

PSYCHE AND SOCIETY

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Editorial

Marx the revolutionary, Marx the father

By the end of year 1864 Marx was very much perturbed how he could finish his draft of *Capital*. He was well aware that a good number of his projects were either abandoned or unfinished. But 'Capital' was his dream project and he was determined to finish it. However he informed Engels that by September 1865 it would be done. Though there was apprehension among his friends as they had heard many such hopeful forecasts over the years. But gradually it became obvious that the horse 'seem to be in the final furlongs-even if the spavined old nag was proceeding at a limping trot rather than full gallop.'

In the meantime he started bilious vomiting every day and he was forced to be distracted due to a sudden influx of house guests namely Jenny's brother, Edgar von Westphalen, came to stay for six months, along with Marx's brother-in-law from South Africa, a niece from Maastricht and the Freiligrath family. He was forced left his house for two months and 'A queue of creditors has been hammering on my door, becoming more and more unendurable every day.' Amidst this blizzard his masterpiece was nearing completion.

Meanwhile the carbuncles returned and he had to take bathe in the sea at Margate and swallow arsenic three times a day. Even in this sorry state of affair he tried to concentrate copying the 1,200 pages *Capital* manuscript by the end of 1865. Subsequently carbuncles were replaced by rheumatism and toothache. Then the old liver trouble returned for an encore. Even on days when he was fit to work some new misfortune usually descended, as when his stationer refused to supply any more paper until the last batch had been paid for.

With exquisitely bad timing, Paul Lafargue asked for the hand of the twenty-year-old Laura Marx in marriage. The Creole medical student, having met Marx through the International, had transferred his attention to the old man's green-eyed daughter and begun wooing her with an enthusiasm which Karl thought most indecorous. Lafargue was suspect anyway, not only for Proudhonist tendencies but also because of his exotic Franco-Spanish-Indian-African ancestry, which to his prospective father-in-law suggested a certain genetic flightiness. So he wrote this caveat.

My dear Lafargue,

Allow me to make the following observations:

1. If you wish to continue your relations with my daughter, you will have to give up your present manner of 'courting'. You know full well that no engagement has been entered into, that as yet everything is undecided. And even if she were formally betrothed to you, you should not forget that this is a matter of long duration. The practice of excessive intimacy is especially inappropriate since the two lovers will be living at the same place for a necessarily prolonged period of severe testing and purgatory ... To my mind, true love expresses itself in reticence, modesty and even the shyness of the lover towards his object of veneration, and

certainly not in giving free rein to one's passion and in premature demonstrations of familiarity. If you should urge your Creole temperament in your defense, it is my duty to interpose my sound reason between your temperament and my daughter. If in her presence you are incapable of loving her in a manner in keeping with the London latitude, you will have to resign yourself to loving her from a distance.'

Before consenting to the marriage, Marx required a full account of the young man's prospects. 'You know that I have sacrificed my whole fortune to the revolutionary struggle,' he wrote to Lafargue. 'I do not regret it. Quite the contrary. If I had to live my life over again, I would do the same. I would not marry, however. As far as it lies within my power, I wish to save my daughter from the reefs on which her mother's life was wrecked ... You must have achieved something in life before thinking of marriage, and a long period of testing is required of you and Laura.'

Source: *Marx Myth and Legends*, Francis Wheen. **P A S**

Professor Martin Bernal, 'Black Athena' author, dies at 76

Daniel Aloï

Martin Gardiner Bernal, professor emeritus of government and Near Eastern studies at Cornell and author of the widely read and debated "Black Athena" books on classical civilization, died June 9 in Cambridge, England. He was 76.

Bernal taught at Cornell from 1972 until his retirement in 2001. He began as an associate professor in the Department of Government and was named a full professor in 1988.

Bernal argued that Egypt, not Greece, was the root of ancient culture in his three-volume work "Black Athena: The Afroasiatic Roots of Classical Civilization." Considered controversial by many, Bernal's first volume, "The Fabrication of Ancient Greece 1785-1985" (1987) was followed by further research in "Black Athena 2: The Archaeological and Documentary Evidence" (1991) and "Black Athena 3: The Linguistic Evidence" (2006), and a volume in response to his critics, "Black Athena Writes Back" (2001).

The series was translated into several languages, became the subject of conferences, radio and television programs, and earned honors including a 1990 American Book Award for the first book and the Japanese newspaper Mainichi Shimbun's 2004 Book of the Year for "Black Athena 2."

His other books include "Chinese Socialism Before 1907" (1976); and "Cadmian Letters: The Westward Diffusion of The Semitic Alphabet Before 1400 B.C." (1990).

Born March 10, 1937, in London to writer Margaret Gardiner and scientist J.D. Bernal, he was a 1957 graduate of Kings College, Cambridge; earned a Diploma of Chinese Language



from Peking University in 1960, and was a graduate student at the University of California, Berkeley in 1963 and Harvard University in 1964. He received his Ph.D. in Oriental studies from Cambridge University in 1966, remaining there as a fellow until his recruitment by Cornell. Adding an appointment in Near Eastern studies in 1984, he initiated new courses including the politics of scholarship.

He was known as a brilliant and lively friend, teacher and colleague; was well-traveled and learned languages wherever he went, including Mandarin Chinese, French, Greek, Hebrew, the Bantu language Chichewa, Vietnamese and Japanese.

Survivors include his wife, Leslie Miller-Bernal; five children and step-children, a half-sister and nine grandchildren. A funeral will be held June 19 in Cambridge, England, with memorial services being planned for the fall in the United States and the United Kingdom. **P A S**

Critiquing Timpanaro's Concept of Hedonism vis-à-vis Materialism

Ramkrishna Bhattacharya

Sebastiano Timpanaro believed that 'the agreement between materialism and Leopardian pessimism had its basis in hedonism; and hedonism is the basis of all scientific systems of ethics' (*On Materialism* p.66). I have already critiqued Timpanaro's concept of 'materialist pessimism' (*Psyche and Society* 11: 2 December 2013, 7-15). Let us now turn to the issue of hedonism vis-à-vis materialism, particularly Marxism.

Like optimism and pessimism, hedonism and asceticism or, in today's terms, consumerism and abstinence/self-denial, do not normally appear in the studies of Marxism; nor has Terry Eagleton in his recent delightful work, *Why Marx was Right* (2011) included it as a query to be answered.² Similarly, authors concentrating on Marxist morality, and, for that matter, the ethical foundations of Marxism, generally do not seem to be concerned with the issues that Timpanaro raises.³ Yet the issues themselves are not of a trifling nature; they do demand a new look. It is all the more necessary to review the matter, because Timpanaro does not refer to Marxism alone but to materialism as a whole. Therefore a brief historical overview of hedonism vis-à-vis materialism is called for.

#

Materialism appeared in the west in the sixth/fifth century BCE with the advent of 'the first philosophers' (Engels *DN* p.186, George Thomson 1955) in Greece. They have been given a collective title: 'the Presocratics.' The contributions of Democritus (460-370 BCE), Heraclitus (530-470 BCE), and the much-maligned post-Socratic philosopher, Epicurus (c.341-270 BCE) were highly appreciated by Marx (*MECW* 1: 25-76), Engels (*AD* p.401, *DN* pp.44, 186-90), and Lenin (*CW* 38: 267-70, 282, 291-297, 334, 346, etc.), all owing much to Hegel's *History of Philosophy*. What attracted them most was their philosophy of nature, because it was totally materialistic. Epicurus has generally been labelled by some later writers as a thorough-going hedonist or eudaemonianist. Horace (65-08 BCE), the Latin poet, for example, invites

a friend: 'When you want to smile then visit me: sleek, and fat I'm a hog, well cared-for, one of Epicurus' herd' (*Epistle* 1.4.16). Many modern European languages (I know of English, French, German, Italian, Portuguese, and Spanish) have such words as Epicure, Epicurean or other derivatives from Epicurus to suggest a gastronome, connoisseur of good food and wine, and the like: in short, a person devoted to utter sensualism. In spite of specific denials issued by the historians of philosophy and contributors to the philosophical dictionaries and encyclopedias (for some such examples, see R. Bhattacharya 2009/2011 pp.30, 124-26; 2010c p.21) this prejudice against the materialists dies hard. It is all due to the bad name given to Epicurus by Horace, the medieval Christian Church authorities, and others of the same ilk. Apparently they knew nothing about Epicurus' philosophical views either of nature (atomism) or of humans (rational and discriminating attitude towards life).⁴ Such ignorance, however, did not prevent the fideists from slandering Epicurus and by implication materialism as such.⁵

The same kind of calumny has been directed against Carvaka, reputed to be the founder of a materialist system of philosophy in India in or around the eighth century CE. A verse has been attributed to him (or to the supposed founder of the materialist system, Brihaspati) which urges people to live happily, for nothing is beyond the ken of death; once the body is reduced to ashes, there is no return. Sayana-Madhava, a fourteenth-century south-Indian doxographer, distorted a part of this verse by substituting 'nothing is beyond the ken of death' by 'consume clarified butter⁶ even by incurring debt' (See Bhattacharya 2009/2011 p.p.201-06). This unwarranted removal of a clause and its replacement by a plea for crude self-indulgence by any means, fair or foul, has proved to be highly effective. Even those who do not know the ABC of philosophy, whether of the idealist or of the materialist variety, think that the quintessence of the Carvaka/Lokayata system is encapsulated in that gross counsel, 'Consume clarified butter even by incurring debt' (*rinam kritva ghritam pibet*).

Since all the works of all the materialist systems of India before the Carvaka, such as the early Lokayata and *bhutavada* (mentioned in the Tamil epic *Manimekalai* (composed between the fourth century and the seventh century CE) and those of the Carvaka system itself (the base text, the commentaries or any explicatory work of any kind), are lost to us up till now, no defence put forward by the Pre-Carvakas or the Carvakas is known (For sources, etc. see R. Bhattacharya 2013a). But as regards Epicurus, even though almost all his writings are lost, a crystal-clear explanation concerning what he meant by 'living happily' is contained in a letter to a friend, which has fortunately come down to us. He says:

'When we say, then, that pleasure is the end and aim, we do not mean the pleasures of the prodigal or the pleasures of sensuality, as we are understood to do by some through ignorance, prejudice, or wilful misrepresentation. By pleasure we mean the absence of pain in the body and of trouble in the soul. [131] It is not an unbroken succession of drinking-bouts and of revelry, not sexual love, not the enjoyment of the fish and other delicacies of a luxurious table, which produce a pleasant life; it is sober reasoning, searching out the grounds of every choice and avoidance, and banishing those beliefs through which the greatest tumults take possession of the soul. Of all this the beginning and the greatest good is prudence. Wherefore prudence is a more precious thing even than philosophy; from it spring all the other virtues, for it teaches that we cannot lead a life of pleasure which is not also a life of prudence, honour, and justice ; nor lead a life of prudence, honour, and justice, which

is not also a life of pleasure. For the virtues have grown into one with a pleasant life, and a pleasant life is inseparable from them.' (Letter to Menocoeus, in: Diogenes Laertius, 10.131-32)

Hedonism in popular use means not only indulgence in food and drinks but also Casanova-like licentiousness. This kind of wilful misunderstanding and hence conscious misrepresentation is not altogether new. Going back to the fourth century BCE, we find Aristophanes, the Greek comedian, in his play *Ekklesizousai* (c.390 BCE, variously translated as *The Assemblywomen*, *Congresswomen*, *Women in Parliament*, *Women Seize the Reins*, etc.), making fun of the idea of having everything in common, including women. Any satire is expected to exaggerate the object that is being held up for ridicule. Such a depiction therefore is only to be expected in a satirical Aristophanic comedy. But it is not to be taken as a truthful representation of what such ancient Greek egalitarianists actually proposed.⁷

The picture in medieval India was no different. Krishnamisra (c. eleventh century) in his allegorical play, *Prabodha-candrodaya* (The rising of the moon of Intellect), makes Carvaka say:

'Where is the embrace of the long-eyed ones, the embrace pressing the shoulder with one's arms and which is pleasing because of the prominent breasts compressed, and where is begging, fasting, penance, exposure to the burning heat of the sun which emaciate the body of these fools.' (2.22 p.43. For a different translation, see *C/L*, p.346)

Sayana-Madhava in his chapter on the Carvaka philosophy (chap.1) quotes the verse that follows in this play:

'The pleasure which arises to men from contact with sensible objects, is to be relinquished as accompanied by pain—such is the reasoning of fools; The berries of paddy, rich with the finest white grains, What man, seeking his true interest would fling away because these are covered with husk and dust.' (2.23 p.43; *C/L* p.249. For a different translation, see *C/L*, p.346)

In more recent times, socialists and communists have been similarly attacked for advocating 'free love,' promoting freedom of women from all social constraints, and abolishing such sanctimonious institutions as marriage, family, etc. Marx and Engels in the *Communist Manifesto* lashed out against this unjust charge:

'Abolition [*Aufhebung*] of the family! Even the most radical flare up at this infamous proposal of the Communists... .

On what foundation is the present family, the bourgeois family, based? On capital, on private gain. In its completely developed form, this family exists only among the bourgeoisie. But this state of things finds its complement in the practical absence of the family among the proletarians, and in public prostitution... .

The bourgeois family will vanish as a matter of course when its complement vanishes, and both will vanish with the vanishing of capital... .

The bourgeois sees his wife a mere instrument of production. He hears that the instruments of production are to be exploited in common, and, naturally, can come to no other conclusion that the lot of being common to all will likewise fall to the women. ...

He has not even a suspicion that the real point aimed at is to do away with the status of women as mere instruments of production... .

For the rest, nothing is more ridiculous than the virtuous indignation of our bourgeois at

the community of women which, they pretend, is to be openly and officially established by the Communists. The Communists have no need to introduce community of women; it has existed almost from time immemorial.' (Moscow ed. pp. 77-78)

All this does not signify hedonism of any kind, neither in relation to food and drinks, nor to man-woman relationship. In fact young Marx and Engels had already taken their stand vis-à-vis hedonism, as evidenced in *German Ideology*. They stated their view in no ambiguous terms:

'The *philosophy* which preaches enjoyment is as old in Europe as the Cyrenaic school [see note 1 below]. Just as in antiquity it was the Greeks who were the protagonists of this philosophy, so in modern times it is the French, and indeed for the same reason, because their temperament and their society made them most capable of enjoyment. The philosophy of enjoyment was never anything but the clever language of certain social circles who (sic) had the privilege of enjoyment. Apart from the fact that the manner and content of their enjoyment was always determined by the whole structure of the rest of society and suffered from all its contradictions, this philosophy became a mere *phrase* as soon as it began to lay claim to a universal character and proclaimed itself the outlook on life of society as a whole. It sank then to the level of edifying moralising, to a sophisticated palliation of existing society, or it was transformed into its opposite, by declaring compulsory asceticism to be enjoyment.' (GI pp.469-70).

Marx and Engels, not to speak of Lenin and his successors, did not deal with the question of materialism vis-à-vis hedonism in their later writings. As shown above, Marx and Engels had made up their mind about this in their early phase, when they were engaged in the exercise of 'self-clarification'.⁸ Yet Timpanaro states almost as an established fact that hedonism is as much a part of materialism as pessimism. This is an example of blatant revisionism in the domain of philosophy. However, in order to refute Timpanaro's claim, we need to study the development of Marx-Engels' approach through the stages they underwent in formulating their approach to human life and its goals. Let us examine the case against the backdrop of the development of Marx's and Engels's outlook in this regard from *EPM* (*Economical and Philosophic Manuscripts of 1844*, also known and often referred to as 'Paris Manuscripts'), through *GI* (*The German Ideology*, 1845-46), to *CM* (*Communist Manifesto*, 1847-48).

#

In the *Economic and Philosophic Manuscripts* Marx emphasized the fact that humans become truly human only when they can rise above consumption and set themselves to other kinds of activity excepting those meant to supply their daily needs, the means of subsistence. One of their objections against the capitalist society, nay of class society in any form, is that humans are reduced to mere animals by the social conditions created by the exploiting class. Marx writes:

'Just as in religion the spontaneous activity of the human imagination, of the human brain and the human heart, operates on the individual independently of him—that is, operates as an alien, divine or diabolical activity—so is the worker's activity not his spontaneous activity. It belongs to another; it is the loss of his self.' (*EPM* p.73).

