relations, general systems theory has the added advantage in that it enables one to move well beyond the confines of the immediate relationship network. Because of its relationships and interaction with other personalities, the individual system can come to be viewed as a sub-system, a definite part of a larger organization. This means that it can be looked at in the context, not only of a generalized other and collective form, but as an integral part of a larger social order.

This property renders the systems approach extremely attractive to the social work discipline, and eliminates certain obstacles encountered, particularly when the practitioner's focus on the relationship between personality system and environment turns, as it must do, from relationships on the micro-level of interaction to relationships on the meso- and macro-levels. The perspective of a personality system could be used more effectively in social work if the environment with which the personality system interacts is also analyzed and described in general systems terms.

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CHAPTER SIX

THE PERSPECTIVE OF SOCIAL SYSTEMS IN THE DISCIPLINE OF SOCIOLOGY

A - INTRODUCTION

In the preceding chapter I indicated that in order to appreciate more fully the effect on, and contribution to, the relationship between the individual and his environment it is necessary to consider the structure and function of particularly the social environment. The discipline of sociology focuses on this area of human behaviour, i.e. it concerns itself with "... social relationships, the network of relationships we call society."[1]

Sociological perspectives and particularly those pertaining to the structure and dynamics of social groups, inter-group relationships, social institutions and social roles, have all contributed ostensibly and positively to social work thinking and understanding, and have enabled the practitioner to broaden and enhance his own perspective of his client.

Maximum effective use of these perspectives becomes possible only if the social work practitioner is clear on the contextual frame of reference from which the particular perspective derives. The demarcation of context is greatly facilitated by one's understanding of the sociological focus and appreciation of sociological methodology. For this reason it is proposed to consider briefly the crystallization of the focus in sociology and then to consider in greater detail the development of the notion of social systems.

B - THE DISCIPLINE OF SOCIOLOGY

A variety of views is revealed when current arguments and theories on the nature

of the sociological perspective, its subject matter and its methodological approaches are considered.[2] Within the discipline one finds at the one extreme those who are concerned with the development of a "... systematic theory which will enable the integration of available empirical data ..." At the other extreme are those who concentrate on the "... empirical investigation of problems of social policy, with little attempt to relate such findings to any broader theoretical perspective."

A brief review of the development of the discipline and of the basic tenets of the pioneer sociologists will cast some light on the reasons for the existence of the variety of views and will also form a basis for the definition that will be offered as being the most acceptable in terms of the reference of this dissertation.

The development and growth of the discipline has been uneven. Its credibility and justification for its existence have often been challenged and disputed. Right from the beginning the focus has been on social aspects of living and behaviour. The earliest attempts at explanation and analysis though were made by employing the accredited analytical methods, or similar methods, as were being used in the physical sciences. However, since the subject matter in so many areas of its manifestation did not lend itself to the scientific method, new methodological tools had to be found. This resulted in many instances in confusion, doubt and widely divergent theories.

Comte and Quetelet were the first to study social factors as separate entities in the 1830s and it was the former who first used the term sociology. Both of them initially referred to their fields of study as social physics. The approaches of both were rather mechanistic and their concepts were akin to the laws of natural science as expressed by Newton. The similarity, however, was never clearly drawn.[3]

Many other disciplines, notably history and the much older discipline of social philosophy contributed to the new "social science of sociology." Such influences are clearly reflected in the contributions of some of the early sociologists.

Spencer saw sociology as a unification of the observations and generalizations of the other social sciences. Another early contributor, Carey, also offered a physical interpretation of social phenomena and his sociological theory was permeated by a mechanistic monism which held that the laws which govern matter, in whatever form, were all the same.

Some of the other early sociologists, like Simmel, thought that sociology meant the study of formulation and dissolution of social groups, competition and conflict. Sorokin, in turn, suggested that sociology was concerned with the "characteristic common to all classes of social phenomena and their interrelationships."

The development of the sociological perspective continued to be influenced by developments in other disciplines. Towards the end of the 19th century one finds, for example, the concept of natural selection formulated by Darwin becoming evident in sociological thinking which, at the time, was primarily organic in nature. Biology was seen as the base of behaviour and collective behaviour could be accordingly viewed as an organism. For example, Dewey's stand on human nature existing and operating in an environment, and its organizational aspects, reflects the analogical approach to social behaviour linking it to the physical forms of life.[5]

The basis on which sociological thinking, explanation and understanding rests ranges from a concern with empirically obtained and statistically processed data to theory-building on a high level of abstraction where the concept of human nature ignores the specific and does not admit to individual idiosyncracies. However, Berger argues that sociology has always regarded itself to be a science,

capable of casting some light on man's social existence. He warns, though, that in its attempts at securing scientific objectivity and status, and acquiring a foolproof methodology, the risk was introduced of losing "... the world of phenomena that it sets out to explore ..." He accordingly offers for consideration the notion of humanism. In sociology the observer is concerned with human significance, the principal subject matter being the human condition itself. The fundamental question is one of "... what it means to be a man and what it means to be a man in a particular situation."[6]

This question, he says, may often be "... observed by the paraphernalia of scientific research and by the bloodless vocabulary that sociology has developed in its desire to legitimate its own scientific status." The question will come through time and again though for "... sociology's data are cut so close from the living marrow of human life ..."

Many definitions of sociology tend to focus on scientific exactitude at the cost of the aspect of human significance. Though it may prove to be extremely difficult, if not impossible, to achieve a satisfactory compromise between the humanistic and the scientifically exact, the definition to be acceptable should not ignore the very essence of social becoming, behaviour and being. For the purpose of this dissertation the most acceptable definition of sociology is that offered by Reiss. Though it does not specifically refer to the notion of humanism the potential of human significance is retained in each qualification

Reiss conceives of sociology, as a special science, as being "... the study of social aggregates and groups in their institutional organization, of institutions and their organization, and of the causes and consequences of changes in institutions and social organizations. The major units of sociological enquiry are social systems and their sub-systems; social institutions and social structure; and social aggregates, relationships, groups and organizations."[7]

He adds a further qualification to his definition by describing the sociological units of which the most inclusive unit is that of the social system. This social system is constituted by the interaction of a number of actors whose "relations to each other are mutually oriented by institutions." Society is accordingly viewed as an "empirical" social system. This system is territorially organized and its members are "recruited by sexual reproduction within it ..." The system persists beyond the life-span of an individual member and it does so by "socializing new members into its institutions." The social system can be broken up into sub-systems such as ecological systems, kinship, legal, educational, religious, etc. systems.

Social institutions are described as being "general patterns of norms that define behaviour in social relationships." In these terms the social institution not only prescribes behaviour but also legitimates the sanctions applied to behaviour. In this respect the example of social contract is offered. A social contract consists of certain general norms and these norms prescribe not only one's entry into such a control but also the consequences of such a contract.

Social structure and social morphology refer to the "integration and stabilization of social interaction through an organization of statuses and roles such as age, sex and class."

With this definition of sociology as basis the concept of society can now be considered.

C - SOCIETY

One of the most succinct and comprehensive descriptions of society is offered by Mayhew. He states that analytical definitions of society usually refer to a "relatively independent or self-sufficient population characterized by

internal organization, territoriality, cultural distinctiveness and sexual recruitment."[8]

Such an understanding uses the term society in an all-embracing sense and, as he points out, specific definitions may vary as to the particular element favoured. As examples he quotes those definitions which stress internal organization so strongly that they "define the society as consisting in the organization and not in the populations." Considerable variation is also found in the meaning given to concepts such as "self-sufficiency", "organization" and "culture". One concept is nevertheless found to be basic to most definitions and that is that a society has a constant element, viz. the "inclusive, self-sufficient group ..."

Mayhew prefers the definition of society offered by Arberle et al[9] which states that society is a "group of human beings sharing a self-sufficient system of action which is capable of existing longer than the life-span of an individual, the group being recruited at least in part by the sexual reproduction of the members."

In terms of this definition the functional requisites are those mechanisms which would prevent the following self-explanatory terminating conditions:

"(a) the biological extinction or dispersion of all the members
(b) apathy of the members
(c) the war of all against all
(d) absorption of the society into another."

MacIver and Page[10] are equally succinct when they state that society is "... a system of usages and procedures, of authority and mutual aid, of many groupings and divisions, of controls of human behavior and of liberties." As they will have it, society constitutes an ever-changing complex web of social relationships The members of society react or behave towards each other according to their

"recognition" of each other. Such recognition is not only mutual but also involves the sense of having something in common.[11] Social relationships are therefore as varied as society is complex.

It is further understood that society involves both likeness and difference on the part of its constituent members. As example here would serve the relationships found between different sexes, age groups, etc. Difference is held to be subordinate to likeness though since common goals and desires will bring unlike people together in unlike functions.

