THE PSYCHO-SOCIOLOGIC APPROACH TO THE PROBLEM OF NEOPLASIA*

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The psycho-sociologic approach to any clinical phenomenon, neoplasia for example, presupposes a conception of man as a body-mind in 'organic' continuity with the multiform environment. Such an approach, however, is logically derived from the contemporary conception of *causality*, a conception which rejects unreservedly the methodological outlook of the older schools of philosophy, according to which biological, psychological and social processes are regarded as independent entities, each capable of assuming absolute causal power, and so of producing a single one-sided effect. The concept of cause and effect projected by the older schools, and enshrined in the dictum *Causa aequat effectum*, presupposes a relationship of one-sided dependence between two events, be they biological, psychological or social. But such a fancied relationship does not reflect the full reality of change. The concept of causality does not, in fact, admit of the principle of dualism, for no event can be dependent upon one cause alone. Each 'cause' itself must be considered in turn as the effect of another 'cause', and each effect as the cause of further effects, so that a particular phenomenon under investigation, neoplasia for example, is construed to be the expression of a chain of causal factors which has the character of a continuum. In this conception, the factors in the causal continuum are interdependent with, or functionally related to, one another. Any clinical event may thus be symbolized by the notation:

$$Y=S\,(p \rightleftarrows q \rightleftarrows r \rightleftarrows s \ldots)$$

One of the factors in a causal chain is always decisive or dominant in the sense of precipitating change or disequilibrium. It is thus the essential task of investigative medicine to identify the dominant variable in the causal chain, and then to determine the extent to which the pathologic process has traversed the diverse components of the human continuum.

This *a priori* evaluation of causality has been amply validated by a series of psycho-somatic and medico-sociological studies. It has given rise to the integralistic school in medical philosophy—a school promoted in the Department of Preventive and Social Medicine of the University of Witwatersrand—according to which the human personality is conceived not as a body and mind operating as independent entities, but as an inter-acting body-mind in continuity with a multi-dimensional environment.[5] In effect, in this concept, the soma with all its components, and the psyche with all its components, and the environment with all its components, are construed as being in a state of continuous interaction one with the other.

The psycho-sociologic approach to the problem of neoplasia, therefore, necessarily involves the procedure of identifying and correlating the gamut of factors as they emerge from (*a*) the individual somato-psychic personality, and (*b*) the multiform environment in which the individual personality is projected. The causal factors *vis-a-vis* carcinoma may be referred to as carcinogenic factors. These factors, however, are not constant, and, in so far as they vary from one individual to another, they are more correctly referred to as variable carcinogenic factors. Thus we may now postulate, on the basis of medico-sociologic data to be presented, that—

I. The susceptibility of an individual to carcinoma in particular, and to neoplasia in general, is determined by

(A) variable factors operating in the somato-psychic personality; and by

(B) variable factors operating in the surround; and that

II. The incidence of carcinoma in a community is determined by variable factors operating in the multiform environment.

I. THE SUSCEPTIBILITY OF THE INDIVIDUAL SOMATO-PSYCHIC PERSONALITY TO CARCINOMA

(*A*) *Variable Carcinogenic or Neoplastogenic Factors operating in the Individual Personality*

These include the following:

1. *The Age Factor.* The liability of an individual to acquire carcinoma is partly determined by his age. The data of Lumsden and Dauer[10] in respect of Massachusetts, Connecticut, New Jersey and Virginia for the period 1931-34 show that for both sexes the liability to acquire carcinoma rapidly increases after the age of 30 years; that in males this liability is about 5 times higher in the 50-60 year age-group, 11 times higher in the 60-70 year age-group, and 20 times higher in the group 70 years and over, than in the 30-50 year age-group. Generally speaking, the greater the proportion of old people in a population, the greater will be the percentage of cancer deaths in total deaths.

2. *The Factor of Sex.* The liability to cancer and other malignant tumours is partly determined by sex. Thus, in an European population, the male sex is generally less liable to neoplasia than the female sex. This phenomenon is amply reflected in the medical statistics of the United Kingdom for the years 1938-48. On the other hand, the male sex is more liable than the female sex to neoplasia of certain organs and tissues of the body. Thus for the year 1948 in England and Wales the incidence of neoplasia of the buccal cavity was 3·5 times higher in men than in women; that of the digestive organs and peritoneum 1·1 times higher; that of the urinary organs 1·9 times higher; and that of the skin 1·2 times higher; but, on the other hand, the incidence of neoplasia of the breast was 124·5 times higher in the female than in the male.