What is the consequence of this self-alienation? Marx writes:

'As a result, therefore, man (the worker) only feels himself freely active in his animal functions—eating, drinking, procreating, or at most in his dwelling and in dressing-up, etc.; and in his human functions he no longer feels himself to be anything but an animal. What is animal becomes human and what is human becomes animal.' (*EPM* p. 73)

Does Marx speak like Axel, the aristocrat in Comte de Auguste Villiers de l'Isle-Adam (1836-89)'s play, *Axel*, who tells her beloved Sara non-chalantly: 'Living? The servants will do that for us' (*Vivre? les serviteurs feront cela pour nous*. Act 4 Scene 1, p.283).⁹ No. Marx was quite conscious of the biological needs of humans:

'Certainly eating, drinking, procreating, etc., are also genuinely human functions. But taken abstractly, separated from the sphere of all other human activity and turned into sole and ultimate ends, they are animal functions.' (*EPM* p. 73)

We hear an echo of this in Engels's *Condition of the Working Class in England* (1845):

'The southern facile character of the Irishman, his crudity, which places him but little above the savage, his contempt for all humane enjoyments, in which his very crudeness makes him incapable of sharing, his filth and poverty, all favour drunkenness. The temptation is great, he cannot resist it, and so when he has money he gets rid of it down his throat. What else should he do? How can society blame him when it places him in a position in which he almost of necessity becomes a drunkard; when it leaves him to himself, to his savagery?' (*CWCE* pp. 126-27)

In the same work, young Engels laments:

'It offers no field for mental activity, and claims just enough of his (sc. worker's) attention to keep him from thinking of anything else. And a sentence to such work, to work which takes his whole time for itself, leaving him scarcely time to eat and sleep, none for physical exercise in the open air, or the enjoyment of Nature, much less for mental activity, how can such a sentence help degrading a human being to the level of a brute?' (*CWCE* pp. 152)

What makes humans distinct from all other species belonging to the same genus is that the humans are *productive while others are not*. Marx distinguished between the concept of production in animals and humans in this way:

'Admittedly animals also produce. They build themselves nests, dwellings, like the bees, beavers, ants, etc. But an animal only produces what it immediately needs for itself or its young. It produces one-sidedly, whilst man produces universally. It produces only under the dominion of immediate physical need, whilst man produces even when he is free from physical need and only truly produces in freedom therefrom. An animal produces only itself, whilst man reproduces the whole of nature. An animal's product belongs immediately to its physical body, whilst man freely confronts his product. An animal forms only in accordance with the standard and the need of the species to which it belongs, whilst man knows how to produce in accordance with the standard of every species, and knows how to apply everywhere the inherent standard to the object.' (*EPM* pp. 75-76)

And then comes the most startling sentence, or rather an apophthegm or maxim: 'Man therefore also forms objects in accordance with the laws of beauty.' (*EPM* p.76)

Marx developed this idea more lucidly in *Capital*, Vol. I:

'We pre-suppose labour in a form that stamps it as exclusively human. A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in

the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination [the German text reads *Kopf*, 'head'] before he erects it in reality. At the end of every labour-process, we get a result that already existed in the imagination of the labourer at its commencement. He not only effects a change of form in the material on which he works, but he also realises a purpose of his own that gives the law to his *modus operandi*, and to which he must subordinate his will.¹⁰ (Moscow ed. 3:7, p. 174)

'Prostitution is only a specific expression of the general prostitution of the labourer, and since it is a relationship in which falls not the prostitute alone, but also the one who prostitutes—and the latter's abomination is still greater—the capitalist, etc., also comes under this head.'¹¹ (EPM pp.99-100 n31)

In EPM Marx also speaks of man-woman relations:

Prostitution to Marx is not just a special case of domination. It demeans both the exploiter and the exploited. It is viewed against the backdrop of capitalist exploitation as a whole. He goes on explaining:

'In the approach to woman as the spoil and handmaid of communal lust is expressed the infinite degradation in which man exists for himself, for the secret of this approach has its unambiguous decisive, plain and undisguised expression in the relation of man to woman and in the manner in which the direct and natural procreative relationship is conceived. The direct, natural, and necessary relation of person to person is the relation of man to woman. In this natural relationship of the sexes man's relation to nature is immediately his relation to man, just as his relation to man is immediately his relation to nature—his own natural function.' (EPM pp.100-01. Italics in the original.)

Marx also distinguished between food as such and what he significantly calls the '*human form of food*'. He says:

'For the starving man, it is not the human form of food that exists, but only its abstract existence as food. It could just as well be there in its crudest form, and it would be impossible to say wherein this feeding activity differs from that of animals.' (EPM p.109)

#

There is no room for doubt that in their first attempts at self-clarification Marx and Engels emphasized the need for food and drinks, clothing and habitation, which are essential for the survival of all humans at all times. In their joint work, *German Ideology* they observed:

'The premises from which we begin are not arbitrary ones, not dogmas, but real premises from which abstraction can only be made in the imagination. They are the real individuals, their activity and the material conditions under which they live, both those which they find already existing and those produced by their activity. These premises can thus be verified in a purely empirical way.

The first premise of all human history is, of course, the existence of living human individuals. Thus the first fact to be established is the physical organisation of these individuals and their consequent relation to the rest of nature. Of course, we cannot here go either into the actual physical nature of man, or into the natural conditions in which man finds himself—geological, orohydrographical, climatic and so on. The writing of history must always set out from these natural bases and their modification in the course of history through the action of

men.' (GI p. 31)

At the same time Marx and Engels again distinguished between humans and all other animals in the following way:

'Men can be distinguished from animals by consciousness, by religion or anything else you like. They themselves begin to distinguish themselves from animals as soon as they begin to produce their means of subsistence, a step which is conditioned by their physical organisation. By producing their means of subsistence men are indirectly producing their actual material life.' (GI p. 31. Italics in the original.)

Here is a purely objective way of viewing things, not from the angle of *consumption*, but from that of *production*. Consumption does not occupy any significant place in the Marxian model of studying human societies, whether pre-capitalist or capitalist.

All this amply proves how Marx viewed the function of food not merely as a means of subsistence but also as a human product, something to be enjoyed only when one is eating not just because one is hungry but because one is prepared to appreciate the art of cuisine as well as the appearance of the dishes to please the eye. In other words, only by transcending the basic natural need for food that human kind can really achieve the aesthetic and truly human enjoyment. It is neither the gourmet nor the gourmand that Marx approves of. Food should have a properly human relationship to all humans, who do not suffer from hunger and can enjoy their food as a human product.

#

In the *Communist Manifesto* Marx and Engels do not openly discuss the views of Babeuf (1760-97), the French egalitarianist. But Charles Andler is of the opinion that "Babeuf is by implication classed [by Marx and Engels] among the reactionaries as one of those who 'preached universal asceticism and a crude egalitarianism' ". (Qtd. in Ryazanoff, CM, p.230). Whether or not such a view is tenable, the fact is that Marx and Engels were very much opposed to any form of asceticism. In their satire against Feudal Socialism they write:

'Nothing is easier than to give Christian asceticism a Socialist tinge. Has not Christianity declaimed against private property, against marriage, against the State? Has it not preached in the place of these, charity and poverty, celibacy and mortification of the flesh, monastic life and Mother Church? Christian Socialism is but the holy water with which the priest consecrates the heart-burnings of the aristocrat.' (CM, Moscow ed. p.89)

Of course Babeuf cannot and should not be tarred in the same brush as the preachers of Christian Socialism. He had no intention of pleasing either the aristocrats or the priests. Yet it cannot be denied that in the writings of at least some of the Babeuvists the idea of 'universal asceticism and a crude equalitarianism' are encountered. (Ryazanoff p.232). Engels in his *The Peasant War in Germany* (1850, revised ed. 1874) accounts for the feature 'why asceticism not only characterized the risings of medieval days but likewise, at the outset, tinged with religious hues every proletarian movement of recent times' (Ryazanoff CM, p.232). The passage, in spite of its great length, is worth quoting in full:

'Already among these precursors of the movement we notice an asceticism which is to be found in all mediaeval uprisings that were tinged with religion, and also in modern times at the beginning of every proletarian movement. This austerity of behaviour, this insistence on relinquishing all enjoyment of life, contrasts the ruling classes with the principle of Spartan

equality. Nevertheless, it is a necessary transitional stage, without which the lowest strata of society could never start a movement. In order to develop revolutionary energy, in order to become conscious of their own hostile position towards all other elements of society, in order to concentrate as a class, the lower strata of society must begin with stripping themselves of everything that could reconcile them to the existing system of society. They must renounce all pleasures which would make their subdued position in the least tolerable and of which even the severest pressure could not deprive them.

This *plebeian and proletarian asceticism* differs widely, both by its wild fanatic form and by its contents, from the middle-class asceticism as preached by the middle-class Lutheran morality and by the English Puritans (to be distinguished from the independent and farther-reaching sects) whose whole secret is middle-class thrift. It is quite obvious that this *plebeian and proletarian asceticism* loses its revolutionary character when the development of modern productive forces increases the number of commodities, thus rendering Spartan equality superfluous, and on the other hand, the very position of the proletariat in society, and thereby the proletariat itself becomes more and more revolutionary. Gradually, this asceticism disappears from among the masses. Among the sects with which it survives, it degenerates either into bourgeois parsimony or into high-sounding virtuousness which, in the end, is nothing more than Philistine or guild-artisan niggardliness. Besides, renunciation of pleasures need not be preached to the proletariat for the simple reason that it has almost nothing more to renounce'. (PWG pp. 63-64. Italics in the original.)

Notwithstanding this striking feature, asceticism cannot be a part of the communist programme as Marx and Engels envisaged it. But a negation of asceticism and abstinence does not necessarily lead to an assertion of the other extreme: eating and drinking and making merriment are the sole aims of life. In fact, given Marx's views of the future communist society, it is conceivable that he wanted to steer a middle course between unlimited consumption and total abstinence, the golden mean that would make human life happy without overindulgence either in too much of sensual enjoyment or scrupulously avoiding all pleasures.

Marx and Engels preferred to see humans not as isolated individuals but as units in a well-organized society. They would all get whatever they need (and needs would obviously vary from person to person, depending on each one's circumstances) and they would contribute to social welfare to the best of their ability. Marx formulated the goal of communism in his *Critique of the Gotha Programme*: 'From each according to his ability, to each according to his needs!' (Moscow ed. p.22; Peking ed. p.17). Such a society would demand rational men and women, not trying to keep up with the Joneses; on the other hand, they should be conscious of others' needs, not only of their own. Consumption would be based on rational choice, not on what 'the hidden persuaders' (in Packard's words) would make them do. Since there would be neither any status (as in the pre-capitalist societies) nor any class division (as it prevailed in all human societies after the dissolution of the pre-class society, otherwise known as 'primitive communism'), both consumption and production would be organized on rational lines. Self-enjoyment at the cost of others would have no room in such a society.

In view of all this, Timpanaro's advocacy for hedonism as inhering in materialism (including Marx's) seems to be not only ill-conceived, but also harmful to the understanding of the socio-philosophical basis of communism. Materialism to many has one and only one mean-

ing: 'a tendency to consider material possession and physical comfort as more important than spiritual values' (as given in the *Concise Oxford English Dictionary*). The other meaning, 'Philosophy the doctrine that nothing exists except matter and its movements and modifications,' is seldom noted and understood. By equating materialist ethics with hedonism Timpanaro has strengthened the hands of the anti-materialists and fideists. Instead of throwing light on the matter, he has made the confusion worse confounded.

We can do no better than conclude this critique with what Engels famously observed in *Ludwig Feurbach*:

'By the word materialism, the philistine understands gluttony, drunkenness, lust of the eye, lust of the flesh, arrogance, cupidity, avarice, covetousness, profit-hunting, and stock-exchange swindling—in short, all the filthy vices in which he himself indulges in private. By the word idealism he understands the belief in virtue, universal philanthropy, and in a general way a "better world", of which he boasts before others but in which he himself at the utmost believes only so long as he is having the blues or is going through the bankruptcy consequent upon his customary "materialist" excesses.' (*On Religion*, p.237)

Notes

To the readers: Quotations from some sources, more particularly from the works of Karl Marx and Frederick Engels, unless otherwise mentioned, are taken from the texts available in the Marxist Internet Archive. For facilitating references and locating the exact place, the page numbers in the print versions are also given, although the translations will vary to some extent.

1. In order to have a general understanding of hedonism as a technical, philosophical term, see 'Aristippus of Cyrene (c. 435-350 BC),' 'Cyrenaics,' and 'hedonism' in Blackburn (or any other dictionary/encyclopedia of western philosophy). See also Shields, and Tännsjö.
2. See, for instance, Bottomore and others (eds.). There is no article on hedonism and no reference to it in the article on ethics. See also Eagleton.
3. See the works by Ash, Kamenka, and Sayers, devoted exclusively to the place of ethics in Marxism.
4. It is amusing to note that, while almost all the Presocratic and post-Socratic philosophers such as Plato, Aristotle, and Cicero are placed in the first circle of Dante's *Inferno* (Canto 4), Epicurus and his followers are separated and assigned to the sixth circle (Canto 10), their sin being that they 'make the soul die with the body.' But Dante did not continue to hold the same view of Epicurus throughout his life. See Mazzeo pp.106-20.
5. For a bird's-eye view of Epicurus and his philosophy, particularly ethics, see Bogomolov, pp. 259-78 and Shields (ed.), pp. 237-50.
6. Clarified butter = *ghrita*, *ghee*, or *ghiu* in Modern North Indian languages, an essential item of delicacy for the well-to-do in their daily meal.
7. It is interesting to observe that in medieval England, of all persons, Plato and Seneca were taken to be the advocates of communism! In *Piers the Plowman* by William Langland (c.1332-c.1400CE) a passage runs as follows:

- Envy heard this and bade Friars go to college
 And learn logic and law and also the contemplative life,
 And preach to men of Plato and prove it by Seneca,
 That all things under heaven ought to be in common (Passus XX, p.198)
8. Marx and Engels did not succeed in publishing *German Ideology* in book form in their life time. The ms lay 'abandoned to the gnawing criticism of the mice'. But they were not overly concerned, for the main purpose behind writing the book was to achieve self-clarification, and they felt they had achieved it. See *GI*, pp. 13 and 681-82 n1.
9. In another edition of *Axel* published by J. M. Dent et Fils, the sentence occurs on p. 260. The play, otherwise insignificant, is widely known for this speech alone.
10. For a somewhat different translation of this highly significant passage see *Capital* (Penguin Books), vol.1, 7:1, p. 284.
11. This note is given by Marx on page V of the manuscript where it is separated by a horizontal line from the main text, but according to its meaning it refers to this sentence. (Note by Progress Publishers)

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Simple and Higher Categories of the Dialectic

Georg Lukács

Of course this interconnection is not in any way a mechanical dependence of both realms of cognition on each other. Since its material foundation is a dialectical process, since the economic structure of society and exchange of matter with nature permanently find themselves in a real dialectical interaction with one another, the objective interconnection is also always a dialectical one. Even within social phenomena these interconnections do not simply form, but are formed in a way that changes in the course of historical development. That is in a way whereby not only the phenomena change their contents—such changes are recognised by bourgeois history-writing too—but also the structure of the interconnection changes as a result of the changes of real materials. Thus Marx points out repeatedly such an ‘unequal development of material production and, e.g. that of art’ (*A Contribution to the Critique of Political Economy*, MECW 28, p. 46). The following expositions, however, show that art is really only an example, and the same unequal development can emerge between law and production. An insoluble problem ensues only for mechanical bourgeois thought—which has to remain trapped in the fetishistic antinomy of ‘eternal iron laws’ or ‘unique individuality’. In dialectical materialism the structural problem is solved historically (i.e. through pointing out the concrete, real historical genesis of the structure concerned), and the historical problem is solved theoretically (that is through pointing out the obedience to the law that the concrete material under consideration has produced). Therefore Marx stresses the follow-

ing in relation to the sequence of economic categories : ‘their order of succession is determined by their mutual relationship in modern bourgeois society and this is quite the reverse of what appears to be natural to them or in accordance with the sequence of historical development’ (MECW 28, p. 44).

However, in no way does the fact that the real objective process is dialectical and that the emergence and linkages of the insights that correctly reflect it are also dialectical mean that all knowledge always appears in the *form of knowledge of the dialectical method*. The claim of the young Marx : ‘Reason has always existed, just not always in reasonable form’ is also true of the dialectic. It depends on the economic structure of society and the class position that the perceiver takes up within it whether and how far an objective dialectical interconnection adopts a dialectical form in thought, whether and how much people can become conscious of the dialectical character of the interconnection concerned. Under some circumstances it may not come to light at all in thought, epistemologically. It might appear as an insoluble contradiction, as an antinomy. It might be understood correctly in terms of some of its traits, without it being possible to determine its correct place in the development as a whole, etc. From what has been said so far it is clear that such knowledge can be, despite all that, at least partially, objectively correct. But theoretically correct, dialectical, knowledge can be found only when the historical development of society is so advanced that the real problems that lie at the basis of these contradictions, etc., are solved historically, or advance towards their solution. In other words : the dissolution, the overcoming of dialectical contradiction is produced by reality through real historical processes. Thought can, under particular conditions, pre-empt such processes mentally; however that is only when this overcoming is present as a real, if practically immature, tendency of development objectively in the real process of history. And if this interconnection has not become fully conscious through the real process of history, if each dialectical problem is not related to its concrete material basis, then that mental pre-empting must stray into abstraction, into idealism (Hegel).