Above all man is seen as being a social animal and dependent for survival and growth on the many resources offered by society. One cannot be "... free of the need of society."

Society can be further broken up into communities, i.e. areas of "social living marked by some degree of social coherence." Such coherence as exists may be determined by either or both geographical or functional factors. The size and complexity of the community will determine factors such as the extent or range of need resources and the intensity of relationships.

Within each community the relationships can be further divided according to associations, i.e. groups "organized for the pursuit of an interest or group of interests in common."[12]

Associations do not necessarily imply that co-operation occurs spontaneously or impulsively but action stemming from conflict or competition with others or from purely independent drives are recognized to be limited and unproductive. Association in this sense implies an organization within a community, and the latter is usually more than a specific organization that "rises" in it. This becomes clear when one thinks of a church or a social club or a business. Some associations such as military outposts or trading outposts may temporarily constitute

communities.

MacIver and Page point at two associations which appear to lie on the borderline between communities and associations, viz. the family and the State. In a complex civilization the former can be regarded as an association in respect of its adult members. The "contracting parties" establish the association with very definite ends in mind. Although such interests are extremely important they are nevertheless limited and become even more so as the "social division of labor increases." However, to the new member, i.e. the child introduced into the family and particularly during the child's formative and early socializing years, the family constitutes more than an association. At first the family is the "preliminary community which prepares him for the greater community." As the child matures its family comes to constitute more of an association and of more limited interest. Once maturity is reached the new adult is likely to break away from this association and form a new one, i.e. start a family of its own.

The State, on the other hand, is often confused with community. This stems largely from the wide ranging effect and control (which at times may be "absolutist or totalitarian") over every aspect of human life. Even so, it never becomes the community but rather an association "controlling the community." Its structure is associational and "as a form of social organization is like the church or business or club ..." The individual's role as citizen is but one of many roles he has to fulfil.

The point about associations is that they are groups, i.e. a "collection of beings who enter into distinctive social relationships with one another." These groups furthermore are "expressly organized around a particular interest." Depending on this particular interest certain institutions are established. Institutions refer to "... established forms or conditions of procedure characteristic of group activity." A particular institution will be

characteristic of a specific association.

In the same way certain institutions are established in, and become characteristic of, any community. In terms of the definition offered it is clear that the individual human being cannot be a member of, or belong to, an institution. Rather, one is a member of an association and of a community and in each instance one's role performance is prescribed and governed by particular institutions.

Certain institutions are common to more than one type of association, e.g. initiation into membership, election of officers, etc. Other institutions are peculiar to particular associations, e.g. marriage in the family, lecture and examination systems in colleges, etc. The nature of the special interest pursued by an association will determine the nature of the institution.[13]

The more formal order of institutions and associations is supported by an "intricate complex of usages and modes of behaviour" which are socially accredited, recognized and accepted ways of acting or behaving, and are referred to as customs, folkways and mores. They exert a certain influence, direct and regulate to a greater or lesser extent social functioning, and differ from institutions only in terms of degree of formality.

However, an awareness of these elements of society and social functioning does not offer an entirely satisfactory explanation of society and the relationship between man and society. One of man's primary qualities is his social nature and it is this very attribute which poses crucial questions for an understanding of the relationship between one human being and another; the individual and society. Questions arise as to whether man belongs to society or whether the reverse holds, the nature of the dependence on each other, and how is the whole (of which man is part) to be understood.[14]

Attempts at answering these questions resulted in the formulation of two one-

sided approaches which can be traced back to long before sociology came to be regarded as a discipline. The first is the so-called contract theory of society which holds man to be an individual who "enters into" society and who is, or could, become a human being "... outside of or apart from society." Society is artificially created to protect men against the "... consequences of their own untrammelled natures", or to ensure mutual economy, protection and order. The second approach is the organismic theory which holds society to be a kind of organism. This view is as old as the first mentioned notion and society is conceived of as a biological system. The cells of this organism are the individual human beings and the organs and systems are its associations and institutions. The same laws of growth and decline which apply to the individual organism of the singular human being hold for the larger organism of society as well.

Some philosophers and theorists, in the organismic vein, thought that society should not be seen as a "greater body" but rather as being more of an "inclusive mind" - i.e. mental organism.

These two approaches oppose each other. The one suggests that society belongs to man whereas for the other the reverse holds true. Both are based on erroneous assumptions since individual man and society cannot be separated and viewed as if no relationship existed between them. The one has meaning only in terms of the other.

Such one-sided approaches are inadequate for the former emphasizes the individual whereas the latter virtually ignores the role of the individual in social life. Individuality derives from the significant differences that exist between one human being and others. And yet, in society a social unity is revealed in respect of its units and parts, and it is obvious that a certain degree of harmony exists between the individual and society. The understanding of individual man and society rests on the understanding of the relationship

between the two.

As a possible solution to the problems encountered when attempts are made to relate the individual to his environment, and vice versa, Pugh suggests that one considers the "emerging interdisciplinary quasi-independent science" of Organization Theory. This theory is defined as being the "study of structure and functioning organizations and the behavior of groups and individuals within them." For its conceptual framework it draws heavily on the disciplines of sociology and psychology and extensively uses the terminology common to both disciplines. It aims in the first place to break down the traditional division of ground and the compartmentalization of disciplines, and secondly to integrate these disciplines (as well as some others) into a "unified science of individual, group and organizational behavior."[15]

Pugh argues that sociological theories of organizational functioning are limited for they offer such an "... extremely naive treatment of human motivation." To this can be added the neglect of individual differences which are "characteristically devalued into personal idiosyncracies." These factors are indeed not being ignored or altogether left out but are rather regarded as being of "no account - that is they are equal to zero." The implications for psychology are obvious. However, psychology has an equally naive view of the relationship between role behaviour and personality, and tends to neglect structural differences in organizational positions particularly when considering aspects of personality structure and functioning in the organizational or group context. The differences in organizational structure and the relationship between personality and role performance are not left out but viewed as being of "no account" in respect of the processes with which psychology concerns itself. This obviously has implications for sociology.

Organization theory aims at relating these views and in so doing to improve the understanding of human behaviour and to obtain a more comprehensive picture of

the whole. The systems view has been applied with success in the discipline of psychology, and since it incorporates so many of the concepts acceptable to organization theorists, it would therefore only be logical in terms of the aims of this dissertation to apply the systems view to the phenomenon and processes with which the discipline of sociology concerns itself.

Mayhew suggests that the concept of a social system assists with the problems experienced when one defines the concept of society. Social system to him meant:

> "... an organized set of interdependent social persons, activities, or forces. It is called a system because its organization includes mechanisms for maintaining an equilibrium or some other constancy in the relations between the units. From another perspective such mechanisms can be seen as boundary maintaining mechanisms, for systems can be isolated as separate entities only if they maintain some consistencies in the face of environmental change, that is, if they maintain some boundaries viz-à-viz the environment."[16]

Mayhew argues that the concept of a social system is "ideally suited for use in defining a society analytically, for it contains within it the crucial concepts of "unit" and "boundary".

Parson's argument lends support to this view and adds a further qualification, that of "self-sufficiency".[17] He regarded society as self-subsistence and of "... long term persistence from within its own resources ..." Society as a social system outlasts the life-span of its units, i.e. the human individual, and its maintenance mechanisms include biological reproduction of units and socializing new units into becoming useful and contributing components of the system.

Parsons made it clear that he did not conceive of society as being independent

of other societies. Societies as systems are indeed capable of relating to, or interacting with, other societies, but as far as he was concerned it had to contain "... all the structural and functional fundamentals of an independently subsisting system." All other social systems he would refer to as "partial" social systems.

Social systems are all self-sufficient to some degree. It is debatable as to whether the search for the totally self-sufficient society is perhaps not a futile one and whether such a search should be continued. Mayhew also thought that the concept of a society with exclusive boundaries may well prove to be obsolete. He suggests that some of the problems, both old and new, in the conceptual analysis of society may well be solved were society conceived of as a "complex of overlapping process systems." A society is constituted when a "relatively broad range of overlapping systems, e.g. political, educational, religious, etc. were found to cohere around a common population. This society in turn may prove to be not altogether self-sufficient and may overlap with other societies. Also, its boundaries may not even be "uniform across the constituent members."