Strachan's data[12] indicate that in the Bantu the liability to carcinoma is slightly greater in the male than in the female but the position is reversed for the two sexes in regard to sarcoma and cerebral tumours.

3. *The Factor of Race.* The liability of an individual to acquire carcinoma depends partly on his racial status. Thus, according to Strachan's Johannesburg study, the incidence of neoplasia in the Europeans is 3·4 times higher than in the Bantu, while in the Eurasian race it is only 1·2 times higher than in the Bantu. The liability to neoplasia varies among the pigmented races

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themselves. This fact has been established by Berman[2] from an analysis of statistics accumulated by Hoffman.[7]

4. *The Factor of Heredity.* The part played by heredity in the transmission of human cancer cannot be determined with any degree of accuracy. In any case, the term 'inheritance of cancer' is somewhat dubious, for what is inherited is not cancer as such, but an increased susceptibility to cancer. It is accordingly preferable to speak of the 'familial incidence' of cancer. Heredity *per se* does, nevertheless, play a part in determining the frequency of cancer in various parts of the body.[4]

5. *The Endocrinologic Factor.* The importance of the endocrine secretions to the development and functioning of the body in general and of cancer in particular has been elaborated by Little.[9] The relation of the sex glands to cancer forms the basis for much present research. Further, biological and biochemical research is yielding significant information about the relationships of cancer to the other glands of internal secretion, such as the pituitary, the adrenals, the thyroid, and the spleen.[9]

6. *The Factor of Nutritional Status.* The liability to cancer is partly determined by the nutritional status of an individual. Thus, Dr. Louis Dublin, chief actuary of the Metropolitan Life Insurance Company, has shown that the cancer death rate increases as weight increases.[13]

7. *The Factor of Morbidity.* The liability of an individual to carcinoma may be determined by certain infections like syphilis, tuberculosis and bilharzia and, generally, by certain diseases of the liver, endocrines, stomach etc. associated with regenerative hypertrophic lesions. The claims made by many pathologists that viruses are the cause of certain types of malignancy in human beings may, in the view of the writer, be difficult to accept on methodologic grounds; for it could be logically postulated that they are the effect rather than the cause of malignancy. In any event, viruses and organisms like pneumococci, tubercle bacilli etc. are constantly present in the human organism, but not all human beings contract malignancy, pneumonia or tuberculosis, as the case may be. Therefore, if viruses are a factor in malignancy, they only become so when they are activated by a set of other factors acting collectively and interdependently, and the operation of which is initiated by a disorganizing *noxa* which may *ab initio* be physical or psycho-physical in character.[3]

8. *The Factor of Occupational Status or Environment.* The liability of an individual to carcinoma depends partly on the occupational environment to which he is exposed. The known or suspected extrinsic carcinogens have been listed by Hueper[8] as (*a*) *direct primary carcinogens*, (*b*) *indirect primary carcinogens*, (*c*) *indirect secondary carcinogens.*

9. *The Factor of Economic Status.* Stevenson[11] has shown that the liability to carcinoma of certain organs varies in the different social classes.

10. *The Factor of Urbanism.* Living in a city with a high population-density increases the liability of an individual to carcinoma.[14]