At this point the most serious objection to my conception of dialectics, raised by Deborin, can be appreciated : my neglect of the simple categories of the dialectic in favour of the higher ones, Deborin says : ‘We simply wish to underline the fact that Hegel always considered the process of development in all its moments, that, scaling the peak of the absolute idea, he showed at the same time that the process as a whole forms its content. The forwards movement begins from abstract and simple concepts or categories and advances to the next concepts, which become increasingly richer and more concrete’ (*Arbeiterliteratur* IX, p. 636). As a description of the *mode of exposition* of Hegel that is—by and large—correct, and it is possible that Hegel as an idealist was often trapped in the illusion that this mode of exposition of the dialectical categories corresponded as much to their objective real interconnections as to the real process of their discernibility. For Marx, to whom Deborin ‘by and large’ ascribes this point of view (ibid.), it is certainly not the case. Marx was always completely clear about the fact that what is lower (simpler, more abstract) can only be *recognised from* the higher (more complicated, more concrete). He says : ‘The anatomy of man is a key to the anatomy of the ape. On the other hand, rudiments of more advanced forms in the lower species of animals can only be understood when the more advanced forms are already known. Bourgeois economy thus provides a key to the economy of antiquity, etc.’ (*A Contribution to the Critique of Political Economy*, MECW 28, p. 42). The simple category is then, for Marx, the

starting point of the *exposition* (commodity, labour, money, etc.). His materialist dialectic, his historical materialism, however, saves him from the error of overlooking the historical (under certain circumstances historically delayed, much diverted) character of simple categories. He comments there precisely about labour: 'Labour seems to be a very simple category. The notion of labour in this universal form, as labour in general, is also extremely old. Nevertheless "labour" in this simplicity is economically considered just as modern a category as the relations that give rise to this simple abstraction. ... The simplest abstraction, which plays a decisive role in modern political economy, an abstraction that expresses an ancient relation existing in all social formations, nevertheless appears to be actually true in this abstract form only as a category of the most modern society' (*A Contribution to the Critique of Political Economy*, MECW 28, p. 40). Therefore: 'the method of advancing from the abstract to the concrete is thinking the way in which thinking assimilates the way in which thinking assimilates the concrete and reproduces it as a concrete mental category. This is, however, by no means the process of the evolution of the concrete world itself (ibid.). If he identifies the method of Hegel 'by and large' with that of Marx, Deborin succumbs to Hegel's illusion that 'the real world is the result of thinking which causes its own synthesis, its own deepening and its own movement' (ibid.). It would not be too difficult to derive this method from all of Marx's later, concrete explanations; and thereby one could discern that he always refused to conceive the concrete totality as constructed in reality of its simple abstract elements, although he (very correctly!) often used this construction as a mode of exposition. I will cite only one passage about crises :

No crisis can exist unless sale and purchase are separated from one another and come into conflict, or the contradictions contained in money as a means of payment actually come into play; crisis, therefore, cannot exist without manifesting itself at the same time in its simple form, as the contradiction between sale and purchase and the contradiction of money as a means of payment. But these are merely *forms*, general possibilities of crisis, and hence also forms, abstract forms, of actual crisis. In them, the nature of crisis appears in its simplest forms, and, in so far as this form is itself the simplest content of crisis, in its simplest content. But the content is not yet *substantiated*. Simple circulation of money and even the circulation of money as a means of payment—are possible and actually take place without crises. These forms alone, therefore, do not explain why their crucial aspect becomes prominent and why the potential contradiction contained in them becomes a real contradiction. (*Theories of Surplus Value* II, p. 512)

It is quite easy to see in all this the interconnection of 'simple' and 'higher' categories in Marx. Higher categories must be produced in reality by the historical process, and they must be correctly recognised in their dialectical interconnections, so that the historical and systematic functions of the simple categories that correspond to them can be recognised. To imagine the process the other way round is an idealist illusion and leads—if carried to a logical conclusion—to an apologia for what exists, whereby the simple category figures as a fundamental element, which Marx convincingly refutes in the passage just cited on bourgeois crisis theory. I would like to remark in passing that the much mentioned 'contradictions' between the first and the third volumes of *Capital*—the inability of bourgeois economy to understand that the more concrete, modifying determinations of the third volume must have been known to Marx before the writing of the first volume—can be traced back to a similar methodological

disposition. Clarity about this aspect of Marx's method is of great importance in understanding the materialist dialectic. There must be clarity about the fact that the so-called simple categories are not trans-historical elements of the system, but are *just as much* products of historical development as the concrete totalities to which they belong, and that, therefore, simple categories are correctly grasped from higher, more complicated, more concrete ones. That is to say it is only the comprehension of the concrete whole, to which the simple categories belong, that makes possible knowledge of the simple ones and not the other way round, even if as has already been outlined—its exposition must often take a reversed path.

All this provides an answer to Rudas's question—about whose rationale he does not even dare 'express his suspicions' (*Arbeiterliteratur* IX, p. 503)—as to why precisely I characterise as the decisive dialectical categories not transformation of quantity into quality, etc., but rather interaction of subject and object, unity of theory and praxis, alteration of the categories as effect of the change of material (reality underlying the categories). It is because, Comrade Rudas, expressed in thought in these categories is what is specific and new in that social stage of development when the proletariat emerges as an independent class and sets about the transformation of society. It would contradict the essence of historical materialism if we did not conceive the emergence of the dialectical method as just as much a part of the real historical process, perceiving simply a scientific development as much in the idealistic dialectic of Hegel as in its overturning, its 'putting on its feet' by Marx. We must always keep in view those real economic, class-conditioned moments of history that make this mental development possible and motivated it. Then it becomes clear how much, on the one hand, those categories that in Hegel himself, in the most abstract and idealist part of his Logic ('Logic of the Concept') form the peak of his system, become real, practical moments of the proletarian class struggle. And, on the other hand, the 'simple' categories, whose determination and discernibility is dependent in both cases on the 'higher' categories, lose their idealist character in Marx, are placed on their feet, and appear as abstractions motivated by the historical process of development. Whatever 'simple' categories one takes in Marx, one will find that they can be correctly grasped only from this perspective. Whoever allows the 'decisive' categories mentioned above to disappear from the system as do all opportunists—eternalises the 'simple' categories in the form that they adopt in bourgeois immediacy. Thereby any dialectical function is gradually lost. Such a 'Marxist' economics all of a sudden transforms itself into vulgar bourgeois economics (Kautsky, Hilferding, etc.). 'Dialectical' categories that have been severed from this connection can even be used by bourgeois researchers; it is not inconceivable that they might, for example, be able to work with the transformation of quantity into quality. The category becomes properly dialectical only in the *context of the dialectical totality*, which can be achieved—mentally—only through the dialectical mediation of the 'simple' categories with the concrete 'higher' ones. It has to be in this interconnection because only this connection offers the real and correct *mental reproduction of the real historical process*. It is therefore social being that determines the consciousness of humans.

Source : Lukacs, Georg. *A Defence of History and Class Consciousness : Tallism and the Dialectic*, translated by Esther Leslie, with an introduction by John Rees and a postface by Slavoj Žižek (London; New York : Verso, 2000), section II.2, pp. 108–113 **PAS**

Bourgeois Society And Bourgeois Science

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The present period is marked by a crisis in both society and sociology, and our task is to assess critically the existing conditions of man's life and try to alter them. It seems that through technical devices and modern forms of manipulation the »realm of necessity« is penetrating into all pores of contemporary man's life. Man continually adds to his material possessions and uses a growing number of devices that ought to ensure for him a more leisurely life. However, instead of technical civilization serving man, he himself becomes its slave. The acquisition of material goods, to which he is slave, is becoming the object of his life. And just as he produces goods in conditions which are inconsistent with his nature, man as a consumer does not satisfy his human needs in a human manner. This seems to contain the paradox of man's present situation : never in human history has technical and social advance been so marked as it is at present, but at the same time, neither has the power of the social forces alienated from man ever been greater.

Never before in history has man been nearer to freedom, and never has he been so helpless in the face of forces he himself has brought into being.

Science too has not escaped this paradox of modern man. While scientific discoveries in all fields of human creativity offer modern man undreamed-of prospects of development, they also bring the possibility of a total destruction of everything he has created, and even of man himself. Nowadays science is one of the most important instruments not only of man's power, but also of power over man, - i.e. the power to manipulate man as an automaton and do violence to him. Like *dogs* or monkeys men are sent into space and this is proclaimed a *scientific* feat. Only few people wonder whether the blights of these human guinea-pigs would have really taken place unless the centres of military might of the great powers wanted to increase their power still more.

We live in a time in which the scientist as a public worker is disappearing from the social scene and becoming an employee of state institutions or powerful economic corporations. In an increasing degree the institutions of modern society restrict human freedom, manipulating not only the results of scientific work in the manner which they believe to be most suitable, but also personalities, ideas and the activities of scientists. Institutions of social power are not interested in people who, because of their intellectual power, will rouse the consciousness of their respective nations or ensure the advancement of society by developing its critical consciousness and bringing about more human relations between people. They are more interested in practicians and administrators who will deal with concrete problems of the state institutions and corporations in which they are employed. In fact, in the name of »higher aims« these institutions often thwart and reject the former and encourage the latter. There is an increasing demand for, and-unfortunately-also a growing supply of, »scientists« who are ready to devote themselves to problems of social practice taken pragmatistically, and to

»deal with problems of our social reality«, i.e. scientists, who, let alone trying to change the world in which they live and work, are concerned with those kinds of problems and related social developments of which they have no understanding in spite of being their witnesses. Thus in modern society there is a growing demand for good social technicians, while the self-conscious analysts who try to take a critical attitude to the world in which they live are increasingly thwarted.

Modern bourgeois society has always tried to find a suitable theoretical term for the *existing* order of things. Admittedly, it has not encountered major difficulties in these efforts. The tragedy of modern man lies perhaps in the fact that *any* regime or social system will find (scientific) writers who are willing to act as its apologists. Therefore in the pragmatically orientated industrial world there is often no room for a theoretical study of the historical dimensions of crucial social problems. The innumerable aspects of history and life, of aspirations and ideals cannot be absorbed by even the most perfect electronic statistical machines, just as they remain outside »supertheoretical« ideological thinking. In a society which seeks to change *everything*,-from consumer goods (such as moter-cars or tooth paste) to the system of democracy and the manner of living in general (>the American way of life«, »stroiteljstvo komunizma«)-into a fetish and a *myth*, there is neither the possibility nor space for the realization of a deep-lying situation in which the pragmatic and non-historical concept of society has quite a definite function,-a function which is not only mythological but also instrumental, technical and operational. In the centres of social power there prevails an anti-historical and anti-theoretical attitude : history becomes a research ballast«, and theory-»subversive activity«.

From this picture of modern industrial society one cannot exclude Stalinist positivism. Here too, pragmatistic nihilism has come into play: the rational interpretation of social reality is cut and re-cut according to daily requirements and the relations of political forces, becoming modified according to the 'orders of the day' of the political leadership.

The origin of bourgeois (social) science (as well as of other sciences) should be sought in the anthropocentrism and analytical spirit of bourgeois philosophy of the Modern Age, primarily of Bacon and Descartes. This acceptance of the anthropocentric concept of the world meant that man had become (or had wanted to become) the absolute centre of the world, a universal subject, with all other creatures, including other people, becoming the objects of man's cognition. It is this very transformation of man into a universal subject, and of all other creatures into universal objects, that forms the foundation stone of *the scientific* approach in bourgeois society. One would say that Faust rather than Mephistopheles is the symbol of human temptation. This attitude of modern man to the world, and his attempts to turn other creatures into the objects of his own activity and analytical study have something of a Promethean heroism about them but they also include the deep tragedy of alienation and reification. In fact, in the course of its development bourgeois science has increasingly departed from ancient science, which put *the logos* of phenomena into the centre of its interest, while orientating its research efforts towards discovering, understanding and explaining the immense world of facts; thus it has broken up *the integrity* of the world and fragmented it into individual fields. Specialisms in science have become more and more emphasized, leaving the totality of society outside its horizon.

If man has become a universal subject, and all other creatures have become universal

objects, it is quite understandable that bourgeois society has become *an absolute* social form,—regarded, of course, from the view-point of bourgeois science. Thus bourgeois science has linked its own fate with that of bourgeois society. In order to make this connection clearer, it must be noted that science treats its subject as a universe of lawfully structured facts. Science approaches a subject creatively by exhausting it analytically and explaining it completely. Thus science's approach to a subject is one of exactness. The premise of the bourgeois concept of science is then a lawfully structured order of facts which cannot be radically changed but can be understood and, to a certain extent, >>reformed<<; the result is science as instrumental-technical knowledge of a subject. This means science as a reified conscience, bourgeois society thus appears as the final, essentially unchangeable and most perfect form of social development, and bourgeois science (as an institution of bourgeois society) as one of the most important instruments of its stabilization.

* * *

There is no doubt that Hegel is one of the philosophers who have made a major contribution to the fundamentals of bourgeois social science, but also—and this is even more important—to the idea of the need for developing an integrated approach to society as a concretely historical totality.¹ It requires no special study to establish that Hegel's shadow stands above bourgeois social science. It suffices to bear in mind the following points :

(1) *The historicity* of Hegel's thought which does not postulate a one-sided historical approach to society as a totality, but incorporates essential logical and theoretical components.

(2) The possibility to develop a truly dialectical approach to society on the basis of Hegel's concepts of history. It is enough to recall that for Hegel world history was a dialectical clash between freedom and necessity.

(3) Especially important is the idea (and nobody before Hegel had expressed it more clearly or precisely) that the development of society throughout history is a *lawful* process consisting in a struggle of contrasts rather than being a simple single-line progress towards freedom. Historical laws are expressed in man's consciousness and aspirations to freedom. And from this idea to the view of human practice as a purposeful, creative and essentially free activity, there is only one step. And not this alone. Of great importance also is Hegel's view that the laws of history should be interpreted from facts. It is only in this measure—as shown by Marcuse—that Hegel's method of historical study is empirical.

(4) Finally, the fact of man's alienation—in the form in which it is analysed by Marx in critical opposition to Hegel—is of exceptional importance for bourgeois (social) science. One may well maintain, for instance, that sociology is possible if man as a reality forms its basic subject. Under what circumstances does man become the subject of science? The very fact that man is alienated makes it possible to make him a subject of science. Thus the idea and reality of man's alienation become the *sine qua non* of the idea and reality both of sociology as a form of (>-false<) consciousness and for bourgeois society as a surrogate of a real

human community. In fact, in a free interpretation of Marx's idea one may say that alienation is a limiting concept of man's history as a whole, while all the known historical types of class society, in which man is alienated, form the prehistory for a true human community with which mankind's real history only begins.

Thus Marx's critical attitude to Hegel offers the basis for a stable viewpoint : If man were free, neither bourgeois society nor sociology as science would be possible. For sociology would be impossible as a science if social relations did not appear to man as something strange, alienated and alien to him. It is to Marx's credit that he showed this as applying to all social sciences including philosophy. He developed a evolutionary critical approach to society and history exposing the antinomies of the theoretical and historical, philosophical and economic, spiritual and material approaches. As a critic of all forms of ideology he clearly saw the ideological character of science, not only because bourgeois science is an apology of bourgeois society. In fact, it often is not apologetic, but nevertheless it is essentially ideological. This science is a fitting expression of a society which is alienated in its essence and transient in its historical determination. Therefore Marx, no matter how paradoxical this may appear, is not a scientist but rather a critic of bourgeois science as a reified consciousness. As a critic of bourgeois science, for instance of political economics, Marx succeeded in exposing the fetishism of commodities and the alienated character of man's work where bourgeois national economy exclusively sees commodities and labour. He could write 'Das Kapital'—>>a critique of political economy—but not write on political economics, because this would leave him within the framework of bourgeois society for the dialectical abolition of which he strove throughout his life. The following passage from the epilogue to the second (German) edition of 'Das Kapital' leaves no room for doubt: >>Political economy as a bourgeois science, i.e. as a science which understands the capitalist order not as a historically transient stage of development, but on the contrary as the absolute ultimate form of social production, can remain a science only as long as class struggle remains latent and becomes manifest exclusively in isolated phenomena<<.²

At this point one must ask the following question : Can sociology play a part in the process of freeing man, even in this alienated world in which it can exist as an independent science? The reply can be in the affirmative, provided that sociology continues trying to transient itself as a stabilizing, planned, reformatory, positive and in most cases positivistic science. Sociology has its historical chance to participate in the revolutionary transformation of the world, provided it endeavours to destroy its own scientific model. It will be able to achieve this by revealing critically the limits of its own methodology, i.e. of its own cognitive potentialities, and by becoming aware of its critical task. This gives it the chance to discover the meaning and limits of its own existence while determining itself as a historically transitional institution of the bourgeois world. This self-cognition of sociology as a critical consciousness, not only of society but also of itself, enables it to make itself, i.e. its own essence, the subject of its own criticism and to negate itself by abolishing its own positivistic character. But then the category of criticism becomes for sociology immanent rather than external, revolutionary rather than functional. Thus sociology becomes not only a science which interprets its own subject, but also the critical consciousness of that subject; by self-criticism and self-negation it realizes its own potentiality. However, as long as the bourgeois industrial class society survives, sociology too will continue to exist as one of its vital ideological

¹ Two basic orientations are generally believed to branch out from Saint Simon's concept of society : Marx's revolutionary and critical orientation and Comte's positivistic orientation. This gives Saint Simon the credit of being one of the founders of sociology. Discussions on the origin of sociology tend to neglect the influence of Hegel's ideas which gave Marx much more encouragement than did those of Saint Simon.

supports and stabilizing elements.

We are still in the fore-court of mankind's history where bourgeois society and bourgeois science will stay for ever. However, the new, *true* history of mankind is not a point in the future that man will inevitably reach one day. It is something that man must strive for. A truly human community is possible only under the premise of revolution. Only a persistent and permanent struggle for man's freedom will lead to the destruction of bourgeois society (and also of those aspects of modern society which are concealed behind slogans of socialism but, as regards manipulation of, and violence over, man are no different from the bourgeois world) and even of bourgeois science as a form of its reified consciousness. Consequently, in the evolutionary processes of the abolition of the bourgeois world one can actually discern the twilight of bourgeois science. In this revolt against bourgeois society and all its institutions, including science, the future is present within us in the measure in which we abolish ourselves as citizens, and our society as bourgeois society. One can say that one of the basic characteristics of the situation of modern man is this contradiction between the total alienation of the world in which he lives and the »curse« of revolt he carries within himself.

The position of rebellion against the positive order of bourgeois society does not merely mean its destruction, but includes within itself, as essential constitutive elements, the *reflection of revolution*, or the *revolution of reflection*, in which the division between theory and practice disappears so that theory becomes a material force, and human practice becomes reflex. The old categories of bourgeois science can no longer satisfy the new requirements of revolution. Revolution calls for categories of its own and these—to use an analogy with Hegel's words written in the Introduction to the *Phenomenology of the Spirit*—cannot be »analysed scientifically«, »interpreted« or »explained« but can only be deduced and expounded, with this very »deducing« and »expounding« of the categories of revolution already amounting to its realization.

It is thus indispensable to constitute an integral viewpoint for a radical criticism of bourgeois society. In contrast to the bourgeois world's »realm of necessity« this view-point of support in the »realm of freedom«, i.e. in the idea of the abolition of contrasts between subject and object and in regarding history as totality and as a medium in which both the subject and the object seek their dialectical unity,—*communism*. The path of reflection towards this unity undoubtedly leads through Marx's ideas about »the science of history« and a truly human community. Success can only come from that idea and that action which realize that the liberation of man and the dialectical abolition of bourgeois society offer *the only path of hope* and—to use a paradoxical phrase—the *real Utopia* left to modern man.