Parsons clarified his stand when he said that self-sufficiency in respect of a society did not infer isolation but rather that "... its social system contains within it cultural materials and role opportunities sufficient for carrying on controlled relations with an environment."[18]

The concept of membership is an important one. The basic unit of society is the "person-in-role" and "boundary-crossing" roles are regarded as external to the society. However, the units of society need further qualification. It was initially thought by some sociologists that the isolated individual constitutes the unit. Comte preferred "more socially relevant units", viz. the family. Much later when the concept of process had come to be established certain "segments of the actions of social persons came to be used as units of

analysis." Parsons in particular came to speak of the units of social systems as "actors in roles".[19]

Mayhew accordingly suggests that if society is seen as being a complex of overlapping process systems, then the ultimate social unit apparently is the act. The systems that constitute society are made up of many different types of units and the links between such units may differ from system to system. The major types of links are

"(a) emotional attraction

(b) orientation of actors to each other

(c) shared cognitive and evaluative perspectives

(d) mutual influence or co-ercion

(e) economic or functional interdependence

(f) common participation in an environment."[20]

Not one of these links can be said to constitute the "one true mechanism of social coherence." In a particular process one or more of these links may appear to be dominant.

However, the concept of overlapping social systems does not fully and satisfactorily define society, for societies relate to one another and the concept of community also adds to the confusion. In terms of the definitions of society offered above it is clear that society is constituted by a population. This population, in turn, is made up of "self-perpetuating inhabitants of a territorial area." A society's boundaries can accordingly be said to be determined by the "largest territorial area within which mating is common and residence is relatively permanent."

Of crucial importance is the notion that population does not mean a mere collection of individual human units but rather that it refers to systems of action

and that society is therefore to be seen as a "complex system of actions in which the units of population participate."

The concept of social systems needs to be considered in greater detail.

D - SOCIAL SYSTEMS

The need for, and usefulness of, a concept of a social system has been stressed by many social scientists. De Greene emphasized the requirement of a general system model, which would enable the observer to describe, and predict, individual as well as collective human behaviour, for different populations in as wide a variety of environments and systems possible. More consideration should also be given to the impact the system has on the environment instead of continuing to focus on environmental constraints over the system.[21]

Gross in turn pointed out that a general systems model of a social system, if used properly, may provide a "background for selecting those variables most appropriate to specific situations and for changing one's focus as the occasions warrant."[22]

Parsons' understanding of system is in accordance with the definition offered under Chapter Two when he suggests that the concept of system refers "both to a complex of interdependencies between parts, components and processes that involve discernible regularities of relationships, and to a similar type of interdependency between such a complex and its surrounding environment."[23] He accordingly defined a social system as being a "... mode of organization of action elements relative to the persistence or ordered processes of change of the interactive patterns of a plurality of individual actors."[24] The conceptual unit of this system is the role.[25]

The social system so defined pertains to a complex entity, or "organization of human interests, activities and commitments and which needs to be viewed in a

functional perspective." In this sense it can be looked at in terms of both structure and process . The emphasis in this definition is on action, function and process in the relationships between components and the system and its environment.

Parsons' view is echoed by Hunt who points out that a social system may be viewed conceptually as an interlocking complex of positions (the structural aspect), or as a functional division of labour. Each position requires of its occupant to behave in a specific way and the occupant must also possess the personal attributes associated with that particular position.[26]

Since a social system is a "system of interdependent activities" it follows that each and every position within a given social structure exists in relationships with certain other positions. Such relationships are reciprocal in terms of interaction, and Hunt speaks of the "rights and duties" of a particular focal position as existing with respect to a counter-position.

In terms of the rights and duties inherent in a given position the occupant will hold certain expectations in respect of the occupants of the other relevant positions. Such complementary expectations are called roles, and social process is seen as the "interaction of positions patterned in terms of ... complementary roles." Hunt also suggests that role and identity (the "personalistic correlate" of role) represent the implications pertaining to the filling of a certain social position. Also, no one role can be fully described unless it is related to other complementary roles. He saw role as serving more than a "linking function". For him it "exemplifies and operationalizes the merging of social and individual phenomena" which had so far been treated separately.

Crozier[27] in similar vein argued that most human actions are "influenced by a set of systems that ensure their integration and regulation." The systems concerned can be analyzed by using the specific methods and logic of the socio-

logy of organization. This "specialization" in sociology is suitable since it tends towards action and prefers "consciousness, rationality and organizations". He also thought that the "combination of different macro-sociological approaches" in systems analysis will enable one to determine several "types of integrative processes." This, he suggested, may lead to an "evaluation of the organizational capacity of a given society."

However, before the integrative processes within and between social systems and the organizational capacity of a society can be considered, one needs to be clear on the environment in which social systems exist. The environment was described by Homans as consisting of three parts, the first being physical (geographic, climate, etc.), the second being cultural (norms, values and goals of society at large) and the third being the technological part (pertaining to the state of knowledge and instrumentation available to the system).[28]

The three parts are closely related. It needs to be pointed out that should the physical part appear to be neglected from here on that this does not mean that it is relegated to an inferior position or held to be of no consequence. It will be more a matter of the other parts drawing the focus for the purposes of this dissertation.

Parsons' methodological distinction between a theoretical system and an empirical system has relevance when the concept of social system is considered. A theoretical system is a "complex of assumptions, concepts and propositions" which have both "logical integration and empirical reference." An empirical system on the other hand is said to be a "set of phenomena in the observable world that can be described and analyzed by means of a theoretical system." To this must be added a further qualification and that is that the empirical system is a "selective organization of those properties of the concrete entity defined as relevant to the theoretical system in question." It is therefore never a "totally concrete entity."[29]

All theoretical systems are abstract and Parsons suggested that the social systems, as a theoretical system, is particularly "adapted to describing and analyzing social interaction considered as a class of empirical systems." Such systems are concerned with behaviour and specifically human social interaction which is "organized on the symbolic levels we call cultural."

The aspects of behaviour which concern systems on this level Parsons referred to as "action", a concept which in turn includes few generic sub-systems, one of which is the social system.

The social system is "generated by the process of interaction among individual units. Its distinctive properties are consequences and conditions of the specific modes of interrelationships obtaining among the living organisms which constitute its units."[30] As such it is held to be the core of human action systems since it constitutes the primary link between the "culture and the individual, both as personality and as organism." In the social system the individual unit acts as an object in terms of both the situation and its fellow units. It is perceived as such by both self and other units.

A further terminological distinction needs to be made between an actor as a unit in the social system and the system as such. As Parsons pointed out, the actor may be either an individual or some kind of collective unit.

On all occasions the actor acts in a situation which consists of other fellow actor-units. The system functions as a whole, or complete entity in relation to its environment. The environment as pertaining to the individual component is constituted by the fellow components with which it is interacting. A component, therefore, does not function in relation to the system's environment, but rather the system functions in terms of the interaction taking place between its components. However, when the immediate whole of which the individual unit is but a part, is considered, the concept of acting in a situation becomes

applicable.[31]

Berrien quotes Parsons and Shils who held that the conceptual unit of the social system, viz. the role, is a "sector of the individual actor's total system of action ..." The individual for them becomes a "unity in the sense that he is a composite of various action units which in turn are roles in the relationships (systems) in which he is involved." To this they added the qualification that this composite of roles was not the same abstraction as personality.[32]

Berrien takes this one step further and points out that although many roles may be performed by a single individual under certain circumstances, a given role may be performed by a group of individuals who combine forces specifically for the purpose of performing that particular role. This happens frequently in large and more complex organizations.

The social system as a living open system engages in processes of exchanging inputs and outputs with its environment. Certain internal processes of exchange among its units takes place at the same time. Depending on one's view, the social system, as entity, may constitute a sub-system of a super-ordinate organization. Under such circumstances its interdependence with the other components of the more comprehensive system, or systems, is acknowledged. It is dependent on these other fellow sub-systems for essential inputs, and, for that matter, on being able to deliver certain outputs. From this relationship derives the concept of function.

Function essentially revolves round the aspect of maintenance and the development of interchanges between a system and the systems in its environment. As such function includes both inputs and outputs between the social system and the other action systems or sub-systems in its environment. Function, as Parsons put it, is the only "basis on which a theoretically systematic ordering of the structure of living systems is possible."

As was indicated when systems were considered, the exchange of inputs and outputs between the social system as an open living system, and its environment, will be determined by the internal states of all of the systems concerned. The homeostatic and teleological nature of the open living system requires that such interchanges be developed and maintained. Of crucial importance in this respect is the extent of the network of relationships between the social system and systems in its environment, and the balance between the relevant attractive and repellent forces. It is understood that the open living system will seek the necessary inputs to replace the energy lost through output or other internal processes. As to how it procures the necessary facilities whereby the required, or desired, inputs are obtained, needs further consideration.

The relation that exists between the social system and its environment is dualistic in nature. On the one hand the objects in the social system's environment are external to it. On the other hand the social system will include "partially and selectively", and through the process of interpenetration, some of the external objects in its frame of reference. The same process of interpenetration, as has been considered in respect of the internalizing of cultural and social objects by the personality, holds in the case of the social system.