11. *The Factor of Psychologic Status.* The part played by the psychologic status of an individual in determining liability to neoplasia invites attention, especially insofar as the human personality is universally an expression of the body-mind interaction process operating within the multiform surround. The author would postulate in the light of this concept that any emotional change, whether engendered *ab extra* or *ab intra*, is accompanied by a specific biochemic substance which is poured into the blood stream and carried to every organ and tissue of the body and has a specific effect upon the organs and tissues of the body; and that the nature of the biochemical change varies with the type of emotional experience. In the main, the diverse emotions experienced by the human personality may be classed into two fundamental divisions, namely (i) those which conduce to well-being or harmonic adjustment on the psycho-physiologic plane of experience, and (ii) those which conduce to ill-being or disharmonic adjustment. The former group of emotions include love and mercy, humility and kindness, compassion and forbearance, based upon sociologic understanding which induce what we have termed a *dilatation of the channel of consciousness*, whereby the area of the mind's contact with reality becomes widened, and wherein the *dilator effects* of such emotions are instantaneously transmitted from the psychic segment to the vascular elements in the somatic segment of the personality. The group of emotions which conduce to ill-being or disharmonic adjustment are the diametric opposites of the first; and they include hatred, cruelty, arrogance, intolerance and aggressiveness, which induce what we have called a constriction of the channel of consciousness, whereby the area of the mind's contact with reality is diminished, and wherein the *constrictor effects* of these emotions are instantaneously transmitted from the psychic segment to the vascular elements in the somatic segment of the personality, producing therein —as psycho-physiological experiments prove—actual constriction of the arterial vessels. The group of emotions which produce a 'dilator effect' within the psycho-somatic personality we designate as '*psycho-dilator stimuli*', and those which produce constrictor effects we designate as '*psycho-constrictor stimuli*'. Now the arterial constriction produced by the psycho-constrictor stimuli (*ab extra* or *ab intra* with reference to the personality) causes an interference with the blood supply to the organs and tissues, eventually tending to degenerative changes within them. But the affected organs and tissues, like the total human personality, do not want to die, and they essay to save themselves, i.e. to intergrate themselves into a harmonic physiologic whole; and this they do by a process of cellular hypertrophy on the part of the surviving cells, which is a compensatory process, i.e., an integrational process. The integrational impulse, i.e. the urge to live as an integrated whole, is present not only within the psyche, but also within every cell of the living organism. But the degenerative change in the affected cells may be so rapid and acute as to threaten the life of the remaining cells; and these cells, in a bid to save themselves collectively, will undergo excessive cell division without reference to the structural requirements of the organ as a whole. Such cellular activity, which serves no useful functional purpose, is thus an over-compensatory process, replacing one pattern of cellular disorganization by another which is worse. But this cellular over-compensatory process, in so far as it is evoked by nutritional deprivation of other cells, is fundamentally not dissimilar in character to the psychologic over-compensatory process which occurs in the human personality as a reaction to emotional deprivation or frustration. In so far as this is so, deprivation or frustration on the psycho-social plane of experience, must induce certain biochemic changes within the body which in turn evoke an over-compensatory process, i.e., a neoplastic process, or a 'splitting off', or schizo-somatic process affecting the cells of a particular organ or tissue. If this is true, and it may conceivably be so, then the whole question of cancer cannot be construed as a somatic problem, but rather as a psycho-sociological problem capable of resolution only by the elimination of the variables in our society which make for undue frustration and deprivation on the fundamental planes of human experience.[6]

(*B*) *Variable Carcinogenic or Neoplastogenic Factors operating in the Individual's Physical Environment*

These include the following:

(1) *Industrial or Occupational Carcinogens.*[1]

(2) *The Factor of Sunlight.*

II. VARIABLE FACTORS OPERATING IN THE MULTIFORM ENVIRONMENT WHICH DETERMINE THE INCIDENCE OF CARCINOMA IN A COMMUNITY

In the light of the foregoing analysis of the carcinogenic factors which inhere in the individual somato-psychic personality, it is clear that the variable factors within the multiform environment which determine the incidence of carcinoma in a community must include the items 1-3 and 6-11 of the factors included under (A) above. That is to say, the incidence of carcinoma in a population will be greater (1) the greater the proportion of aged persons, (2) the higher the masculinity, (3) the greater the proportion of Europeans, (4) the greater the number of malnourished persons, (5) the greater the incidence of syphilis, tuberculosis and bilharzia,

(6) the greater the proportion of persons engaged in occupational activities which bring them into close and prolonged contact with extrinsic carcinogens, (7) the greater the poverty, (8) the greater the degree of urbanization, and (9) the greater the number of mentally disordered persons.

THE CONTROL OF NEOPLASIA

Our method of control of neoplasia must necessarily be determined by our acceptance of the conception of man as a body-mind-surround unit, which the neoplastic individual also is. In so far as this is true, control measures in a community must be applied to each element of the integrate—both to the affected psycho-somatic personality, and to the environment in which that personality is projected. Thus the measures of control must necessarily embrace the following:

1. *Medical measures*, applied to the individual.

2. *Medico-social measures*, applied both to the individual and the group, and including (*a*) cancer legislation, and (*b*) cancer education.

3. *Medico-sociological measures*, which are necessarily directed to the variable carcinogenic factors which operate in the multiform environment and must have as their objective the elimination or the amelioration or the normalization of these factors in the population. Thus these measures involve (*a*) *the amelioration of the nutritional status*, (*b*) *the eradication of syphilis, tuberculosis, and bilharzia*, (*c*) *the provision of a hygienic occupational environment*, and (*d*) *the amelioration of economic conditions*, etc. etc.

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