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Machine-Monster and Machine-Man

Dhirendranath Gangopadhyay

After industrial revolution a section of artist, writer and philosopher are seized by terrible fear of machine-monster. Though in this era of tremendous development of technology, we see an all through intense fear of technology. The reason of this fear is continuous, steady deterioration of interhuman relationship in this era of automation. The reason of this fear is gradual loss of humanism, emergence of mechanical relationship. The reason of this fear is man's transformation into machine, birth of automated man or automation - increase of alienation in width and depth.

Now straightway we can go to the question of alienation. In 1844 Marx had written, "Just as in religion the spontaneous activity of the human imagination, of the human brain and of the human heart, operates independently of the individual - that it operates on him as an alien, divine or diabolical activity - in the same way the worker's activity is not his spontaneous activity. It belongs to another; it is the loss of his self."

After industrial revolution the condition of the working class was extremely bad. They did not feel any active inspiration except maintaining just a organic life. It was difficult to see any demarcation between beastly instincts and human finer senses. "What is animal becomes human and what is human becomes animal." The man who is alienated from his labour has no right on his production. As the quantity and quality of production were gradually increasing, so the working class were realising that amount of helplessness.

"With the increasing value of the world of things proceeds in direct proportion the devaluation of the world of men." ... "The more man puts into God the less he retains in himself. The worker puts his life into the object, but now his life no longer belongs to him but to the object." Man is now a days alienated from his production, he has to oppose with his own production commodity. ... "The life he has conferred on the object confronts him as something hostile and alien" ... "Estranged labour estranges the species from man." The greatest tragedy of man is his alienation from existence from his essence. This is the cause of occurrence of "estrangement of man from man."

For whom we should toil? From whom we should do the work? Just to maintain the organic existence? Who would reap the fruit of this surplus labour? God would appropriate it?

Once upon a time people of India, Egypt, Mexico were encouraged by building temples. Though previously labouring people were inspired to worship nature. By the influence of science and technology when the power of nature is much controlled from his previous position, when the power and glory of God diminished due to the enlightenment of science and spreading effect of industrialisation, then it is useless to ask people to worship nature or any such idol for any immediate result or for to satisfy the divine power.

Do people believe it? Never. To day he knows that he cannot reach the product of his labour though somebody is enjoying it. According to Marx in primary stage the private property is the cause of alienation of labour, in the next phase it is the cause to make this

alienation in deep and complete. Hence the imagination of God is the result of confusion regarding intelligence of man. But in the next phase theology is the cause of all sorts of confusion in man. We know that the problem of alienation is not confined only in working class. It is pervaded in all class, all strata of our society. It is not possible to eradicate this alienation by material abundance or by increasing labour wages.

Again we do not expect production of material abundance before the highest development of science and technology. Then it is useless to make elaborate plan regarding socialism or communism. The communist society cannot eradicate the primitive alienation. "The first positive annulment of private property - crude communism - is thus merely one form in which the vileness of private property, which wants to set itself as the positive community, comes to the surface." ... "It has indeed, grasped its concept, but not its essence."

Just after that Marx comments, "Communism as the positive transcendence of private property, as human self-estrangement, and therefore as the real appropriation of human essence by and for man: communism therefore as the complete return of man to himself as a social (human) being. ..."

Here Marx predicts how we can prepare ourselves for the communist society after abolishment of the private property. There is a possibility of development of communist society due to abundance of material production after bourgeoisie production revolution. We know a communist society totally depends on material abundance. This abundance depends on the highest development of the science and technology. In this society the alienation of the working class would be completely abolished. There would be complete development of human essence.

This is not the only reason that Marx comments it as a highest development of the society. This society is desirable to us as there would be complete emancipation of exploiter or exploiting classes. So not only the working class or the petty-bourgeois classes even the bourgeoisie class would be emancipated in this society - because the whole of human servitude is involved in the relation of the worker to production.

The alienation that has emerged in primitive savage era of primitive communism should be abolished in the society of scientific communism. The private property that has developed due to surplus labour production would be abolished due to production automation and abundance production. Science and technology have developed from labour eventually it has multiplied and enriched the power of labour. Only in a socialist society we can expect unhindered spread of science and technology. If we can completely and totally apply the development of science and technology then we can reach in a communist society.

The fear of the preserver of this social system is quite natural. They are terror-stricken for any sort of radical change of this society. There is continuous relentless propaganda that communist ideals and the huge development of science and technology are responsible for the crisis of today's civilisation. And this propaganda has influenced even the liberal idealistic philosopher, sociologist and psychologist.

But it is impossible to exist in this modern era without science and technology. The preparation of atomic warfare, whether it is for attack or defence for whatever purpose it may be, carried away the science and technology. There is competition among the monopoly capitalist, in that competition development and application of science and technology is inevitable. Apart there is competition with the socialist camp regarding rate of production. It

is impossible to engage in this competition without proper development of science and technology.

Bourgeois scientist reflects accurately the external world in his laboratory. Actually this reflection is nothing but to follow the pathway of dialectical materialism. It actually empowers the dialectical materialism. They do not know when the fearful material monster would suddenly come out of the bottle and it cannot be avoided by some smoke of ideal. They are crying for their own crisis as the 'crisis of science' and are very much apt to publicity that this science and technology is responsible for all these maladies.

The cause of this intensity of this crisis is severe external calamity. The old production and distribution system is gradually failing to cope with the development of science and technology. Spontaneous application of this production system will invariably create unemployment. There is no way out seen in this old system to resist this kind of unemployment.

George Mini, president, of the big boss of working class association of America comments, "We know that with the pace mechanical science is going, the different methods, the different techniques being applied, that automation will take more and more jobs in the years to come." He thinks automation as a curse of God. - "there is no element of blessing in technological progress." He and many like him opine that the day to day huge new discoveries and development of science and technology are definite indication of national disaster. Mini and the industrial tycoons have no knowledge regarding eradication of this unemployment and social insecurity. So there is inevitable result of intense feeling of alienation.

This is a peculiar condition! If they participate in the production system then there is alienation from the products and if they do not participate in this production system then they will feel social alienation from the mainstream. We see this reflection of this alienation in literature and philosophy. Esherwood explains, "If I were asked to say in one word what is it that young Americans are chiefly writing about now-a-days. I should answer - loneliness." What is the cause? Repetition of the same reason.

Colin Wilson has proceeded one further step forward. We find his explanation like this - "And what is the significant figure of our age - the age that lies beyond Darwin and Freud, Einstein and the Atom Bomb? ... the outsider." Mr. Wilson defines "the 'outsider' as one who has a perception of the unstable foundations that human life is built upon and feels that chaos and anarchy lie deeper than the order that most of his fellowmen believe in."

On that day in the International Conference of Philosophy the philosophers presented the theory of Bergson's 'Philosophical Intuitionism' and Heidegger's 'Ring and Time' and they said, "There was technological progress in the past too, but it is distinctive feature of our age that techniques have revealed their intrinsic demonic force and threaten to enslave man."

We can summarise their statements in this way - science has empowered man with unlimited power but man is not equipped enough to dominate over this power. In such a huge rate the tormenting power of machine-monster is increasing we cannot see parallel increase of moral force and self-conscious force of man in the equal rate. Man is just preparing its own destruction. What is the way out to resist man from this self-destruction? They think that we have to realise the chief characteristics of human civilisation. We have to admit the distinctiveness of our essence from our existence by emancipating the individual from the unholy chain of collective and bureaucracy.

In this context Eric Fromm has said, "The new form of managerial industrialisation in

which man builds machines which act like men and develops men who act like machines, is conducive to an era of dehumanisation and complete alienation, in which men are transformed into things and become appendices to the process of production and consumption." Previously Orwell has shown how human essence, truth-beauty-welfare of mankind, broadbased humanism have been jeopardised to meet the demand of machine-monster. As if man has lost his personality and transformed only into an indicative number.

Huxley has shown that people have been transformed into automaton after deep hypnosis. There is havoc publicity in the name of party and its highest leader, people are allured for a heaven. This publicity is nothing but suggestion. As we seen in the book of Jameatin titled 'We' that people are transformed into robot after lobotomy operation of brain. And Orwell has narrated the story of oppression by a dictator. If we accept that criticism of Orwell is mainly against bueraucracy then there is no doubt Jameatin and Orwell both are sharpeing their teeth against Soviet state and communism.

The socialist state want a radical change of this state by applying science and technology totally and completely. So it is necessary to distort the truth according to need. There material truth is neglected and overall importance is given to the 'party'. "Whatever the party holds to be true is truth." According to party, "Reality is not external. Reality exists in the human mind and nowhere else." Party leaders are power-mongers. This power is be all and end all to them. "Power is not a means: it is an end. And power means the capacity to inflict unlimited pain and suffering to another human being." All this quotations are from "Escape from Freedom" written by Eric Fromm.

But spokesman of socialism declare that the socialist country is trying to build a new society applying the laws of dialectical materialism. They are not ready to give due recognition to the subjective truth. The idealists are trying to impose their conception of truth on the materialist. They should know that psychology of the socialist workers are by no means enmeshed with power-mongering and it is not the basic instinct of man. At least Fromm would not think in that way otherwise his main theory of 'dictatorship' would be jeopardised. According to Fromm the party leaders are successful to convert workers as automaton. Because he thinks, "Men being frail and cowardly creatures, want to escape freedom and are unable to face the truth." There is no need of further comments.

What is the purpose of so much horrible propaganda regarding science and machine-monster?

The only purpose of this publicity is to declare that there is no alternative system possible except this degenerated western society. They are determined to establish this theory that the last stage of imperialism is fascism and communism and they are same kind of cruel, savage and inhuman. Socialism is far better social system then capitlism and it is the primary condition of alleviating alienation of man - they are not in anyway in a position to accept this truth. We have heard the echo in the last international philosophical conference held in Mexico. The erudite philosophers are vehemently opposing through a cold war programme about the publicity of communist ideals. "Give up the idea of communism triumphing the world over. That inspires fear."

... According to their godman, not only the contamination of atomic warfare, we have to protect the people from any sort of idealism. One of them has clearly stated, "Must man be free, or should he become an automaton, part of an automatic mass? ... The Red philoso-

phers are inclined to the latter view." In one newspaper of Mexico it has been written, "Marxists negate individual freedom in favour of allegedly existing collective freedom." This same message is echoed in the pages after pages in our Bengali daily and weekly for the last one year.

Their animosity and hatred against automation is nothing but the same against socialism and socialist ideals. It is a trick of politics. It is not our purpose to involve ourself in paradoxical political debate. Do we admit in any of our scientific psychology that the advancement of science is detrimental for development of humanity or it is helping creating deep sense of alienation? We want to judge it this much. There is no complain regarding automation in the socialist countries. Rovinsky of Soviet State comments, " Like any other phenomenon of technological progress, automation not only can be a blessing for the working class and the whole of society, it already is an enormous blessing." Due to automation production has increased many folds. Though there are incidences that people are loosing job due to automation but they are also employed in new sectors. There is no unemployment in socialist countries. "Socialism does not and will never know unemployment."

According to Rovinsky what Mini has depicted it is true for America or any capitalist country, but it is not true for any socialist country. If automation has become a curse to any social system then we have to think where is the drawback of that system? We have to think, as capitalism and imperialism are in a moribund stage so they do not have any cutting age with the rapid advancement of science and technology. But Mini is giving the wrong reason as science and technology is responsible for all this maladies of their society. But why the working class will depend on this reasons? After introduction of automation the production of twelve factories of America has become three folds, in one factory of England it becomes four folds. Automation not only increased production it has transformed the quality of production. Labour-intensive and dangerous jobs are now much more easily performed.

Gradually the boundary between mental and physical labour are abolished. Automation is the creator of plenty. So it has immense value of any pre-planned production system. But where its performance has been constricted according to need due to profit motive, in that case sometimes automation transforms as a curse of God.

However due to automation the production cost decreases. So application of automation is also essential in only profit-motivated production system. The main crisis of the factory owner's are here. According to Soviet economist Gorbunov , "The main reason for automation being an evil is the private ownership of the means of production and the resultant anarchy of production, the uncontrolled and unplanned character of production under capitalism." Gorbunov further said that in their state, "Everything is done in the name of man; for the benefit of man." So in their state automation is not curse, it is blessing.

Now we would review the accusation of those who are against automation in socio-psychological viewpoint. According to their opinion, due to automation man would be gradually transformed into the parts of the machine, his intelligence and power of judgement would be lost. He will only be a robot and only has the capacity to on-off the switch of the machine and he will be transformed into a beast without any conscience! They accused that in this condition alienation would be far more deeper. On the other hand those who are pleading for socialism says due to automation the worker's labour will be much less strenuous, they will be paid high wages, they will get much leasure hours for their individual development in all spheres.

The machineries of automation are much more complicated. To run these machines we need extraordinary skill and knowledge of the workers. So they have to be developed in every sphere of their life. They have to be equipped with training for small repairs of these machines. To develop necessary general knowledge and overall skill we need a different environment for workers that would be much more developed from this existing environment. The workers of the post-automation period will be much more developed than the pre-automation period. The main reasons of this alienation are due to compartmentalised production system and no rights of the workers on their production. In this age of automation everybody would be benefited from somebody's labour, so the workers' mind will be much more alienation-free in comparison to this compartmentalised production system.

Though still limited yet in the socialist production system the workers have got every right on their produced commodities. As it is controlled by the state so the overall purpose of labour is mostly known to all as clearly revealed. Unhealthy competition has mostly been eliminated. Personal ambition and expectation of social security measures are mostly identified. As the personal property rights have been abolished so men are not deprived of their product of labour. So the alienation is narrowed. In the language of Marx science is now the 'direct productive force', because science is part and parcel of today's production system.

Science and technology is intimately related to social development and all researches are pre-planned. New discoveries are not done as any individual's creation or for any special community's profit. It is dedicated for the welfare of the society. Discovery of science is free from patent-right and there is no endeavour to keep these discoveries as mysterious secrets. Science is there in the service of people and technology is the carrier of abundance. As the society is based on mutual cooperation among the workers so the alienation is automatically negated. Science and technology are gradually developing themselves in much higher stages as it is applied for more production and much higher social development.

Science and technology are not at all hostile to individual's personality development. On the contrary it is congenial for more individual development. Automation does not transform man into an automaton. If man becomes powerless in the production system or constructing society then he becomes a machine. Insecurity, starvation, ridiculous behaviour, frustration regarding the future, powerless to perform any change in natural or social untoward situations shape a man religious, fatalistic and inactive. A society of unhealthy competition, and severe inequality among various social strata create greed, jealousy and self-centredness.

Monopoly capitalism has made the alienation of man complete. The capitalistic profit motive is the stumbling block in the transformation of a society from capitalism to socialism and this selfish interest is creating hindrance regarding development of the world. In this context professor Mumford said, "Machines increasingly took the place of men and men themselves were tolerated only to the extent that they took on the attributes of machines, free from passions and emotions, indifferent to values." [L. Mumford: 'In The Name of Sanity']

He does not search the answer in the inhuman system of monopoly capitalism and his country's social system. On the contrary he is fixing responsibility of all these maladies on the faulty irrational application of machine and automation. According to him man can only achieve his full development by purposeful, intelligent and rational application of this huge development of science and technology. Actually he is echoing the process of highest development of individuality as depicted by Marx. Mumford said that for that reason we need

a peaceful coexistence among capitalism and socialism as capitalism has taken all the positive things of socialism now it requires that socialism will accept all the good things of capitalism. [Mumford: 'The Transformation of Man']

Marxists do not disagree in this proposal of Mumford. Because we cannot build up socialism by destroying all the old traditional values and cultures. Socialism will emerge in the womb of capitalism. But when they say, "Instead of maintaining their ideological purity, each regime, seeking a dynamic equilibrium, will tend to take on more of the diversified attributes of living systems," then we become suspicious about their honest intention. Then we have to say that we want socialist ideals should pervade in all states and if it is occurred by peaceful coexistence, we should not oppose it.

We want to avoid any holocaust but at the same time we do not furl the flag of communism. Marxists will not accept any sort of ideological compromise. They believe that once upon a time man will certainly build up socialism and communism. Enormous development of science and technology is its indication. Without radical change of production and distribution system it is impossible to accommodate this sort of development of science and technology. Some two hundred years ago in the feudal system it was not possible to apply minimum form of science and technology. So it is not possible to apply automation in full form in this capitalist society. The internal contradiction of capitalism is becoming much more intense as a result of it. Free, unhealthy competition and private property related mentality is obsolete in this era of collectivisation. Without the formation of new social stratification it is impossible to create new values, new society and new man.

When Orwell, Huxley, Fromm, Mumford depict the picture of the future they have lost this side of their vision. They do not believe in qualitative transformation of mindset. There will be radical change of overall environment, new interhuman relationships will develop, political consciousness among people will increase, labour-value will increase, man will get more leisure hours, they will increase their knowledge and skill to handle the advanced technology engaged in the production system, overall science-consciousness among people will be increased, social security measures will be increased, standard of public education will be gradually increased - so the human essence will increase in much higher degree and new consciousness, intelligence, values will develop. Then only new man will emerge. Science will not make man an automaton. Science will fulfill all the demands of people and it will create the path of higher spiritual development. The purpose of science is not only to produce abundant commodity but also to develop a man spiritually to a highest degree. Here comes the scientific psychology of Pavlov, based on cerebral cortex. It helps to eradicate fear, weakness, violence, jealousy, discrimination from the mind of the people that have been contaminated this class-divided society.