The aspects of interpenetration, internalization and links between the social system and the systems external to it are by no means easy and simple to identify and understand. Parsons' concept of the system's environment which ran parallel to Homan's concept of the three-part environment offers a useful lead-in. He typified under the concept of action four sub-systems, viz. the organism, the social system, the cultural system and the personality system. He made the point though that no direct link exists between the social system and the physical environment. The relationship that exists is mediated through the action of the organism. In the same way no direct relation exists between the social system and the "non-empirical reality" but rather such relations as exist are mediated through the cultural and technological systems.

The theoretical system as described above can be applied to the empirical phenomenon of human social behaviour in the following way:

With the conceptual unit being that of role, in the social system as constituted by the interaction between two or more individual human beings, the intra-processes in the case of each of the occupants of the recognized positions are not included as relevant variables per se. The focus is on the quantitative and qualitative aspects of the relationships, i.e. the nature of the role performance. The link between individual and role performance is mediated through action on the part of the organism and through the interpenetration of the organism's action by the external objects pertaining to the operant cultural and technological systems.

As was indicated in the preceding chapter the individual human being is capable of internalizing external objects and not just on the level of accepting matter/energy inputs but information inputs as well. Through the process of interpenetration by the external cultural and technological systems the individual human being becomes socialized. In this sense the cultural and technological systems facilitate, and exercise, constraints over certain outputs. Socialization involves inter alia learning on the part of the individual as to what he can expect of the systems with which he interacts and also what is in turn expected of him.

At a certain point in time, and when a certain degree of development has been reached, the individual human being will change his role from being pupil to become a teacher and initiator of the socialization process in others. The whole process of social living requires of the person to occupy a number of positions in a number of different situations. The way in which the process is unfolded and conducted has become normative and standardized to a certain degree, interpenetration is ensured and the social system perpetuates itself.

The process in itself is not rigid in the sense that variations and deviations do not occur but it is consistent enough to allow for theoretical generalization and abstraction. Such variations and deviations as do occur usually do so as a result of idiosyncracies on the part of the individual occupants of the relevant positions.

Miller defined a number of "critical sub-systems" which he suggests are essential to the life of the living, and which Berrien conceived of as being function roles.[34] A particular person may well be able to perform several of the roles or sub-systems mentioned. In the case of larger and more complex organizations one may find that a specific individual is assigned to a particular role or that a group of individuals come together for the very purpose of carrying out a particular function.

Miller's breakdown of the system into sub-systems is in the true tradition of the systems analyst, and aims at offering as refined and complete an analysis of the relationship or network of relationships which exists between the components. Each of his sub-systems refers to a particular element of the relationship between components, e.g. ingestor, distributor, producer, decoder, associator, etc. The sociological breakdown of the social system into its components or sub-systems does not often extend to the same length and a sub-system may include, as elements, several of the sub-systems mentioned by Miller.[35] This does not mean that the sociological perspective lacks refinement and accuracy and for these reasons needs to be set right. It is more a matter of providing the observer or analyst with a tool that would enhance his observation and appreciation of the sociological context.

Miller's exposition in this respect covers the social system in all of its forms, levels of sophistication and complexity, and as such forms a sound basis for the study of human social behaviour. Its advantage lies in the fact that it does not seek to replace any existing theories but rather to clarify the focus,

highlight the variables, and aims at establishing links between a particular view and other views since it always deals with the whole and the relationships between its parts. It also enables one in a given instance to change one's focus as the occasion may warrant.

In the simplest of social systems one would find no more than two persons relating to each other, and the two would occupy positions which involve rather limited expectations of each other, e.g. the passenger on a train and the ticket examiner. It may well mean that the passenger has no other expectation than to be asked by the examiner to produce evidence of having paid his fare. The examiner on the other hand will expect to have the evidence of having paid the fare produced upon demand.

Not all social systems involving only two persons are so simple, e.g. the social system of husband and wife, where expectations in respect of both positions may range very widely and are so complex as to make possible a breakdown into sub-systems such as lover, protector, companion, etc. Social systems which involve more than two interacting persons are frequently more complex organizations. The nuclear family, for example, reveals a number of roles or sets of expectations. Each member occupies several positions, e.g. the husband is a father, lover, companion to his wife, breadwinner, etc., while the child occupies the positions of son or daughter, brother or sister, etc.

Whenever a social system involves more than one set of expectations, it is frequently necessary to resort to a breakdown into sub-systems as mentioned above, i.e. Miller's analysis or perhaps role-analysis, etc. However, a given social system may in turn prove to be a sub-system of a larger organization. The nuclear family is a sub-system of the extended family, of a neighbourhood, community, or a sub-sub-system of society. In the same way the lecturers in a specific discipline at a university constitute a component in a faculty which is part of the academic division of an institution, concerned with tertiary

education and training, and which exists in an educational sector of a nation, and which forms a segment of the economic, as well as the commercial, industrial and political systems in a nation, which has political, economic, industrial and other relations with other nations.

Exchanges of inputs and outputs between the components occurs on each of the levels, and the social system displays all of the features found in the open living system. The exchanges as do take place occur on the basis of satisfaction and reward for the individual component, and continue for as long as the participant feels that the returns justify the investment. The homeostatic as well as the feedback mechanisms are likely to prevent the acceptance or delivery of inputs and outputs at a cost that exceeds the reward received from such an exchange. This notion is crucial to the understanding of bondage between components for it casts light on how relationships can be established and maintained between similar and dissimilar components.

The elements which constitute similarities might be shared values, points of view or goals, or the component may share a common system of communication, valued status, etc. The differences will invariably constitute a complementary linkage in that the one component will enable the other to become more complete, i.e. give it meaning in a holistic sense.

The social worker/client system would serve as an example of differences, e.g. age, experience, knowledge, etc., and yet such components are often forged together even more strongly because many common goals are shared as well as, for example, in the case of marriage. Here there will be, apart from social, psychological and physical differences, certain common goals such as sharing a home, producing children and raising them. Gross remarked on symbiosis and thought that it constituted a stronger tie than consensus when it comes to cohesion in social groups. In the case of symbiosis the one component supplies something the other lacks. The adage that "birds of the same feather flock

together" is accepted, but a system of this sort is loosely integrated compared to the symbiotic or "opposites attract" type of system.[36]

Berrien adds that the distinction between maintenance and signal inputs helps to clarify the difference/similarity attraction between components. Should the components hold similar values and expectations or states, the task-oriented groups would "require a set of maintenance inputs (satisfiers)." However, "signal inputs (task instructions)" are said to be processed effectively whenever the parts of the system differ in respect of "resources, skills or capabilities."[37]

It is further suggested that neither differences nor likenesses on their own would result in an "effectively operating dyad" but rather a complete social system will be found whenever elements of similarity as well as dissimilarity are found. As to why one component responds to another and succeeds in establishing a relationship which will constitute the system is not the primary concern, though no doubt the teleological essence of the open living system must be a determining force.

The balance of exchanges between components can only be fully understood in terms of the distinction made between role behaviour and role expectation. Such a distinction is by no means easy. The aspect of maintenance and signal inputs have been mentioned but these have to be integrated as well. As to how many roles will be performed, and how well at that, will depend very much on individual capabilities and limitations in respect of values, skills, tools, etc. The individual person is capable of many roles, of receiving and executing directions and also of originating directions. On top of this a rapid shift from the one to the other may occur.[38] As to the role a person will assume in a given instance will depend very much on his personal characteristics and to a certain extent these very characteristics determine the person's membership in a particular social system.[39]

Role also revolves round maintenance and task functions, and a certain degree of flexibility is required if the system is to "accept and process a wider variety of inputs." Role rigidity results in tension which is a waste by-product of the individual's performance in a situation of conflicting demands and expectations.

Closely associated with the concept of role is that of norm. As Berrien suggests it is commonly held that the "norms of a group define the roles of the members and vice versa." This is not entirely satisfactory and he accordingly proposes that one conceives of the norms of a group, or the role of the component, as the "filtering boundary that permits certain inputs to flow into the system and certain outputs to flow out." In this sense norms are the equivalent of the "filtering function" of the boundary for the social system. Communication between components are made more meaningful because of the shared code and norms. This all lends a definite shape, a purpose and stability to interaction between bodies which may have interacted initially in a chaotic and a haphazard way.[40]

The structure and function of a given social system is greatly influenced by that system's properties of feedback, growth and adaptability.

The essential function of feedback is control. The system's output is controlled by messages sent to the input regulator which in turn will match the particular flow and in so doing prevent congestion or undue drainage. Feedback also results in the system maintaining a "relatively stable" state irrespective of external changes or variations, and this prevents undue fluctuations in the system. The controlling function of the feedback mechanism, lastly, ensures that the system has a "higher probability of survival." The social system displays both positive and negative feedback loops.

Growth as a process in social systems is difficult to observe and verify. Berrien quotes McNulty, Guetzkow and Bowes who all pointed at the lack of

relevant empirical data. He accordingly suggests that one could not with absolute certainty claim that "the growth phenomena of social systems do, or do not, fit in major respects into the general systems theory ..." He nevertheless believes that some data on growth are "understandable within such a framework."

Positive feedback loops are thought to play a major role in the process of growth in the sense that once the process has started it is encouraged to continue through the messages to the input regulator and the compensatory action taken by the regulator. The negative feedback loop will sooner or later come into play and under normal circumstances will counter the tendency, on the part of the growth process, towards overrun or runaway. In this way a steady state can be maintained.

Though much remains to be learned about the changes involved in the process of growth and the expansion of organizations, one of the known facts is that as organizations increase in size specialization is found to increase among the components in the system. A further complication is caused by the intensity factor in the relationships between components in newly formed specialist sub-systems and the effect this has on the sub-system's relationships with fellow sub-systems as well as the overall system. This aspect was discussed in Chapter Two and obviously needs to be taken into account here. The increase or decrease in intensity of relationships, the parent system's struggle to regain or maintain control, and the resultant conflict between parent-system and offspring are all factors which will influence the process of growth.

The problems mentioned by Berrien in respect of growth are understandable since the sociological perspective does not really set out to penetrate beyond the level of function, i.e. it stops at interaction between human beings and does not concern itself with the internal structure and functioning of the individual human being. The limitations to the sociological approach seem to be

essentially in the reluctance to consider the individual human being as a separate entity, a complex organization capable of change and growth. The individual human being is not merely a reactor or co-actor but a pro-actor as well; he is not only influenced by his environment but in turn exerts influence on his environment. Inasmuch as the individual changes internally as a result of the interaction with others, will the interaction network change as a result of the internal changes in the components. Growth occurs on two levels, i.e. internally within the component and externally to the components but within the system. Growth in the one will affect growth in the other.

Berrien in a sociological vein does not descend below the level of interaction within a social system constituted by two or more related human beings. He does speak of a nascent condition towards growth directing the so-called "charter members" of new groups. In his explanation of growth he turns to Boulding's principles of growth in open living systems.[41] From his explanation the following conditions emerge:

(a) a timeous catalytic or foreign input into a system is required;
(b) the system must be in a state of readiness and adaptable enough to allow for the concomitant structural and proportional modifications;
(c) the system must possess the properties of storage, memory and learning;
(d) the ultimate outcome will be determined in part by some of the "sub-structures of the initial system."

The concept of adaptation is of particular importance. It refers to the conditions that need to be steadied or stabilized when changes come about. It also refers to both the system's adjustment to "potentially destructive conditions" in the external environment as well as to disturbances which arise within the system.

One of the outcomes of growth is that new mechanisms for delivering suitable maintenance and signal inputs to the various components of the system will have

to be acquired. This condition will be present for as long as the process of growth continues. There are limits though to any system's adaptability and growth. The degree of change is therefore subject to these limitations and no system can grow to an infinite size. The limitations lie in the system's ability to store energy, to memorize and learn, and to effect a balance between the maintenance inputs required for the processing of new signal inputs.

E - CONCLUSIONS

The discipline of sociology concerns itself with human interaction and the network of relationships which constitute society. The structural and organizational aspects of interaction can be successfully translated into general systems theory terms. The phenomenon of social behaviour can therefore be viewed as an open living system.

The concept of a social system enables one to move between the simplest of dyadic relationships to the most complex of organizations, that of society. The social relationships are based on a "symbiotic exchange" which does not differ markedly from the relationships found in biological systems. As Berrien suggests, the main difference between the exchanges characteristic of social and biological systems lies in the substance or the content of such exchanges as well as in the "nature of the effective and emergent parameters within the system influencing the systems operations." To this a further claim is added and that is that "the principles describing the operations are isomorphic throughout the hierarchy of systems."[42]

As analyzed the perspective of a social system is extremely useful to the social work practitioner for it enables him to assess the nature and quality of the relationship between the client and the client's environment irrespective of the level of interaction and complexity of the organization of the system, or systems, involved.

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CHAPTER SEVEN

THE CLIENT AS SYSTEM

The constitution and behaviour of the client, whether an individual human being, a group, or a community of human beings, evidences all of the features pertaining to the open living system. The client as defined in terms of social work objectives, principles, values and interventive techniques is a system which does not function socially to its full capacity, and, to such an extent as to call on the social worker to set about improving its social functioning. This means that the client system:

(a) does not receive adequate maintenance and signal inputs

and/or (b) cannot, because of its internal state, process the inputs received, has no adequate storage capacity and is overloaded by excessive inputs

and/or (c) lacks adequate filtering mechanisms and cannot block harmful inputs from entering the system

and/or (d) does not deliver suitable outputs because of any or all of the above reasons, or, is expected to deliver outputs it is not capable of and hence experiences harmful stress

and/or (e) has inadequate positive and/or negative feedback mechanisms.

The acceptance of the client as a system is subject to the conviction on the part of the social worker that it has

(a) the potential to reach the desired level of social functioning

or (b) the potential for regaining the ability to function satisfactorily; an ability which had become impaired under adverse conditions

and (c) the capacity to perceive the need for self-realization and self-actualization and that this could be secured through improved social functioning

and (d) a sufficient number of suitable alternatives to choose from.

Approaching the client as an open living system means that the social worker will assess, and be guided in his response to, a particular situation in terms of the being, becoming and behaving of the open living system as discussed in Chapters Two and Three. As indicated, the client in social work can be presented on one of three levels, viz. as an individual person, as a group, or as a community of people, and in a given instance the practitioner may be obliged to consider aspects of the other levels as well. In this respect the systems approach facilitates the social worker's actions since the homology of the open living system's characteristics are not based on mere analogy, metaphor or reductionism. General systems theory enables the practitioner, when necessary, to consider the problem for which he is seeking a solution, in terms of more than one perspective.

A brief consideration of each of the three levels is necessary for each holds specific implications for the practitioner in terms of his knowledge-base, techniques and skills. However, before this can be done the aspect of social work intervention and its enabling process must be mentioned.

Initially I intended considering the client as system first and then to turn the focus to the practice base and the enabling process. However, the two aspects are so closely and intricately linked together so as to render separation undesirable, distracting and possibly confusing, particularly when the unitary approach, as suggested by social workers such as Hearn and Goldstein, is favoured.

Social work is service oriented and its service is directed at a particular phenomenon, viz. a client in an environment, a client embedded in a particular operational system. The system is perceived in terms of a clear notion of what

is desirable and how this goal can be attained in terms of the particular system's potential for growth and development. Social work intervention thus entails a complete process of:

(a) observing and studying the system in a controlled and empirically verifiable manner;

(b) diagnosing the phenomenon studied in terms of declared goals and standards of functioning;

(c) plotting a course towards the goal and initiating movement accordingly.

The process retains its character irrespective of whether the client system pertains to an individual person, a group, or a community of people. The conceptual tools for study and diagnosis, and the techniques for reaching the desired goal, will change though according to the particular level.

The client's social functioning is the observable external manifestation, and result, of the total interaction taking place between the components of that system in a particular situation and at a particular moment in time. The interaction may be due to certain inputs introduced into the system by external services or may come about as a result of certain internal processes which occur in accordance with the system's teleogenic nature. The client is studied, understood amd helped in terms of his social functioning.

A client's social functioning occurs in relation to the environment irrespective of whether that environment at the time is constituted by one or more people. This relationship or interaction in turn constitutes the operational system and involves a two-way exchange of inputs and outputs.

The simplest client system in social work pertains to an individual human being but even then that person cannot be approached as though he were in complete isolation socially. Even upon the rare occasion where the practitioner meets up with a client who at the time has no significant relationships with any other

person, once the worker/client relationship is established then that client once again becomes imbedded in a social operational system.

However, in the casework situation where the worker/client relationship is essentially a one-to-one configuration that person may for the sake of the social work process be regarded as a system. Under such circumstances the system may be broken up into its separate components as was suggested in Chapter Four. The functioning of each component and the interaction between the components are studied in detail.

It is under these circumstances that the social worker will come to rely more on psychological perspectives and the approach as outlined in Chapter Five would stand him in good stead. It is so that under such circumstances the physical and psychological components may appear to enjoy greater prominence than the social component. In the case of a crisis, e.g. a disaster which has left the particular client destitute, the social worker may well be obliged to attend to the physical and psychological needs first. The social component is ever present, though, and the client's social needs will have to be attended to sooner or later if the client is to attain or regain his functioning as a complete system.