I cannot complete my discussion here because we need to answer regarding brain-washing, mentiside etc.. They say the people of socialist countries are nothing but robots, as they only abide by the party dictation. So they have lost their 'self', specially conditioned and transformed into a part of a machine. We are not able to touch this matter here. Hope we will give answer to all these discussions in the future.

Written in April, 1964

[All quotations of Marx are taken from the book 'Economic and Philosophic Manuscripts of 1844'.] **P A S**

A glimpse of the relation between Classical Logic and Fuzzy Logic

Sarbari Ghosh

"It has been said that man is a rational animal. All my life I have been searching for evidence which could support this." – Bertrand Russell

1. Introduction

Logic in the study of the methods and principles of reasoning in all its possible form. Deductive reasoning from general premises was invented by ancient Greeks. Here, I would like to concentrate on one of the principal facets of logic, that is, set-theoretic approach of reasoning.

The basic assumption upon which classical logic is based—that every proposition is either true or false has been questioned since Aristotle the great Greek philosopher whose influence in logic was the greatest of all. According to him, propositions about future events are neither actually true nor actually false, but potentially either; hence their truth value is undetermined, at least prior to the event. [1] But now we all know that propositions with problematic truth values are not restricted to future events only; as for example, the truth values of certain propositions in Quantum Mechanics are inherently indeterminate due to fundamental limitations of measurement. To address such propositions the true-false dichotomy of classical two-valued logic must be relaxed.

I think it would not be out of place to highlight the view of Bertrand Russell, the great British logician best known for his work in mathematical logic on Aristotle in this respect: "Any person in the present day who wishes to learn logic will be wasting his time if he reads Aristotle. ... By the time that logical originality revived, a reign of two thousand years had made Aristotle very difficult to dethrone. ... throughout modern times, practically every advance in science, in logic, or in philosophy has had to be made in the teeth of the opposition from Aristotle's disciples." [2] Let me now cite an example in support of my claim regarding the relaxation of the true-false dichotomy of classical two-valued logic. Suppose there is a piece of an apple in your refrigerator. If anyone asks you whether there is an apple in your refrigerator, what will be your answer? It is neither 'yes' (true) nor 'no' (false) but in between. Here lies the importance of many-valued logic. Classical logic is based on two-state truth values (true/false), whereas, Fuzzy logic is based on multi-state truth values (true/false/very true/partially true/very false/partially false etc.) [3].

In our modern information based society, advances in computer technology have been steadily extending our capabilities to cope with complex systems. But sometimes the simplification of a system becomes inevitable to reduce its complexity to a manageable level. It is true that statements obtained from the simplified system are less precise (certain), though their relevance to the original system is fully maintained. The loss of information which is necessary for simplification is expressed in uncertainty. There are fundamentally

different types of uncertainty. The Probability Theory has been an effective tool to handle a particular type of uncertainty (randomness), but Fuzzy Set Theory is an excellent mathematical tool to handle various types of uncertainty arising due to partial information or inherent imprecision in human language or the receipts of information from more than one source etc. Usually, the type of uncertainty in Fuzzy set theory is called 'vagueness'.

In this respect I refer to the conversation about Fuzzy Logic and Vagueness between Christian G. Fermiiller and Petr Hájek [4]. In this conversation, Fermiiller said that logicians should not just presume that they are properly dealing with vagueness when they investigate fuzzy logics, but should pay attention to the extended discourse on so-called 'theories of vagueness' in Philosophy to understand the various challenges for correct reasoning in face of vagueness. But at the end of the conversation he agreed that fuzziness and vagueness are closely related and might not always be distinguishable in practice.

2. A short Historical Background of Non-conventional Mathematics

The idea of fuzzy sets was born in July 1964 by the well-known professor, Lofti A. Zadeh of the University of California, Berkeley. In early 1960, he began to feel that traditional system analysis techniques were too precise for many complex real world problems. In a paper written in 1961, he mentioned: "We need a radically different kind of mathematics of fuzzy or cloudy quantities which are not described in terms of probability distributions. Indeed, the need for such mathematics is becoming increasingly apparent ..., for in most practical cases the *a priori* data as well as the criteria by which the performance of a man-made system is judged are far from being precisely specified or having accurately known probability distributions."

In spite of strong resistance by the traditional mathematicians, many researchers around the world became Zadeh's followers. The fuzzy boom in Japan was a result of the close collaboration and technology transfer between universities and industries. In 1987, Matsushita Electrical Industrial Co. (also known as Panasonic outside Japan) was the first to apply fuzzy logic to a consumer product, a shower head that controlled water temperature.

In fact, the 1990's is an era of new non-conventional computational paradigms which include fuzzy logic besides others. Zadeh introduced the term 'soft-computing' in the early 1990's to distinguish the non-conventional techniques (Genetic Algorithm, Artificial Neural Network etc.) from the conventional ones. The non-conventional methodologies are inspired by the remarkable human ability to manipulate perceptions without any measurement and any computation. A crucial difference between perception and measurements is that, in general, measurements are crisp whereas perceptions are fuzzy. In a natural language words serve as labels of perceptions and Zadeh was interested in developing a machine with high Machine Intelligence Quotient which can mimic the unique human ability to make rational decisions in an environment of imprecision, uncertainty and partial truth. For this purpose, according to Zadeh, computing with words is important, which may be a unique contribution of fuzzy logic, especially in the realm of applications. [5]

3. Motivations

Fuzzy logic was motivated by two objectives:

a. It aims to alleviate difficulties in developing and analyzing complex systems encountered by conventional mathematical tools.

b. It observes that human reasoning can utilize concepts and knowledge that do not have well-defined or sharp boundaries (i.e. vague concepts).

The first motivation requires fuzzy logic to work in quantitative and numeric domains (Quantitative Fuzzy Logic) while the second one enables fuzzy logic to have a descriptive and qualitative form. So, fuzzy logic can be considered as a natural bridge between the quantitative and the qualitative world.

As I intend to focus mainly on fuzzy logic in narrow sense, which is often called mathematical (or quantitative) fuzzy logic, I define crisp set (classical set) and ordinary Fuzzy set in a nutshell.

It is worth-mentioning here that crisp set and ordinary Fuzzy set are closely related to the set-theoretic approach of classical logic and fuzzy logic respectively.

4. Definitions

Crisp set : A crisp set is a set with sharp boundary. In Characteristic Function Method, it is defined by a function, usually called a characteristic function that maps an element in the universal set of discourse to set containing 0 and 1. That is, for a given set A in a universal set X, the characteristic function assigns a value $M_A(x)$ to every x in X, such that

$$M_A(x) = 1, \text{ if and only if } x \text{ is a member of } A$$

$$0, \text{ if and only if } x \text{ is not a member of } A$$

i.e. $M_A : X \rightarrow \{0,1\}$ in case of a crisp set A

A crisp set is often referred as a set only.

Example : A collection of blue pens is a crisp set or a set couples is not at all a set.

Fuzzy set : A fuzzy set is a set with unsharp boundary. Here the characteristic function of crisp set is so generalized that it maps elements of a universal set to a specified range and indicates the membership grade of an element in the set in question. Such a generalized function is known as membership function and the set defined by it a fuzzy set. That is, for a fuzzy set A in a universal set X, the membership function assigns a value $M_A(x)$ to every x in, such that, $M_A : X \rightarrow [0,1]$ (x) = a real number in [0,1], where [0,1] denotes the interval of real numbers from 0 to 1, inclusive, i.e. in case of a fuzzy set A, $M_A : X \rightarrow [0,1]$

Example : A collection of happily married couples is a fuzzy set with a possible function defined for it.

It is to be noted that the above definition of fuzzy set is that of an ordinary fuzzy set on which fuzzy logic was focussed initially. Each fuzzy set is completely and uniquely defined by one particular membership function. Larger values demote higher degrees of set membership [2].

Example : If for two fuzzy sets A, B in X (universal set) and an element x in X, $M_A(x) = 0.3$ and $M_B(x) = 0.5$, then x is closer to B than to A.

5. Advantage of Fuzzy Logic over Classical Logic

An important limitation of crisp set theory is that, an element cannot belong to a set and its complement simultaneously. That is, given a set A in X and its complement A^c in X, if $M_A(x) = 1$, then $M_{A^c}(x) = 0$ and vice-versa, whereas, in fuzzy set theory, an element x may belong partially both to a fuzzy set and its complement with different degrees of membership. Given a fuzzy set A and its fuzzy complement A_c , if $M_A(x) = 0.3$, then $M_{A^c}(x) = 0.7$ or less

(because the summation of membership grades on a finite universal set may not be equal to 1, which is a must in case of probabilities). Thus classical logic interpolates the input into a crisp set, whereas, fuzzy set has an ability to classify elements into a continuous set using the concept of degree of membership.

Let me cite simple examples which are expected to establish my view, that, in some sense or other, fuzzy logic is a generalization of classical logic.

Example 1. Let us suppose Sunil is a person who belongs to the set of bald people to degree 0.2, i.e. $M_{\text{Bald}}(\text{Sunil}) = 0.2$

If 'Bald' devotes the complement of 'Bald', such that $M_{\text{Bald}}(\text{Sunil}) = 1 - M_{\text{Not Bald}}(\text{Sunil})$, then $M_{\text{Not Bald}}(\text{Sunil}) = 0.8$. Therefore, Sunil partially belongs to the set of bald people as well as the set of people who are not bald with different membership grades, which is not possible in classical set theory. The interpretation is, that, Sunil is more close to non-bald people than to bal people.

Example : 2. Let us consider the interval of temperatures, [20°F, 100°F] Classical set theory can only classify the temperature as hot or cold (i.e. either 1 or 0). It cannot interpret the degree of hotness or coldness of the temperature between 20°F and 100°F. Let the characteristic function (Classical logic) for the above example be given by :

$$M_{\text{Hot}}(x) = 1, \text{ if and only if } x > 50^\circ\text{F classified as hot}$$

$$M_{\text{Hot}}(x) = 0, \text{ if and only if } x < 50^\circ\text{F classified as cold}$$

Without any loss of generality, 50° F is taken as the boundary, because classical logic cannot interpret intermediate values.

On the otherhand, fuzzy logic solves the above problem if we define the membership function as follows :

$$M_{\text{Hot}}(X) = \begin{cases} 0, & \text{if } x < 20^\circ\text{F} \\ \frac{x-20}{80}, & \text{if } 20^\circ\text{F} \leq x < 100^\circ\text{F} \\ 1, & \text{if } x > 100^\circ\text{F} \end{cases}$$

where x denotes the temperature.

The computed degrees of hotness and coldness are presented in the following Table 1 and the corresponding graph in Fig. 1.

TABLE 1

Temperature (°F)	Degree of hotness	Degree of coldness
20	0	1
30	0.13	0.87
40	0.25	0.75
50	0.375	0.625
60	0.5	0.5
70	0.625	0.375
80	0.75	0.25

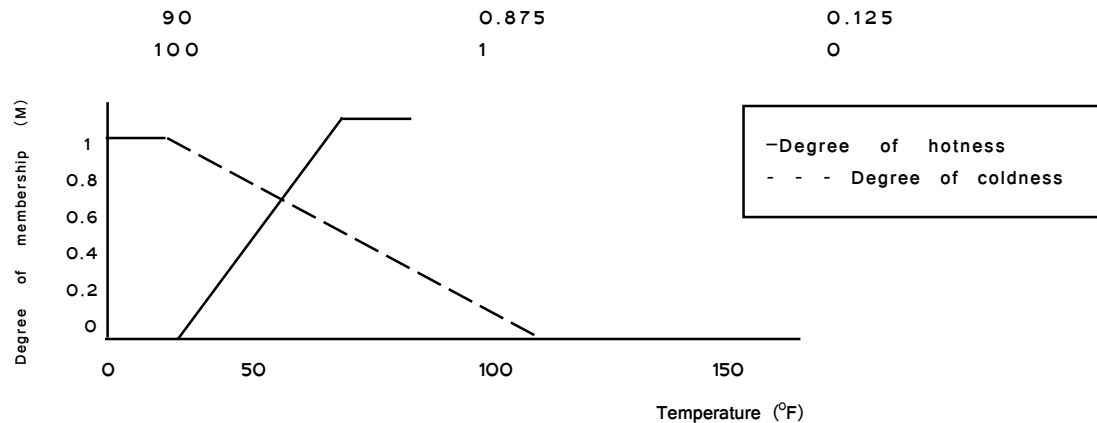


Figure 1

If the degree of coldness is taken as the complement of the degree of hotness, then 30°F may be interpreted as follows :

The degree of hotness for 30°F is 0.13 and that of coldness for 30°F is 0.87, which means that of coldness for 30°F is 0.87, which means that 30°F is hot by 13 percent and cold by 87 percent. Thus the notion of membership in a set as a matter of degree in fuzzy logic is closer to the human interpretation which allows a gradual transition from 'cold' to 'hot'. But this cannot be achieved by classical logic.

6. Open Problem

According to Wang (2007) : "Fuzzy logic in the narrow sense is formal development of various logical systems of many valued logic. In the broad sense it is an extensive agenda whose primary aim is to utilize the apparatus of fuzzy set theory for developing sound concepts, principles and methods for representing and dealing with knowledge expressed by statements in natural language." [6]

As because the meaning of a linguistic term changes with different context, it is important to remember that a fuzzy set is always defined in a context. Though researchers all around the globe are working with different aspects of fuzzy logic, there exists no sound principles yet for guiding the choice of membership functions. Since the choice of membership functions does affect the performance of the resultant models, it is still an open area of research and to achieve the primary aim of fuzzy logic in broad sense we have miles to go before we stop.

7. Conclusion

The objective of the article is not to disregard the classical two-valued logic, but to justify the importance of its extension for application. Traditionally, in Aristotle's logical calculus, there were only two possible values (i.e., "true" and "false") for any proposition. An obvious extension to classical two-valued logic is an n-valued logic for $n > 2$ and multi-valued logic is strictly related with fuzzy set theory and fuzzy logic. Infact, in spite of its philosophical interest, fuzzy logic is devoted mainly to the application. It is pleasing to note that recently Petr Hájek has coneded that it is hard to understand why Zadeh's idea has been met with so much resistance from traditional mathematics and engineering. According to him, fuzzy

logic aims to provide precise mathematical means to talk about impreciseness, but it does not advocate imprecise or vagere mathematics in future the non-conventional techniques will emerge as the principal and unique contribution of fuzzy logic in application area.

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Classification In Psychiatry

Diptadhi Mukherjee

Overview

Classification: Classification is the process by which the complexity of phenomena is reduced by arranging them into categories according to some established criteria for one or more purposes.

Nosology: It is a system of concepts and theories that support the strategy of classifying symptoms, signs, syndromes and diseases.

Disease: It is a biological event characterised by anatomic, physiologic or biochemical changes or by a mixture of these.

Disorder: It is clinically recognizable set of symptoms/behavior associated in most cases with distress & interference with personal function. (WHO,1992) {conjunction of a syndrome with a clinical course}

Mental disorder: A Mental Disorder is a health condition characterized by significant dysfunction in an individual's cognitions, emotions, or behaviours that reflects a disturbance in the psychological, biological, or developmental processes underlying mental functioning. Some disorders may not be diagnosable until they have caused clinically significant distress or impairment of performance.

A mental disorder is not merely an expectable or culturally sanctioned response to a specific event such as the death of a loved one. Neither culturally deviant behaviour (e.g., political, religious, or sexual) nor a conflict that is primarily between the individual and society is a mental disorder unless the deviance or conflict results from a dysfunction in the individual, as described above.

Illness: It is a subjective experience and objective phenomena consisting of an array of discomforts and psychosocial dislocations, resulting from the interaction of a person of the external environment.

Psychiatric nosology: It is the branch of medicine concerned with the classification and description of psychiatric disorders.

According to formal logic classification is the process by which the complexity of the phenomena is reduced by arranging them into categories according to some established criteria for one or more purposes. At present, the classification of mental disorders consists of specific mental disorders that are grouped into various classes on the basis of some shared phenomenological characteristics. Though it does not always follow the dialectical logic that there are continuous change of situation due to matter in motion. The ultimate purpose of classification is a bit pragmatic to improve treatment and prevention efforts. Ideally, a classification of disorders is based on knowledge of etiology or pathophysiology, because this increases the likelihood of improving treatment and prevention efforts. Ultimately the purposes of a classification of mental disorders involve communication, control and comprehension.

A classification enables users to communicate with each other about the disorders with which they deal. This involves using names of categories as standard shorthand ways of summarizing a great deal of information. When indicating that an individual has a particular disorder, this confers information about the cluster of clinical features that the individual is experiencing without listing all of the specific features that together constitute the disorder. For communication to be effective, there must be a high level of agreement among users of the classification.

Control of mental disorders primarily refers to the prevention of their occurrence or the modification of their course with treatment. Control also refers to knowledge of the course of a condition, as this too is often important in clinical management.

Classification should provide comprehension or understanding of the causes of mental disorders and the process involved in their development and maintenance. Disorders can, of course, be treated without knowledge of their etiology or pathophysiology. Comprehension is not an end in itself but is desired in a classification because it usually leads to more effective treatment and prevention i.e. better control.

Uniqueness of Psychiatry : There is no disease only disorder - Aetiology not known - Importance of subjective observations - Absence of lab studies.

Why we need classification : Psychiatric classification is a part of medical classification (WHO, 1992) - Diagnosis and classification are means of viewing the world (Sartorius,N.1988) -To ensure the availability of treatment facilities -To help clinicians planning treatment and monitor treatment progress - To communicate with each other - To make public health programmes -To access medical insurance coverage.

Problems of classification: Labeling - Pseudo-explanations - Lack of reliability.

Classificatory system is based on: Reliability, Validity, Specificity, User-friendly.

-Reliability is the degree to which findings can stand the test of repeated measurements.