To illustrate, one may consider the hypothetical case of the individual who loses his job, cannot pay his rent and is evicted by his landlord. Under such circumstances the client may as one of the alternatives available to him approach the social worker for help. On the other hand he may resort to less desirable alternatives and further aggravate his position, e.g. an unsuccessful attempt at suicide, committing a criminal offence, etc., and so come to the notice of the social worker. In this instance the system's physical needs will be given priority. Once adequate maintenance and signal inputs have been secured, and satisfactory and acceptable outputs are delivered by the physical component, can the attention be turned to the inputs that have been and are still being received

and processed, and the outputs delivered by the psychological component or sub-system. Once satisfactory inputs have been restored to these two components in the form of, for example, clothing, accommodation, food, medicinal treatment, psychological support, etc., will the social component have to be attended to.

The form and direction of the helping process depends on which of the three components needs to be attended to first, and the order in which the remainder will follow. It must be added that a social worker cannot in any given instance attend to only one of the three components. He has to consider the other components as well, for any changes brought about in one component's state or functioning will affect the other two, and such effects need to be carefully assessed before the helping process can be terminated. The successful functioning of a system can only be secured if all of its components receive the necessary and appropriate inputs, process them correctly and deliver proper and useful outputs.

In the face-to-face situation between the individual person and the social worker the client is perceived, as such, in terms of the output he delivers, and which is accepted as input by the practitioner. The aim of the social work process is essentially to deliver the person of his client-status and the two-way exchange of inputs and outputs between the individual person and the social worker means that these two in fact constitute the components of the operational system mentioned earlier on. The individual's components or sub-systems are the sub-components or sub-sub-systems of the operational system.

In this system psychological insights into human behaviour and functioning is extremely useful since it is expected of the practitioner to be the more flexible and adaptable of the components. He is to be the more accommodating component which, through his sympathetic understanding and expertise, has to effect suitable change in the functioning of the other component. Of particular use are the psychological concepts of perception, cognition, conation, learning, empathy,

transference, coping mechanism, etc., for in them lies the key to the relationship between one person and another.

An extremely important feature of the operational system is that the social worker component will actively and continuously employ its feedback mechanism. This mechanism manifests itself in the introspection, awareness of self and positive use of experiences on the part of the social worker. Purposeful reflection on the part of the social worker who is controlled and guided by his discipline and profession, enables him to deliver to the client outputs of the most pertinent and appropriate kind. The systems approach helps the social worker in that it offers a succinct abstraction of the principle contained in each functional aspect of the relationship - the interaction which takes place between himself and his client. The convincing illustration of trans-boundary isomorphism and comparison of principles in general systems theory favours its use by the social worker for he needs to understand his client and the client's functioning, not in terms of the needs of a psychologist but strictly in terms of the requirements of his own discipline.

It is true that the techniques and skills used by the social worker in the individual/practitioner situation closely resemble that of the psychologist/therapist. The difference lies in that the social worker is more concerned with the social functioning of his client and will show more interest in, and will be prepared to become more actively involved with, the larger social environment pertaining to the client, than would the psychologist. Here the social worker shows a stronger bias towards the client's social role performance and is more prepared to intervene actively and directly in the client's social orbit, i.e. his network of relationships. The social worker not only actively searches for internal relationship resources in the client but in the client's external environment as well.

The social component remains an important part of the client-system and with

the emphasis on social functioning and role performance the social worker will need to incorporate into his operational system certain sociological perspectives. In this respect he begins to distantiate himself from the psychologist's approach.

The hypothetical case offered above is relatively rare since the operational system between social worker and client usually involves indirectly, if not directly, at least one other person. The client's relationship with that person is crucial to the helping process. However, in itself the client/worker operational system can be viewed as one of the forms of the simpler social system. When looked at in this way a different perspective emerges. The components of this system are the roles performed by the client and the social worker. The roles of both the client and the social worker contain numerous elements which may be delineated as sub-roles, e.g. the client is an employee, a husband, a father, etc., while the social worker may be a professional enabler, a wife, a mother in her home, etc.

When one is concerned with social functioning the concept of role is an extremely useful tool since it enables one to demarcate and delineate the system's functioning into manageable parts. By having a prescribed number of roles in a given operational system the process of determining the nature and extent of deprivation malfunctioning or underperformance, is greatly eased. It is necessary for one to have a clear picture of which component's functioning is causing undue stress for its fellow components and which components are capable of compensatory action should a fellow-component not be able to function in the required way. A client may prove to be a satisfactory worker and breadwinner but an indifferent husband and mediocre father, or at work the client may be polite, considerate and patient while in his home setting he may display irritability, be a tyrant and bully, etc.

The systems approach enables the social worker to approach the same phenomenon in terms of two perspectives, that of the psychological system of the personality and that of the social system. The relevant discussions in Chapters Five and

Six above indicate that these two perspectives need to be used conjointly if a comprehensive picture of social functioning is to be obtained.

Social functioning is not the end result of the process of socialization nor that of individual psychological development. It is the result of, and can only be understood and explained in terms of, the interaction between the socializing forces and the individual's psychological forces. These forces expand themselves in certain identifiable and unique processes and they react to, and act upon, each other.

The social work process becomes more complex when the client refers to a dyadic structure, e.g. a married couple who are experiencing difficulties in their marriage relationship. What adds to the complexity of the situation is that the intervention of the social worker causes the structure to change from dyad to triad. In this case one is faced with a system comprising two sub-systems, i.e. the marriage partners. This system can be approached as outlined above in terms of both the psychological and sociological perspectives.

It is here very much a matter of level. One may look at their social functioning in terms of one partner's interaction with the other, or, one may look at the functioning of the couple as a unit and in relation to their larger social environment. To the social system new role components are added by the social institution of marriage. The new role of husband or wife is to a large extent prescribed by society and in order to cope with the demands for new inputs, throughputs and outputs, the sub-system will have to effect certain changes to its internal state.

The social worker's role in respect of this system is to correct situations where the sub-system had not succeeded in making suitable adjustments and cannot cope with the new demands, or, when possible, to help the sub-system prepare in advance for such adjustments.

The enabling process, dependent as it is on a strong client/worker relationship, does mean that the flow of inputs and outputs between the sub-systems will undergo change. Certain inputs and outputs will be blocked, filtered or amplified by being re-directed via the intermediacy of a new sub-system, i.e. the social worker. The change from a dyadic to a triadic structure is essentially a temporary one and will change back to its original form as soon as is expedient. The new sub-system's function is not a replacement function and the possibility of it replacing any of the other sub-systems is guarded against. Its function is to facilitate improved interaction between the other sub-systems and to promote growth on their part. This is possible only if the third sub-system has access to both the perspectives outlined and if it can accordingly assess the client's needs on the different levels.

A more complex situation arises where the client system involves more than two sub-systems, e.g. if the unemployed individual as mentioned in the first hypothetical case were to have a family to provide for. His psychological sub-system would be subjected to a wider range of influences than in the case of the single person. His social sub-system will likewise be more complicated in that its parts now include the additional roles of husband, father, head of household, etc. Because of the larger relationship network he will have to cope with more wide-ranging inputs and deliver an equally wider range of outputs.

A social system such as the family usually displays great discrepancy and inequality between its components. The differences that exist between a husband and his wife may contribute to a strong relationship being established if the one supplements and completes the other. With offspring the differences and the dependence of the children on their parents may well cause additional stress being experienced in a situation where the father had lost his job and income.

The social system of the size of a family involves various sub-systems, each of

which is constituted by a set of specific roles. The husband-wife sub-system will include the roles of lover, companion, home-maker, etc. In the parent-child sub-system the roles are that of a providing parent, a socializing parent, a protecting parent, etc. This approach to the family enables one to differentiate between the elements of the relationships that exist between the member in a given situation and at a given time. It also assists the social worker in his attempts to gain a picture of the psychological as well as social forces operant in respect of each member.

The principle of intervention by the social worker is identical to the case of working with one person or with a couple. Both his psychological and sociological perspectives need to be broad enough though to accommodate the extended network of relationships due to the increased number of components. A noticeable feature when the social worker works with the family as a complete system or even while attending to its larger sub-system is that the relationship between himself and his client, i.e. the flow of inputs and outputs, is not as strong or intense as when the social worker is involved with a sub-sub-system. In order to reach the desired goal the social worker may therefore be obliged to move down the hierarchy of levels to that where the relationship will be influential enough to effect the required changes. In order to do this the social worker at all times must be clear on his contextual frame of reference. Should the reverse process occur, i.e. when the social worker has to deal with larger organizations, the more likely he is to resort to using his understanding of social systems as a means of ordering the diffusion of relationships and input/output transports.