Criteria for reliability: 1.Internal consistency. 2. Test-retest reliability. 3. Inter-judge reliability.

-Validity is the extent to which a test measures what it is supposed to measure.

Construct validity is whether the symptoms chosen as criteria for a disorder are consistently associated with the disorder.

Descriptive validity is the extent to which the diagnostic classification provides significant information about the individuals placed in the category.

Predictive validity is extent to which a diagnosis is able to predict the course of the disorder and the efficacy of different types of treatment.

- Validity is established by Clinical description, Lab studies, Follow up study, Family study (Robin and Guze et al 1970).
- Validity of current system is based on Descriptive and psycho pathogenic criteria. But no demonstrable etiologic or pathogenic data.
- Specificity - it should tell not only what the diagnosis is but also what it is not.
- Utility- they provide nontrivial information about prognosis (including treatment outcome) or testable propositions about biological and social correlates.
- Manual with no validity has no utility but manual with extreme utility is unduly susceptible to undermining of validity (Sprock,2003).

Splitter versus Lumper

- A classification comprised of many forms of distinct mental illness, just as is seen in disease of other organ systems (Splitter)?
- The lack of validating support for most of the separate categories, brought them together into one or a few groups (Lumper)?

<p>Splitters- envisioned a classification comprised of many forms of distinct mental illness, just as is seen in disease of other organ systems.</p>	<p>Lumpers- recognizing the lack of validating support for most of the separate categories, brought them together into one or a few groups.</p>
<p>John Haslam-GPI William Hammond Etienne Esquirol-monomanias Jean-Pierre Falret Edward Spitzka Karl Ludwig Kahlbaum Emil Kraepelin Eugen Bleuler</p>	<p>Hermann Helmholtz Wilhelm Griesinger-unitary psychosis model Paul Broca,Meynart,Karl Kleist Alfred Hoche</p>

Conceptual dimensions

- Causalism versus descriptivism
- Should psychiatric disorders may be categorized as a function of their causes (causalism)?
- Or they are categorised as their clinical characteristics (descriptivism).
- **Essentialism Versus Nominalism**
- Are categories of psychiatric disorders defined by their underlying nature (essentialism)?
- Or are the practical categories identified by humans for particular uses (nominalism)?

Internalism Versus Externalism

- Should psychiatric disorders be defined solely by processes that occur inside the body (internalism)?
- Or can events outside the body also play an important (or exclusive) defining role (externalism)?

Categories Versus Dimensional

- Are psychiatric disorders best understood as illnesses with discrete boundaries (categorical)?
- Or are they best understood as the pathological ends of functional dimensions (dimensional)?
- **Categories:** All the members of a class are relatively homogeneous and different members are mutually exclusive.
- **Dimensions:** Assigns positions on one or more axes (dimensions) and implies that index criteria are distributed on continuum rather than all or none.
- **Multiaxial systems** are based on syndrome and aetiology.
- **Categories are** - Easier - Separate and mutually exclusive - Many falls between two categories - Easy to decide therapeutics.
- **Dimensions are** - More flexible - Convey more information - No boundaries - Rejects separate categories - Don't have atypical cases.

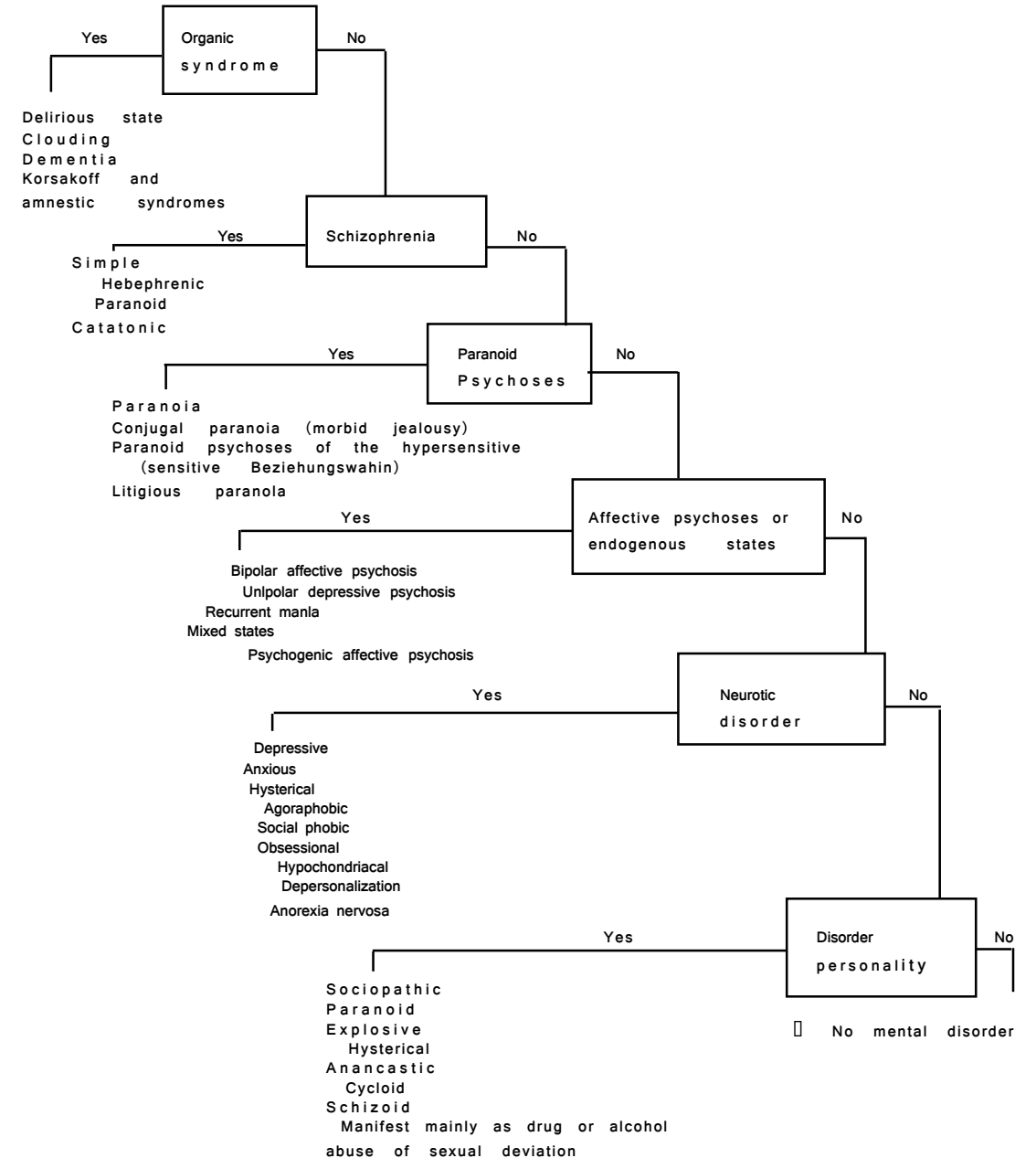
History of classificatory systems

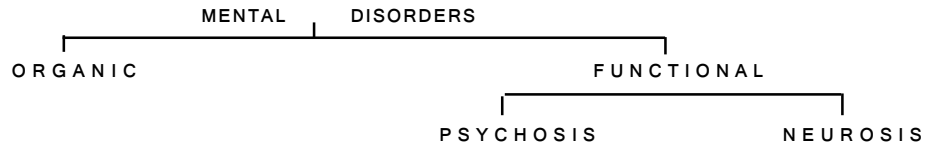
- Nosological concepts - Pre ICD (International classification of Diseases) & DSM (Diagnostic and Statistical Manual) - Limitations of DSM and ICD - Future perspectives (ICD 11).

History of Classification

- **Hippocrates** (approximately 460 to 370 BC) is usually regarded as the one who introduced the concept of psychiatric illness into medicine.
- His writings described - acute mental disturbances with fever (perhaps delirium), acute mental disturbances without fever (probably analogous to functional psychoses but called mania), chronic disturbance without fever (called melancholia), hysteria (broader than its later use), and Scythian disease (similar to transvestism).
- In the 10th century the Arabian psychologist Najab ud-din Unhammad classified a nosology of nine major categories of mental disorders, which included 30 different mental illnesses in total. Some of the categories he described included obsessive-compulsive disorders, delusional disorders, degenerative diseases, involuntal melancholia, and states of abnormal excitement.
- **Phillippe Pinel** (1745 to 1826), a French physician, simplified the complex diagnostic systems that preceded him by recognizing four fundamental clinical types:
- mania (conditions with acute excitement or fury), melancholia (depressive disorders and delusions with limited topics), dementia (lack of cohesion in ideas), and idiotism (idiotcy and organic dementia).
- **Kraepelin** described a dichotomy with Dementia praecox and Manic-depressive psychosis.
- Basic approach of Kraepelin toward classification was to search for that combination of clinical features that would best predict outcome.
- In contrast, **Bleuler** (1857 to 1939) based his classification system on an inferred psychopathological process, such as a disturbance in the associative process in schizophrenia.

- **Foulds and Bedford's** described a hierarchy (1975) of diseased condition with disintegrative psychoses, delusional psychoses, neuroses, dysthymic states.
- Patients with symptoms at a higher level may exhibit symptoms from a lower level but not vice versa.





Indian History

- In India, in approximately 1400 bc, a classification of psychiatric disorders was included in the medical classification system of Ayur-Veda
- Najabuddin Unhammad (1222 AD), an Indian physician propagated the Unani system of medicine as he described seven types of mental disorders;
- Sauda-a-Tabee (Schizophrenia); Muree-Sauda (depression); Ishk (delusion of love); Nisyan (Organic mental disorder); Haziyan (paranoid state) and Malikholia-a-maraki (delirium).

Current Classificatory System

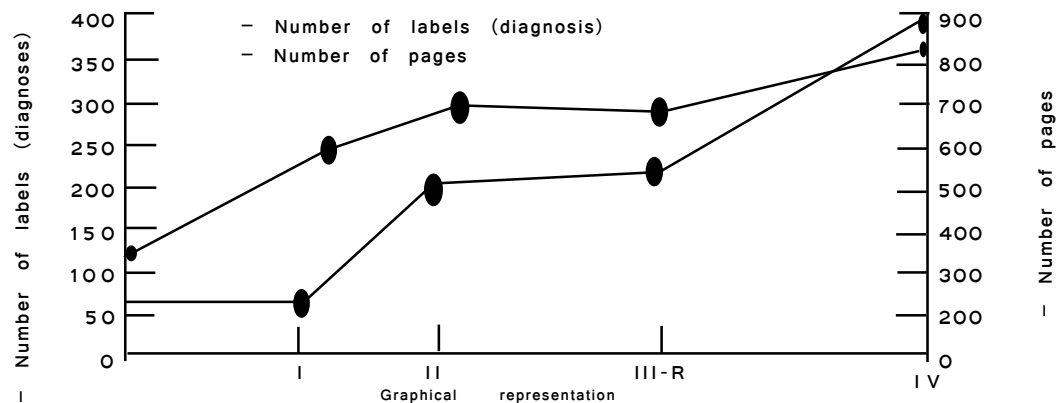
- ICD -10 (International Classification of Diseases - Clinical descriptions and diagnostic guidelines)
- DSM-5 (Diagnostic and Statistical Manual of Mental Disorders - 5th edition, Text Revision)

History of Current Classification

- First attempt in USA- 1840-had one category - 1923- classification by APA+ Bureau of census : 22 disorders - 1935: classification for acute disturbances- following world war-II - 1948:WHO-International list of causes of death- 6th - 1952: APA-DSM-I (106 diagnoses) - DSM II - 1968.
- DSM III- 1980- first edition with diagnostic criteria. Dawn of biological or neo Kraepelin era. Use of operationalized diagnoses, hierarchy.
- DSM IV(1994)- Conducted 3 stage empirical process. Mainly comprehensive & systematic review of published literature. Re-analysis of already collected data sets. Incorporated results from extensive field trials.

DSM-IV TR (2000) has five axis - Axis I Clinical syndromes, Axis II Personality disorders, Mental retardation, Axis III General medical condition, Axis IV Psychosocial & environmental problems, Axis V global assessment functioning.

DSM-5 (2013) will try harmonization with ICD-11, dimensional approach to diagnosis, developmental and lifespan consideration, use of other specified and unspecified disorder, the multi-axial system, cultural issues and Internet enhancement.



International Statistical Classification of diseases and related health problems (ICD)

- Bertillon Classification of Causes of Death-1893
- |
- 1st international conference to revise the International Classification of Causes of Death- 1900
- |
- ICD-1 to ICD-5 every ten years
- |
- ICD-6-International Statistical Classification of Diseases, Injuries and Causes of Death- 1949- WHO overtook it.

Chronology of Psychiatry disorders in ICD

- In ICD 5 (1938) - There is Neurological disorders chapter with Mental deficiency, Schizophrenia, Manic-depressive psychosis, All other mental disorders.
- In ICD 6 (1948) -There is separate chapter for mental disorders.
- In ICD 8 (1965) - There is glossary of mental disorders.
- In ICD-9(1977) - There are organic & functional psychoses.
- Suppose problem of depression such as - 296 MDP, depressed type, 300Neurotic depression, 301 Depressive personality, 309 Depressive reaction, 311 Depressive illness.
- In ICD 10- Tenth revision is available where work toward preparation started in 1979 when ICD-9 came into effect. Worked through under chairmanship of Norman Sartorius. It is used worldwide in 19 languages. It has chapter 5, F category. Here system allows addition of new diagnoses in future without substantial changes in future. It is phenomenological, descriptive and pragmatic. Here traditional dualistic principle i.e. psychoses and neuroses are abandoned. Here mostly the term 'mental disorders' is used rather than 'diseases'. It has few chapters with etiological findings (F00, F10,).

Multiaxial Presentation of ICD -10

- Axis I - Clinical Diagnoses: both mental and general medical disorders.
- Axis II - Disabilities: This axis appraises the consequences of illness in terms of impairment in the performance of basic social roles.
- Axis III - Contextual Factors: used to describe situations clinician consider important for understanding disorder and clinical work.

ICD and DSM

- They are non-theoretical. They explicit rules when information is insufficient. It has some associated features. It has hierarchy. Here multiple diagnoses are possible.

ICD	vs	DSM-IV-TR	vs	DSM -5
□ 1992		□ 2000		□ 2013
□ W H O		□ APA		
□ Different versions for clinical & research		□ One version		
□ All languages		□ English		
□ Separate multi-axial available -3		□ Multi-axial-5		□ Multi-axial-3
□ Part of gen. classfn		□ Only mental disorder		

Merits and Demerits of Classification

Merits are - Mental disorders arranged according to some established criteria. There is standard reference. It provides vocabulary for professionals to improve communication. It has rigorous research standards. It can improve teaching.

Demerits are - Aetiology not known to major mental disorders. Cross cultural issues are important criteria. Diagnostic criteria are poorly "Defined Terms" such as disorganized speech encourage misdiagnosis (e.g. misidentifying a fluent aphasia as flight-of-ideas or formal thought disorder). Psychopathology associated with neurologic syndromes (e.g. psycho-sensory features and seizure disorder) are not mentioned. Misuse in health insurances is a possibility. There are criteria include only some characteristic symptoms - fail to provide a comprehensive description such as - Decline of importance of phenomenology, dehumanizing impact and sacrifice of validity to achieve reliability (Andreasen 2007).

Critique

- In dementia organic / nonorganic dichotomy used in ICD to be abandoned and use of the term cognitive disorders is suggested. DSM itself has a critique about ICD using the term organic.
- In Alzheimer's, dichotomy of late versus early onset is not supportable by current evidence (Hachinski et al,1974).
- Whether substance-use disorders are best represented as categorical or dimensional constructs?
- Whether generic criteria or specific substance dependence criteria is valid?
- There is cross-cultural variation in defining substance-dependence, harmful use, intoxication, hence generalize ability of criteria is valid?
- Currently 114 combinations of symptoms can lead to a diagnosis of schizophrenia, so where is the validity?
- Emphasis on psychosis and reliance on signs & symptoms are distal to disorder's etiology and pathophysiology (Tsuang et al, 2000).
- Use of categories causes potential problems especially when symptoms of multiple disorders are present.
- Early intervention is difficult because there is lack of clear guidelines to identify and predict future schizophrenia.
- Whether dichotomously we can differentiate bipolar & schizophrenia, share radiological findings, genetic variation, cognitive profiles?
- Anxiety disorders have frequent co-morbidity with affective disorders, hence how can we categorically separate them?
- PTSD (Post Traumatic Stress Disorder) is the criterion describing exposure to traumatic event too restrictive.
- In high degree of co-morbidity with panic attacks, further subtypes are needed.
- Severely ill patients meet criteria for 3 or 4 or 5 Personality disorders.
- Most patients who are not very symptomatic meet criteria for NOS (not otherwise specified).
- Patients with same diagnoses may look different.
- So it is recommended that hierarchical framework of relations among temperament, personality & psychopathology should be done.

Future of Classificatory Systems: Goals for the current ICD revision: ICD-10 to ICD-11

- > 1. Update ICD to accommodate new scientific, clinical and public health knowledge.
- > 2. Integration of broad consultations and new, internet-based technologies for information gathering, integration and sharing.

- 3. Integration and cross-referencing with health-related terminology systems.
- 4. Harmonize with ICD-related and derived classifications as well as other members of the WHO Family of International Classifications
- 5. Build in needs-driven adaptations to the revision process around priority ICD Use Cases, including public health
- 6. Accelerate global implementation plans with particular focus on developing countries

Pre-final draft released on March 2013 -

- ICD-11 endorsed by WHA (*World Health Assembly*) on May 2014.
- ICD-11 implementation package will be ready on July 2014.
- It would be in six official languages.

Conclusion

As we know Psychiatry is an emerging subject of Medicine in comparison to other branches of medical sciences. Its classification of disease, disorder of its abnormal system is just beginning and taking a shape. We expect in near future it will make a solid state for exchange in all socio-economical and cultural conditions. There will be many make and break but the principle conflict would be with the categorical and dimensional approach. We get a clear indication of this in the DSM-5 classificatory system where it is steadily moving towards a dimensional approach for various reasons.

In spite of profound advancement of laboratory and imaging techniques and genetics there is little impact in classification. But we have to wait for etiology based classificatory system in future for its further development.

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Mirror Neurons and Pavlov

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“ The chief defect of all hitherto existing materialism - that of Feuerbach included - is that the thing, reality, sensuousness, is conceived only in the form of the *object or of contemplation*, but not as *sensuous human activity, practice*, not subjectively. Hence, in contradistinction to materialism, the *active* side was developed abstractly by idealism - which, of course, does not know real, sensuous activity as such. ...” - Marx, *Theses on Feuerbach (I)*, 1845. (Italics original)

Introduction

In 1980s and 1990s, Giacomo Rizzolatti was working with his assistants Giuseppe Di Pellegrino, Luciano Fadiga, Leonardo Fogassi, and Vittorio Gallese at the University of Parma, Italy. They have performed an unique neurophysiological experiment in their laboratory. They inserted electrodes in the ventral premotor cortex of the macaque monkey. Actually they had wanted to know the specialized control of hand and mouth actions sequence taking hold of an object and manipulating it. They wanted to record, to measure neuron's response to certain movements. Eventually they observed that some of the neurons would respond when the monkey saw a person pick up a piece of food as well as when the monkey picked up the food. Thus the neuron 'mirrors' the behaviour of the other, as though the observer were itself acting. They called this neuronal function as 'mirror neuron system'. In this procedure actually they overlook or ignore the previous conditioning process or naturally developed temporary connections of this puppy macaque.

After this initial investigations many neuroscientists made innumerable laboratory works in various laboratories for the last twenty years and confirmed that this mirror neurons found in both inferior frontal and inferior parietal regions of the brain of monkey. It is also confirmed that mirror neurons are a particular class of visuomotor neurons. Now we have to know the basic functional properties of mirror neurons in the monkey specially their functional roles in 'action understanding'. In the next phase we have to know there is evidence that a mirror neuron system similar to that of the monkey exists in humans. Afterwards we have to know that in humans, in addition to action understanding, the mirror neuron system plays a fundamental role in action imitation.

A matter of much debate is whether activity in the so-called mirror neuron system reflects neural processes engaged in 'action understanding', that is, inferences about the goals and intentions driving an observed action. It has been suggested that mirror neurons are simply the result of learned sensorimotor associations, as proposed in the associative sequence learning and that this ontogeny is inconsistent with a role in understanding the actions of others. In contrast, we argue that mirror neurons may develop through associative learning and subsequently contribute to action understanding.

In humans, brain activity consistent with that of mirror neurons has been found in the premotor cortex, the supplementary motor area, the primary somatosensory cortex and the inferior parietal cortex. The researchers argue that mirror neurons may be important for understanding the actions of other people, and for learning new skills by imitation, it provides the physiological mechanism for the perception/action coupling, it help us understand the actions and intentions (purpose/goal) of other people. They are the neural basis of the human capacity for emotions such as empathy. Though there are cognitive scientists and neuroscientists who caution that the claims being made for the role of mirror neurons are not supported by adequate research.

Mirror Neurons

Various experiments in laboratories confirmed that about 10% of neurons in the monkey inferior frontal and inferior parietal cortex have 'mirror' properties and give similar responses to performed hand actions and observed actions. Whereas discussing the role of the mirror neuron system of action recognition and proposing that the human motor language centre Broca's area is the homologous region of the monkey ventral premotor cortex. Even in both humans and monkeys, the mirror neuron system also responds to the sound of actions.

Researchers found that mirror neurons are believe to mediate the understanding of others behaviour. Here we can consider the 'mediation theory' of psychologist Leo Vygotsky where he proposed that the elders in the family or society play the role of mediators in cognitive development of the children's 'proximal zone of development'.

However if mirror neurons enable the observer to infer the intention of an observed action, how might they do this? It is assumed that mirror neurons are driven by the sensory data and that when the mirror neurons discharge, the action is 'understood'. In this scheme mirror neurons could only enable action understanding if there was a one-to-one mapping between the sensory stimulus and the intention of the action. But this is not the case. The context of any action by any unknown person must establish which intention is more likely to drive an action. The empirical evidence does not support the view that mirror neurons are driven solely by sensory data from focal action stimuli.

The fact that when we observe someone else, we use our own motor system to generate a model of how we would perform that action to understand it. So we can infer of the intentions of an observed action by assuming that the actions are represented at several different levels and that these levels are organized hierarchically such that the description of one level will act as prior constraint on sub-ordinate levels. It assumes that the sensorimotor connection strengths have been learned (conditioned as temporary connection), but does not propose a mechanism by which these are learned. Association sequence learning provides an associative mechanism for such learning. Although this learning does not provide a mechanistic account of how such learning could enable action understanding, it allows for the possibility that the mirror neuron systems, once acquired, could support such functions. In other words the mirror neuron systems could enable inferences about the intentions of others, even if this function is not a adaptation by natural selection. Therefore it assumes that we learn, via the principles specified in associative learning to predict others' intentions using our own motor systems.

Child Development and Mirror Neurons

Human infant data suggest that the mirror neuron system develops before 12 months of age and this system may help human infants understand other people's actions. Here the question is how this properties are conditioned or acquired. It is proposed that mirror neurons are trained through associative sequence learning abide by the principles of Pavlovian neurophysiology. It is also suggested that 'imitation' of single mimetic gesture may account for facial mimicry by new-born infants.

Various neuroimaging techniques evaluating mirror neuronal activity have shown a possible connection between the acquisition of social skills and brain development. In the inferior parietal lobes, mirror neuronal activity increases as humans are exposed to situations in which their behaviour demonstrates that they understand the intentions of people they are observing. It appears that mirror neuronal activity may provide a mechanism allows for human communication of feelings or intentions. Mirror neurons may be responsible for children's ability to understand the motives and feelings of others. For example, in the inferior parietal lobe, as well as insula, certain mirror neurons are activated when fictional cinematic characters perform actions that are being viewed but not actually performed by the child. The child understands the goals and intentions of the characters based on previous experience as registered in the mirror neuronal systems. This understanding may be the mechanism for the child's acquisition of social skills that permit friendship, pleasure in playing with those who have similar interests, and shared aesthetic, visual, and auditory experiences. Although further studies are needed, the absence of mirror neurons has been demonstrated in autism, where such a deficit is significant. In autistic children there is demonstrably less activity in learning situations in which imitation is critical. EEG changes that reveal a suppression in activity in motor areas when a child is watching another person's move, for example, are not seen in autistic children. This was particularly pronounced in the premotor cortex area of mirror neuronal functioning when children were observing facial expressions that were essential for imitation or understanding of other children's feelings or intentions. Children who have more mirror activity, on the other hand, appear to have a better ability to share their feelings with others and understand other children's intentions or emotions. In the socialization process, understanding intention is critical for fostering interactions that form friendships. A child unable to interpret cues is less likely to be able to communicate in a way that encourages another child's interaction.

Emotional development can be seen in the acquisition of emotions. Children must develop the capacity to recognize and use their emotions appropriately. Children must also become successful in a complex maturation process that entails their learning to become emotionally responsive rather than emotionally reactive to internal experiences of emotion. In addition, children must learn to use their emotional repertoire to handle the inherent anxiety and stresses that are universal to the human condition. Emotional maturation can be understood as the acquisition of coping defenses in infancy and childhood. In infants and children, emotional maturation is best understood in terms of theories that incorporate all of these elements.

One of the most critical skills essential for maximal emotional development is the acquisition of empathy. Recently, researchers have documented a series of complex interactions

for explaining emotional maturation. Their work appears to integrate the previous theories into a psychological, biological and sociological interactive formulation. They suggest that emotional maturation-predicted on genetic predispositions, environmental exposure, and behavioural repetition-occurs through the development of complex internalisation-externalisation process within a child's brain. Neurons with mirror properties have been demonstrated to exist not only in the prefrontal and motor systems, but also interconnected to the limbic system (subcortex). The implication of this interconnection is that mirror behaviour may be viscerally and emotionally connected in a way that explains the acquisition of the cornerstone of emotional maturation-empathy. Subjects who tested high on tests for empathy have much stronger neuroimaging evidence of pathways linking pleasure or disgust to facial expressions, for example, than those with much lower degrees of demonstrated empathy.

Of interest, a gender difference showing some evidence that girls are potentially more inherently empathetic than boys seems to be substantiated by magnetoencephalographic data that show that the mirror system is stronger in girls than in boys. Children who are able to share the feelings of others, as well as understand the feelings of others, have heightened activity in areas of mirror neuronal imaging. An interesting study found that autistic children, who have developmentally disturbed emotional development, have significantly depressed activity in mirror neuronal sites of the premotor cortex when show facial expressions. Other theorists have postulated that the persistence and pervasiveness of anxiety in children who are neglected or abused as infants stems from the reverse situation-enormous overstimulation of the mirror neurons, with a subsequent high degree of development of those particular brain synapses, which creates an exaggerated sense of empathy that closely resembles oversensitivity.

The implications of mirror neuronal development with neuronal connections may prove to be significant in understanding the interconnection between emotional and social development, as well as the genetic and internalisation-externalisation implications of emotional and social interactions. The automatic emotional response and the intuitive understanding of the response that allows human to develop empathy for even fictional characters may be the product of the interactions of experiences integrated with individual's genetic predisposition to mirror neuronal response in the prefrontal and limbic systems of the central nervous system.

In the developmental process must come the acquisition of basic emotions-those learned directly or inferred from facial expressions, including happiness, anger, sadness and fear. Mirror neurons are postulated as an essential pathway for this stage of emotional maturation. Throughout the first year and infant's emotions grow as they are stimulated and encouraged. Smiles are simple reflexes at birth. Appearing at the end of the second year are the second stage of emotions-the self-conscious emotions wise arise from injury to or enhancement of the sense of the self: shame, envy, pride, embarrassment, and guilt.

Functions mediated by mirror neurons depend on the anatomy and physiological properties of the circuit in which these neurons are located. Actions studied in the initial mirror neuron studies were actions without an emotional content. Accordingly, activations were found in circuits related to motor action control (parieto-premotor circuits). Recent evidence suggests that the mirror mechanism is also involved in empathy, that is in the capacity of feeling the same emotions that others feel. In an fMRI experiment, participants were exposed,

in one condition, to disgusting odorants and, in another, to short movie clips showing individuals displaying a facial expression of disgust. It was found that the exposure to disgusting odorants specifically activates the anterior insula and the anterior cingulate. Most interestingly, the observation of the facial expression of disgust activated the same sector of the anterior insula (Wicker et al. 2003). In close agreement with these findings are the data obtained in another fMRI experiment that showed activation of the anterior insula during the observation and imitation of facial expressions of basic emotions (Carr et al. 2003).

These data strongly suggest that the insula contains a neural population active both when an individual directly experiences disgust and when this emotion is triggered by the observation of the facial expression of others. Similar data have been obtained for felt pain and during the observation of a painful situation in which was involved another person loved by the observer (Singer 2006, Saarela et al. 2006). Taken together, these experiments suggest that feeling emotions is due to the activation of circuits that mediate the corresponding emotional responses (Gallese et al. 2004).

Integral for all of moral development is the ability of the child to observe consequences of his or her behaviour for others. In this sense, mirror neurons may once again play a pivotal role in moral growth. A child who can feel what other children feel may be more stimulated to develop a conscience and accept the cause-and-effect connections essential for moral maturation.

Given that mirror neurons abound in the inferior frontal cortex that is near Broca's area, it is suggested that the presence of such cells supports the theory of imitation as fundamental to language acquisition. The overall size of the sites of mirror neurons appears to correlate with the quantitative acquisition of language skills. Given that female brains appear to have more mirror neurons this may explain the significantly earlier and more highly developed language acquisition in girls. On the other side, thinner layers of mirror neuronal cortex found in autistic children may point to a mechanism for understanding the language deficit in such children. Of interest, mirror neuronal size increases with the use of such language skills. This plasticity of the human brain to alter its morphology consequent to behavioural activity indirectly correlates with such language theories. This is the neurobiological equivalent of the sociological adage that the "rich get richer". Imitation acquired through the presence of mirror neurons may stimulate more mirror neuronal production. One interesting observation is that mirror neurons do not seem to discriminate between human or robotic stimulation of cells by gestures and imitation. In several recent studies, infants seem equally stimulated in their development when modeling imitation of robots as compared to human behaviour.

Humans mostly communicate by sounds. Sound-based languages, however, do not represent the only natural way for communicating. Languages based on gestures (signed languages) represent another form of complex, fully-structured communication system. Nonetheless, the fact that signed languages represent a fully structured communication system has not changed the view, which many share, that speech is the only natural human communication system and that the evolutionary precursor of human speech consists of animal calls. The argument goes as follows: Humans emit sound to communicate, animals emit sounds to communicate, therefore human speech evolved from animal calls.

The logic of this syllogism is, however, rather shaky. Its weakness becomes apparent when one examines animal calls and human speech more closely. First, the anatomical

structures underlying primate calls and human speech are different. Primate calls are mostly mediated by the cingulate cortex and by deep, diencephalic and brain stem structures (Jürgens 2002). In contrast, the circuits underlying human speech are formed by areas located around the Sylvian fissure, including the posterior part of IFG.

Second, speech in humans is not, or is not necessarily, linked to emotional behaviour, whereas animal calls are. Third, speech is mostly a dyadic, person-to-person communication system. In contrast, animal calls are typically emitted without a well-identified receiver. Fourth, speech is endowed with combinatorial properties that are absent in animal communication. Finally, humans do possess a "call" communication system like that of non-human primates and its anatomical location is similar. This system mediates the utterances that humans emit when in particular emotional states (cries, yelling, etc.). These utterances are preserved in patients with global aphasia.

If not animal calls, what could be the origin of human speech? An alternative hypothesis is that the path leading to speech started with gestural communication (for a modern version of this idea see Armstrong 1995; Corballis 2002). According to this theory, the initial communicative system in primate precursors of modern humans was based on simple, elementary gesturing. Sounds were then associated with the gestures and became progressively the dominant way of communication.

The discovery of mirror neurons provided strong support for the gestural theory of speech origin. Mirror neurons create a direct link between the sender of a message and its receiver (Rizzolatti and Arbib 1998). Thanks to the mirror mechanism, actions done by one individual become messages that are understood by an observer without any cognitive mediation. The observation of an individual grasping an apple is immediately understood because it evokes the same motor representation in the parieto-frontal mirror system of the observer. On the basis of this fundamental property of mirror neurons and the fact that the observation of actions like hand grasping activates the caudal part of IFG (Broca's area), Rizzolatti and Arbib (1998) proposed that the mirror mechanism is the basic mechanism from which language evolved. In fact, the mirror mechanism solved, at a initial stage of language evolution, two fundamental communication problems: parity and direct comprehension. Thanks to the mirror neurons, what counted for the sender of the message also counted for the receiver. No arbitrary symbols were required. The comprehension was inherent in the neural organization of the two individuals.

It is obvious that the mirror mechanism does not explain by itself the enormous complexity of speech. Yet, it solves one of the fundamental difficulties for understanding language evolution, that is, how what is valid for the sender of a message become valid also for the receiver. Hypotheses and speculations on the various steps that have led from monkey mirror system to language have been recently advanced (Arbib 2005).

Brain type (Pavlovian) development involves the maturation of traits that allow children to respond to new situations, tasks, and opportunities. Parents frequently comment regarding type of their offspring, "Where did this child of mine come from?" This is the realisation that they do not recognise a particular child's trait as familiar to their own experiences.

It is fact that every child born with specific brain type of behavioural response. This traits can be discerned throughout the child's life span. As with other developmental areas, type traits can be excited or inhibited by external factors, including family interactions, cultural and

environmental influences, and social interactions. As regard inhibition it has been seen that certain children are irritable and fearful in new situations regardless of a parent's sensitivity and support. There is internal consistency and continuity of brain type up to a point. However the environment begins to shape such traits. Unlike other areas of development brain types have especially strong negative and positive connotations, which magnify the influence of sociocultural influences on a child's growing experience. Brain type development can significantly affect other areas of growth. In the parent child relationship, brain type traits are particularly relevant for emotional growth. The compatibility of traits between children and their parents is termed a goodness of fit. A good fit results in parents behaving with more sensitivity and positive interactions with their children.

Modern research strongly indicated that brain type has a genetic base but that such traits are significantly altered by environmental factors, including family and sociocultural situations. Successful attempts to identify specific genetic markers involving brain type have bolstered notions for both the genetic foundations and interactional aspects of brain type development.

Marxian postulation

Now we may consider a significant first part of *Theses on Feuerbach (I)* to confirm why we consider Marx a much more superior thinker of all ages. Here what Marx is postulating that previous all existing materialisms are mechanical including Feuerbach. Why? Because the thing, reality, sensuousness is only conceived by them in the form of object or of contemplation. They do not think of any further extension of it. This mechanical materialists do not feel any urge to conceive the thing, reality, sensuousness by human activity, practice. Here 'practice' is the most important aspect of our cognitive process, *i.e.* to acquire exact knowledge through bodily sensuous activities (conditioning through innumerable temporary connections) after active social participation in any conditions of life. This is the gateway to acquire any complete comprehensive knowledge. For that reason we give tremendous emphasis on active participation in any social situation. In this cognitive process we receive the essential human part of sensuous human activity. All of us more or less aware of it. But what we could not think of it that had been postulated by Marx and that is the answer of our long drawn query - why in contradistinction to 'hitherto existing materialism', 'idealism' is much more superior in human civilisation, history of ideas of thought. Because, according to Marx, it is only possible as 'idealism' abstractly developed the 'active' side of the thing, reality. Marx admits that it is not possible to develop this active side in the form of knowing real, sensuous activity without actual 'practice' but in spite of that it is superior than to conceive the reality only in the form of the *object or of contemplation*. In our opinion the idealist develop this active side as predicted by Marx with the help of the existing mirror neurons system in our brain *i.e.* previous conditioning process in so-called socialisation. Let us explain it.