The notion that the system of the individual human being needs to be involved in several different relationships with other people if its maintenance and growth requirements are to be met is clearly illustrated in the social worker's work with groups of people. This method of intervention is employed when the individual person system has an inadequate or unsuitable relationship network and when changes in his social functioning can best be achieved by providing him

with an additional relationship network.

The size of the supplementary relationship network will depend on the specific needs of the person concerned and his tolerance threshold (lower and upper) for relationships. This relationship network, even though the individual system may enjoy its resources over a lengthy period of time, is seen as a temporary arrangement with specific objectives in mind. Once these objectives have been reached the network will be withdrawn.

The groupwork method in social work has two primary functions, viz. restoration/remedy and the promotion of personal and social growth. Restorative/remedial work, if successful, will certainly promote growth but it is possible to have a group where the latter objective is the primary one and such a group will differ from the problem-solving group.

In the case of remedial work the groups will be limited to a relatively small membership so as to allow for fairly intimate and close relationships in these areas where the members' relationships are wanting. As in the larger groups the members may be similar or unlike in respect of age, race, sex, denomination, qualification, etc. The social worker selects members to the group on the basis of similarities or differences in terms of his understanding of the interplay between the attractive and repellent forces on the personal level. The psychological perspective is useful here since in the case of each and every member of the group the worker is concerned with that individual and his experience of and response to the others. The interaction within this group is of primary importance and is encouraged and assessed in terms of the needs arising from the constitutions and functioning of the individual members.

Despite the emphasis in this direction the group nevertheless constitutes a social system and the social worker needs to consider the group in this light as well. The remedial group functions as a whole and the effect of its

functioning is experienced by other social systems through changes occurring in their individual members who belong to the remedial group. The reverse holds equally well and is a factor which must be allowed for.

In groupwork the worker's relationships with the individual members are determined by their specific needs, and is usually less direct and intense than is the case in the casework setting. The social worker in groupwork relies mainly on the flow of inputs and outputs between the members as a means whereby the social work objectives can be obtained. In the remedial group the worker is not a member of the group but he may from time to time resort to directing the flow of inputs and outputs between one member and another via himself. The same reasons would apply here as outlined above in the worker's role when working with couples and families. This feature differs considerably from the growth promotional situation where the practitioner is more free to participate actively in the group-interaction.

The groupwork worker may, under certain circumstances, compose his group out of dyadic sub-systems, e.g. married couples. The inclusion of larger sub-systems such as families, is not indicated since the system will then become too cumbersome and the relationship network too extended and diffuse to allow for effective remedial and restorative work.

The objectives of groupwork in social work were initially said to lie in the areas of education, recreation and socialization. The aim was to compensate for any shortcomings or deprivation in the individual's environment, to provide the individual with the opportunity of developing new personal and social skills, and to promote social growth generally. The objectives were reached by establishing groups which would develop their own identities and which would function as such in relation to other groups.

Membership of such a group may be a prolonged one depending on one's development

and needs. Groups of this kind could be quite large and the total membership may range between 10 and 30. Below the figure of 10 group-cohesion is difficult to effect unless the emphasis is on remedial work in respect of personal problems. A group of more than 30 is too large and difficult to keep together and there is a risk of sub- or splinter-groups forming within the main group.

For personal problem solving the small group of 10 or less proves to be effective but despite its increasing use as a means of problem solving, the tradition form of groupwork has remained and continues to serve a useful function particularly in respect of developing people, e.g. children and young people, and where the needs centre round the areas of education, recreation and socialization. In this setting the social worker provides for specific experiences in relationships with others through the carefully controlled use of particular activities in which members can participate individually and/or the group as a whole. Here too the emphasis is on the establishment of relationships between the members of the group as desirable and necessary if the goals are to be reached.

Groups are an essential feature of social living. The individual joins a specific group because of the goals he has in common with the other members of the group, and because his goals can be reached through active participation in the affairs and activities of the group. Social groups are seen as social systems which facilitate the need-meeting processes of individuals in the most advantageous manner to both the individual and his environment.

The group in groupwork, however, is of a supplementary and/or restorative nature in terms of its need-meeting facilities. The individual is encouraged to retain his membership to all other desirable groups. In the groupwork situation the group is carefully controlled and kept protective and supportive. The individual member is encouraged to change his behaviour and perspective, accept new ways of doing things, discover new resources within himself and the others around him, and to strive towards the realization of his full potential. His experience

and discoveries in this group are intended to encourage him to make better use of the available resources in the other groups to which he belongs and in turn to contribute meaningfully to group life and become a resource person for others.

The worker in groupwork operates in terms of his knowledge and understanding of the constitution and needs of individual human beings as well as that of social groups. He creates a group of a particular kind which aims at the restoration, or the release, of the individual's ability to function satisfactorily in social groups and which would convince the individual of the value of social groups when used constructively. The social worker should therefore also be concerned with the formation and maintenance of a group which would result in its members making more effective use of, and of contributing more meaningfully to, other social groups. This group perspective extends beyond the psychological perspective of the individual members and calls for an understanding and appreciation of the social and cultural values and requirements of the larger community and society.

In the groupwork setting the need for using both the psychological perspective and the sociological perspective can be clearly observed. The ability to explain and describe inter-system relationships and exchanges satisfactorily and its ability to facilitate cross-level comparison and uncover homologies renders the general systems theory an invaluable conceptual tool in this situation. Both perspectives are crucial to understanding the phenomenon of social function and particularly in this setting are accorded equal status.

In the case where the client refers to a community of people, the emphasis shifts to a marked concern with social systems of various sorts. These systems are created or located and exploited by the social worker in order to meet personal needs on a collective, and social needs on a general, basis. The social worker sets out to determine needs in the community, brings these needs to the attention of certain social systems and these systems are then assisted through the social work helping process to secure appropriate solutions.

Although the focus is more on the larger organization, the social worker never loses sight of the individual person for the community after-all is made up of individuals who stand in particular relationships, or sets of relationships, to each other. No limit is set on the size of a community since its boundaries are determined by the total relationship network between people. The size of the community depends on the number, and extent, of common elements present in the relationships and which serve to bind people together in a particular area. The boundaries to a community are often determined and expressed in geographical terms, and existing within the larger communities one may find several smaller communities. Such sub-communities may be confined to particular geographic areas within the larger community, e.g. a neighbourhood in a city, or their boundaries may be determined by functional or ideological factors, e.g. a Jewish community, a community of professional people such as lawyers or doctors, etc.

The systems approach to the larger and more complex community reveals a hierarchy of supra-systems, system and sub-systems; it enables one to break the community down into social systems of varying complexity. Each social system consists of an association of people bound together by a set of social roles which in turn prescribe both conduct and the task to be completed. Association is secured by the ability of the individual component to process certain inputs and to produce certain outputs either individually or in conjunction with one or more of the other components. The individual human being, certainly in its adult form, is capable of a multiplicity of social roles and may therefore be a member of several associations and, depending on his expertise, may represent a particular association from a lower level on a higher level.

The sociological perspective is particularly useful to the social worker when analyzing the community's structure, processes and determining its needs. The sociological perspective, however, can only take the social worker down to the level of social role. The enabling process in social work requires of the social worker to go beyond this point and to reach down to the level of the

individual human being, his constitution and his behaviour. For this a psychological perspective is required.

In community work unmet, or inadequately met, human needs are identified on both the personal and social levels. Once the need has been identified it will be brought to the awareness of a suitable association of people, who will be encouraged to find a satisfactory solution. If no suitable association exists the social worker will be obliged to bring about the formation of such an association. The needs perceived must be of such dimensions and magnitude as to call for collective action on the part of the community. The community is made aware of the need for certain changes in its social organization if its obligations to some of its members are to be met satisfactorily.

To illustrate, one may consider the situation of inadequate housing, medical, nutritional and social care of the aged in a given community. Should the social worker find that too many citizens belong to this group to be attended to effectively by way of casework or groupwork strategies, he will resort to employing community work methods. A decision to this effect can only be taken after a detailed study had been made of the nature and extent of the problem, and of the organization of the community, its facilities and resources.

The first step after the social worker's study, diagnosis and plan of action was finalized, would be to select, or to bring about the formation of, a suitable association to deal with the problem. The members of such an association would possess the individual properties and qualifications necessary to enable the association or system to function in a problem-solving manner, i.e. deliver the outputs necessary to bring about the desired changes. More specifically the system's function, once it had ascertained the facts and the necessity for change, would be to liase with other associations, elicit their co-operation and assistance (financial, professional services, political pressures, etc.) and to convince the larger community of the existence of a problem and the desirabilit

of pursuing a particular goal in respect of that problem.

To establish such an association, and the subsequent monitoring of its functioning requires not only an understanding of, or a sociological insight into, social systems but also a psychological insight into the make-up of the individual person as a member of the association. The social worker's relationships with the individual members of the association are akin to his relationships with his clients in the groupwork situation. He needs a clear understanding of the role structure in the particular social system as well as a clear understanding of the psychological properties required to fulfil a particular role. It is equally important that a particular role should in turn satisfy some of the needs of its incumbent.

In the case of the aged in need of care, a successful link-up between social role and personality in the association charged with the task of finding a solution to the problem, will ultimately result in changes coming about in the community by way of improved need-meeting facilities for the aged. Such changes or adjustments on the part of the community, e.g. the building of a home for the aged, or a community centre, etc., does not necessarily mean that the problem has been solved. The person in need of such facilities must recognize his own needs, perceive the facilities as being of use to himself; he must be prepared to avail himself of the offered services. Problems arising in this area are best attended to on the individual basis or by means of groupwork, and psychological insights into personality structure and functioning are essential for this purpose.

Although the community work social worker extensively uses the sociological perspective of social systems and social roles in order to reach his goals, he can never stray far from the psychological perspective of personality. In community work the complex organization has to be analyzed and described in terms of individual personal needs as well as general social needs. The social worker

must then accordingly prescribe a way in which the identified needs are to be met. On the one hand the resources and facilities of the community are to be brought within the reach of the individual, and he in turn is encouraged to use such resources effectively, and to participate actively in the affairs of the community.

Social work intervention provides a medium through which the interaction between an individual and his environment may be suitably altered. Such alteration aims at maintaining or establishing an unbiased and unprejudiced balance between the rights or privileges and the duties or obligations of both the individual and his environment. The reciprocity of rights and duties derives from the interdependence between individual and environment for nurture and growth, survival and perpetuity. Since the one only exists in terms of the other, the focus in intervention remains on the interaction between the individual and environment and on the security of the eco-system. In this process the social worker does not create the forces required to realize fully the potential of either the client or his environment. He can only assist in the release of, and the meaningful harnessing of, such forces.

The principle of help remains the same irrespective of whether the client happens to be an individual, a group of people, or a community of people. In all instances the social worker actively uses the client's relationship network with the other components in his environment to promote improved social functioning. In the process, changes in the state and organization of either the individual system or its environment will be sought, and the constitutive effect of all changes on both the individual system and its environment is carefully evaluated. The principle of the client's right to self-determination and self-actualization is upheld insofar as this right fits into the notion that a harmonious and anabolic relationship between the system and its environment is desirable, necessary and possible.

The enabling process in social work can only stand to benefit if the client is viewed as an open living system. The emphasis on intra- and inter-system relationships and the flow of inputs and outputs between components brings into sharp relief any anomalies or pathological conditions. By analyzing the system in terms of its being, becoming and behaving, the extent of the identified deviation and the form and direction of the helping process can be determined.

The enabling process inevitably involves changes in inter-component and inter-system transactions, either because of the removal of certain components from the environment or the introduction of new components into the environment, or because of changes brought about in the filtering properties in boundaries and the re-organization within the system. The decisions as to what changes are required and the effects of such changes needs to be carefully assessed. In this respect the availability of additional suitable conceptual tools from other disciplines is an indispensable facility.

The concept of, and response to, the client in social work derives from its unique view of man, its value base and concern with serving in the best interest of mankind, and its constant striving to improve and refine its service rendering. In his attempts to refine and develop his profession the social worker resorts to employing certain conceptual tools, methods, techniques and skills developed in other related disciplines, and this has resulted in a certain degree of obfuscation of disciplinary boundaries.

This problem can be eliminated by applying the general systems approach to each of the relevant perspectives from the various disciplines. This ensures that the contextual frame of reference is retained in each instance, facilitates the demarcation of the different levels on which the phenomenon is studied, defines the boundaries between the disciplines, clarifies inter-disciplinary relationships and improves inter-disciplinary communication.

CHAPTER EIGHT

CONCLUSIONS

In this dissertation I have tried to assess the use of general systems theory in overcoming some of the problems presented by the continuous use of psychological and sociological perspectives in social work. In my attempts I was influenced and guided by the contributions of so many others who have been engaged in finding solutions to the same or similar problems. In terms of my understanding of the nature and origin of the problem, the use of general systems theory and the goal of my profession, I came to the following conclusions:

(a) The profession of social work can and should make effective use of the knowledge and insights gained in the disciplines of psychology and sociology, but it is imperative that it does so with its own disciplinary boundaries clearly defined and kept inviolate.

(b) This can be achieved by applying general systems theory to the phenomenon of the client and for the following reasons:

(i) General systems theory frees the observer from the initial normative appraisal in terms of pathology, and enables the observer to approach the client in terms of the psychological and social forces brought to bear on, or emanating from, this system. Such a value-free examination of the relational determinants of behaviour when the accent is on transactions taking place between systems, fits well into the social work frame of reference.

(ii) The theory is particularly useful in that it offers a new perspective on the maintenance of a steady state. This is helpful when dealing with situations of stress or crisis-reactions.

(iii) The linear approach to causation is replaced by the approach that the environment serves the system, is used by the system, and vice versa. This means that an output is not merely assessed in terms of the processes taking place within the system but rather in terms of the meaning that output has for the environment. This is a significant distinction in that it irrevocably places the system in relation to its environment.

(iv) In general systems theory processes are related to outcomes and this enhances the predictive ability of the intended intervention. In this respect it may well indicate the point at which intervention may commence but does not prescribe the exact techniques and procedures to be followed. It counters the tendency towards pre-occupation with process and technique in any other way than to identify it with the goals which the processes and techniques are intended to serve.

(c) The phenomenon of the client in social work displays all of the characteristics of the open living system, and its structure, internal processes and its functioning as a whole can be described accordingly.

(d) General systems theory enables one to identify isomorphic constructs, effect cross-level linkages, describe inter-system interactions, and to define the boundaries of the system. It accordingly enables one to relate one discipline to another and to position a discipline in the hierarchy of disciplines involved in studying the same phenomenon.

(e) Social work's position is superordinate to psychology and subordinate to sociology. At the co-ordinate level with psychology, social work views the individual person as being a complete system, in constant interaction with its environment and as a system made up of several identifiable and measurable components. At the co-ordinate level with sociology the individual person is viewed as being a component or sub-system of a much

larger social organization. Social work does not constitute the co-ordinate between psychology and sociology, though, for the perspectives pertaining to the two disciplines are so far apart as to prevent any direct linkage except by way of isomorphic comparison.

(f) The psychological and sociological perspectives relevant to social work have been translated successfully into general systems terms. Transcription of the social work client into these terms would therefore improve inter-disciplinary communication.

(g) Applying general systems theory to the social work discipline means that a skeleton is provided onto which the practitioner can hang the flesh of his knowledge and understanding; it is a means whereby theory-building and the body of knowledge can be ordered into an integrated whole.

(h) Systems theory embraces general terms of reference which are capable of intra- and inter-disciplinary transmissions. It is an excellent communication agent and has great potential as a teaching aid particularly since its level of abstraction is sufficiently sophisticated to allow for movement between the local specific and global general, the concrete and conceptually representative, within a clearly defined perimeter and according to equally well defined procedures.

(i) The application of general systems theory explicates the incorporation of "foreign" perspectives into social work practice in such a way as to leave little doubt in the mind of the social worker as to use, order and position of the conceptual tools available to him. The systems approach distinctly points at the psycho-social approach not being a mere concoction of psychological and social systems which, through their union, had produced a new offspring, a system which defines the client in social work. It is more a matter of the social worker, because of his concern with social functioning

and his specific objectives, having a ready access to useful perspectives in his neighbouring discipline. Not only must he have a ready access but the relevant perspectives are to be used in an unadulterated and undistorted way, i.e. retaining their particular contexts and frames of reference. The social work discipline is not a bastard discipline born out of a whimsical liaison entered into in order to off-set the individual disciplinary shortcomings in the parents.

(j) The intricate process whereby the psychological perspective of personality as a system, and the sociological perspective of social systems are incorporated into the enabling process of social work, can be meaningfully analyzed by applying general systems theory to the client in social work.

General systems theory meets the requirements of the model described in Chapter One. It is particularly well-suited to cope with cross-level and interdisciplinary linkages and comparisons. With its emphasis on wholeness the relationship network between the component is brought into sharp relief and in this respect it contributes positively to integrative and constitutive knowledge-building. There can be no doubt that it offers the social worker a means whereby a unitary approach in social work can be achieved, the discipline's boundaries defined, and its autonomy and identity secured.

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