Mirror neurons represent a distinctive class of neurons that discharge both when the person executes a motor act and when it observes another individual performing the same or a similar act. This is a kind of conditioning process which acts since birth by contiguity and contingency situation. Now what might be the functional role of the mirror neuron system, a series of postulation have done such as action understanding, imitation, intention understanding, empathy etc.. Over and above the mirror neuron system represents the basic neural mechanism from which language and other related matters have evolved. It can only

be understood if we go through a bit details of Pavlovian neurophysiology. I think my readers can endure me for this long discussion.

Pavlov's Neurophysiology

The question, however, of what is the function of the mirror neuron system. Do this system possess an unique functional role? Their properties indicate, rather, that they represent a mechanism that maps the pictorial descriptions of action carried out in the higher order visual areas onto their motor counterpart. This matching mechanism may underlie a variety of functions. But this functions are nothing but conditioned reflexes, in essence formation of innumerable temporary connections.

To know the Pavlov's neurophysiological experiments (mainly principles of conditioned reflexes) first of all we have to know the methodology on which this principles are based. We know Pavlov started his research career into the nervous regulation of blood circulation. Here we have to note that Pavlov was not conventional regarding his experiments. He adopted new experimental method that was one component leading to the eventual discovery of conditioned reflexes.

Pavlov was well aware that in conventional classic physiological experiments with animals in the laboratory the method followed that the animal was anaesthetized so it was unsuitable to produce desired results on complex problem of nerve regulation. It is needless to say that anaesthesia had a distorting effect on the experimental results of reflex actions of the animal's nervous system. So to eliminate this untoward effect Pavlov had to take a first step toward his method of studying the functions of the intact organism under natural conditions. Here he did this by training the experimental dogs to lie on the table and without any anaesthesia Pavlov could perform his experiments on a living intact dog. Here we have to remember that in Pavlov's time there was least technological development to ensure safe experiments with animals.

However in this new method Pavlov was the first neurophysiologist who was able to discover physiological laws concerning the reflex regulation of the cardiac and vascular functions. From this discoveries he made a broad generalization to the effect that not only the blood vessels, but all organs contain specific sensitive nerve devices adapted to respond to mechanical, physical or chemical stimulants. From this he concluded that it is the nervous system that regulates and combines the varied activity of the organism into one unified whole.

The method Pavlov called 'chronic' that required when the function of an organ or system of organs was to be investigated. In opposition drastic 'acute' method had played an important role in physiological research as long as the analysis of *structure* was the primary task. But it was far too crude and led to distortions of *functions* which made discovery of laws all but impossible.

The process of studying the interconnections and interrelations and of treating the organism as a whole, together with its life conditions, is called synthesis, or the synthetical method. Synthesis is the putting together, the composition, the combination of parts or elements to form a whole. As such, it is the direct opposite of analysis. The two in their interconnection form the methodology of science, if it is to discover the laws of complex process.

Pavlov was the first physiologist to employ both approaches systematically. The chronic

experiment was the solution of the problem of synthesis in physiological investigation. He supplemented the analytical approach to the structure and functions of the organism with a synthetic one. In this way he created a dialectical method of study; that is, he combined the two opposite methods into one unified approach. It was this dialectical method which enabled Pavlov to study the organism in its integrity and in its unity with its environment.

Traditionally, investigation of the direct stimulation by contact to the body had been the province of physiology, while 'action at a distance' had been considered within the jurisdiction of psychology. Pavlov had made significant contributions to the understanding of the nervous regulation of gastric and salivary secretion caused by the introduction of food into the mouth. But now he was confronted by a different phenomenon, one which generally considered to be far beyond the reach of physiology.

The clue lay in the thesis that psychic activity must be regarded, not as a function of consciousness or of the brain alone, but as including the three-thirds of a reflex, namely (1) sensory stimulation, (2) the brain, and (3) muscular activity in the form of behaviour, deeds and words. As long as psychology restricted itself to the middle phase or third alone (consciousness), then it could rely only on introspection. For in that case there was no external cause (sensory stimulation) or external effect (muscular activity). From his teacher Sechenov, Pavlov learned that the clue to the study of higher nervous activity was the reflex in all three of its phases. This made objective analysis possible, since sensory stimulation and muscular activity are observable and therefore subject to experimentation. Consciousness need no longer be probed by introspection, for it is externally manifest. This was a brilliant and creative clue.

However the key principle in the Pavlovian physiology and psychology is the unity and integrity of the organism as a whole, together with the adaptation of the organism to the conditions of the environment and the environment to the requirements of the organism. In both aspects, the unity and the adaptation, the central role is played by the nervous system, and, in higher animals including man, the role of the cerebral cortex, as the seat of temporary or conditioned reflexes, is decisive.

Thus the conditioned reflex, as the prime organizer and regulator in the unity of the organism and in the adaptation to the environment, is the basic concept in the teaching of Pavlov.

The first set of facts demonstrated by Pavlov in his experiments that an animal which is to be stimulated by food from a distance must be 'hungry'. This phenomenon of internal 'readiness' for stimulation, or state of excitability, without which there is no excitation or response, is in itself an important adaptation to environmental conditions.

A second set of experimentally verified facts established that if dogs are simply shown food, and this is repeated several times, at each repetition the resulting flow of saliva is weaker until there is no reaction at all. But the moment a bit of food is put in the dog's mouth, the full reaction of the salivary glands to the sight of food is restored. The adaptive function again is present since it causes the animal to cease reacting to stimuli which do not lead to concrete results, e.g. food, and at the same time to have the capacity to regain response to such stimuli if they do bring results. The mechanism underlying these phenomena is that reaction to secondary properties or accidental conditions is based on a primary reflex to essential properties.

A third set of facts revealed that if a dog is shown dry bread, which evokes a profuse flow of saliva, and at the same time is shown moist meat, which evokes very little or no saliva, then the result of these two opposite stimuli will depend solely on which stimulates the dog more strongly. The moist meat is usually stronger, and therefore the corresponding result is produced: there is no flow of saliva. The dry bread, which by itself would invariably call forth a lavish flow of saliva, remains completely without effect, even though lying before the eyes of the dog. Here again is an important feature of adaptation to external environment. The reactions of the dog can be far more effective if he responds solely to the strongest stimulation rather than spitting his response between two or more stimuli. Subjectively, this phenomenon is referred to as 'attention' or 'interest'.

Conditioned reflex is the temporary connection between the organism and its environment acquired during the course of its life, as distinguished from the permanent connection i.e. unconditioned reflex, embodied in an original inborn reflex, which constitutes the essential mechanism of psychic phenomena. In the sketch, Pavlov outlines the most general law of temporary connections as their strengthening through repetition and weakening through lack of it.

In the unconditioned reflex, the essential properties act as stimuli, for example, the physical and chemical properties which bear a direct relation to the physiological role of the saliva (to make dry food wet and hard food soft). In the conditioned reflex, the secondary properties of objects act as stimuli, for example, colour, form, scent and sound which bear no direct relation whatever to the physiological role of the saliva (the colour, form, scent and sound are not the subject of action of the saliva).

Pavlov says that these secondary properties in the conditioned reflex mechanism "evidently receive their physiological importance as signals for the first ones, i.e., for the essential properties."

Here at last is the greatest discovery made by Pavlov, the conditioned reflex as the key to knowledge of psychic phenomena. These phenomena are designated 'psychic' primarily because they are concerned with the secondary properties or signals of objects rather than with their essential properties. Indeed the study of the psychic life of animals is largely the study of the system of signals which they develop during course of their individual lives to adjust to the changing conditions of their environment.

The concept of conditioned reflexes as dealing with signals of external objects is one of the richest theoretical contributions ever made to science. It put animal psychology on a sound scientific basis, making it forever inexcusable to read human subjective interpretations into animal activity.

Pavlov's cardinal thesis is the Darwinian principle of the interaction of the organism and the environment. One problem with this principle had always been an implication of predeterminism through inborn instinctive control of behaviour. Pavlov solved this problem of adaptive changes in structure and function by distinguishing two aspects of the environment and two different but closely related mechanisms of adaptation to them i.e. *unconditioned and conditioned reflexes*.

Lastly therapeutic hypnosis is a most important part in organisation of Pavlovian hypnotic-suggestion therapy. From the perspective of therapeutic hypnosis, the experience of empathy and understanding 'other mind' would appear to be the essence of what has been

called 'rapport' and 'rapport zone' in the historical literature of hypnotic induction and the facilitation of the classical hypnotic phenomena. In a discussion of the early theories of Pavlov and Platonov (1955/1959, p.43) we can summarize the neural mechanism of hypnotic induction via verbal suggestion in this way.

The rapport zone produced in the hypnotic subject by verbal suggestions is a more or less confined center of concentrated excitation isolated from the remaining regions of the cortex. This then is the manner of hypnotic induction, internal inhibition produced through circumscribed excitation zones established by monotonous verbal pattern. But the rapport zones serve more of a function than merely making induction possible. It is through these zones that the hypnotist maintains the capability of eliciting further hypnotic phenomena by additional verbal suggestions. If the process of hypnosis was conceived of as a process of increasing inhibition, interspersed with zones of rapport, then the subsequent elicitation of hypnotic phenomena was a process of disinhibition. As suggestion calling for some sort of alert action were offered, other areas of the cortex became uninhibited to fulfill the task required.

We now propose that such heightened activity in the rapport zones during the segmentalized trance is what neuroscientists today would describe as the activation of selective portions of the sensory-motor mirror neuron system in complex cognition and cultural transmission. From our current perspective on mirror neurons 100 years after the pioneering research of Pavlov and 50 years after the work of Platonov on 'the word as a physiological and therapeutic factor' it is tempting to hypothesize that activating 'rapport zones' in hypnosis is what neuroscience now describes as turning on (activating) the gene expression/protein synthesis cycle and brain plasticity in the sensory-motor cortex and related brain areas by novel and enriching psychosocial cues.

Further research by the neuroscientists (2004) documenting how the mirror neuron system is active when subjects imitate novel hand postures is reminiscent of the important role of the psychological experiences of novelty, enrichment, and exercise (mental and physical) in generating activity-dependent gene expression/protein synthesis cycle and brain plasticity in humans at all stages of life.

Conclusion

Vladimir Kosonogov postulates that the mirror neurons code the goals of other's actions because they are activated if the observed action is goal-directed (Pavlovian *reflex of purpose*) or is a pantomime of a goal-directed action. However, the mirror neurons are activated only when the observed action is purposeful in any kind of mimetic or pointing gestures. How do they 'know' without previous conditioning that the definite action is goal-directed? At what stage of their activation do they detect a goal of the movement or its absence? So the mirror neuron system can be activated only after the goal or purpose of the observed action is attributed by some other brain structures. Here comes the Pavlovian neurophysiology.

Now to conclude this article we only summarize the teachings of Pavlov that has been all through neglected in this mirror neuron system research. No where we have found in this scientific papers of 'mirror neuron' any reference of Pavlov's huge scientific contribution. Although in our opinion these mirror neurons are nothing but the conditioned specialized neurons scattered all around the brain with dense agglomeration in some distinct cortical and

subcortical areas. These neurons have been conditioned with the external environment with innumerable temporary connections since birth if not from *in utero* and shaped the brain type (temperament) of the person. So if we want to make a comprehensive idea regarding this mirror neuron system then we have to know the basic premises of Pavlovian neurophysiology.

In the first phase of his scientific career, for nearly twenty five years, Pavlov as an experimental scientist devoted to demonstrating that the nervous system controls the internal organic processes of blood circulation and digestion. Recently (2011, 2013) we have come across with innumerable research papers where it has been confirmed that through local neural regulation by Vagus nerve (tenth cranial nerve), human body loading with a principle meal can regulate and make a unique equilibrium of the blood glucose level by secretion of local hormones and enzymes in the gut namely GIP, GLP, DPP-4 inhibitors. Here the role of insulin is doubtful or nothing at all regarding this control as it is seen to be regulated by pituitary-hypothalamic neurohormonal axis.

However after the result of his experimental work, Pavlov made the first series of broad generalizations about the life processes of higher animals, including human beings. This first great generalization was that the brain, as the apex of the nervous system, regulates what he called the *internal environment*, the system of interrelated organs and glands, comprising the animal organism. As regulator of the internal environment, the task of the brain is to achieve and maintain a dynamic equilibrium within the body. This is the basic of this neural regulation. According to this principle, the body is a synthetic whole in which the parts are regulated and coordinated by the brain through the apparatus of the entire nervous system. There are certain physiological laws of the nervous system that control the internal environment. To discover it properly Pavlov needed a new experimental method. Pavlov devised the method that he called 'chronic experimental method'. It allowed him to perform the experimental work on the intact and healthy animal.

What Pavlov required to know was the interrelationship and regulation of *external environment* with the internal environment. In the next phase of thirty long years of laboratory work on dogs and primates Pavlov made the second broad generalization that the nervous system and particularly the brain controls this physiological function. As the brain is the special organ for the adaptation of animal behaviour to the conditions of life. This adaptation is done by two nervous mechanisms. The first is concerned with certain adaptive conditioning (here mirror neurons may play a special sensitive part) that in the course of natural selection of the given species, have become genetic behaviour that we call unconditioned reflexes, according to Pavlovian nomenclature. Unconditioned behaviours guarantee that the animal at birth will have minimal necessary behavioural adaptation to those more or less stable conditions of life which have surrounded the species from its inception. The center of the unconditioned behaviour is the subcortex.

The second nervous mechanism to carry out the task of adapting behaviour to the environment is the conditioned reflex. The discovery of this mechanism and its laws was perhaps Pavlov's greatest scientific achievement. By means of the conditioned reflex ('action at distance') the animal is able to adapt to the constantly changing environment during the course of its own life since birth through innumerable temporary connections that we call associative sequence learning. It is 'learning' from seeing somebody doing something (as it is postulated in the case of mirror neurons) or by experience on active participation. Sense

stimuli, through temporarily formed connections, act as *signs* representing concrete external objects. By means of this sensory system of signals, animals make the most refined adjustments and modulation to the details of the surrounding world. No matter how subtle this adaptive behaviour of animals becomes, however, it can be fully accounted for in terms of sensory signals without calling on the human qualities of thinking, reasoning, feeling or purposeful activity. What we have seen in mirror neurons the oppositely acting process of excitation and inhibition can make minute analyses of external agents by breaking down sense stimuli, and then can synthesize the latter into new conditioned reflex acts, resulting in new adaptations to the environment. This is the unique process of functioning as we have seen in mirror neurons and this is nothing new as it is the process of conditioning of the neurons since birth. The centre of all this conditioned reflex activity is the cerebral cortex.

From this two generalizations Pavlov confirmed that nervous system, brain and specially the cerebral cortex is responsible for maintaining a dynamic equilibrium between the external and the internal environments. In the internal side there are some vital activities for survival of the individual animal and the species *i.e.* feeding, hunting, mating, reproduction, avoiding enemies, caring and training of offspring etc.. On the other side the external environment is constantly changing so brain has to coordinate this external activity with various states of the body and also regulate all the internal function of the organism. Thus the nervous system- the brain, the cortex with the mechanisms of the unconditioned and conditioned reflexes- controls and coordinates all the life processes, external and internal, of the animal.

During his research works with psychiatric patients Pavlov made a fourth broad generalization that in human beings there is, in addition to the sensory system of signals which they have in common with animals, a system of signalling by means of speech. Words are conditioned stimuli standing as signs for the sensory signals. Thus the speech system is built up on the base of the sensory system, and cannot exist apart from it. It marks a qualitatively higher relation between the organism and the environment. For while animals can 'learn' from their own experience by means of the sensory system of signals, people not only learn that way but in addition can learn from the entire experience of mankind through spoken or written words acting as speech signals, and passed on from generation to generation. As conditioned stimuli, words make abstraction and generalization from sensory signals possible. By combining words into grammatical sentences, and sentences into logical arguments, the speech system makes possible reflection (mirror neurons may play a significant part) of external reality in the human mind. Reflection tested back in the sensory signals obtained in social practice, is found to true or false, to correspond or not to correspond to reality. Thus the speech systems makes possible the discovery of facts, laws and theories which truly reflect the nature of the external world. In short, the speech system, in closest relation to its base, the sensory system, is the nervous mechanism underlying thought, reasoning, purposeful activity and all forms of social consciousness, including technology, art and science. Summarily the speech system is the synthesis of sensory and the motor system of the body and by constant social interaction it is making infinite temporary connections that is not possible for the individuals who are suffering from autism spectrum disorder and who are deficient of necessary mirror neuron system. The human cerebral cortex is the centre of both the sensory and the speech systems of signalling reality. Here mirror neuron systems are the healthy, automatic, universal, innate potentialities.

All the powers and potentialities of man to run, to talk, to reason, to imagine, to love etc. are a combination, direct or indirect, of innate requisites and social capacities to form the universal level, together with a superstructure of advanced abilities rising on the universal basis to possible heights not yet within the range of human vision. After million years of natural selection of the species has selected the innate biological, anatomical, physiological potential such as mirror neuron systems which is an indispensable ingredient in the total historically constituted human potential existing in society. Acquisition of the biologically innate potential including mirror neuron system is automatic by means of conception, foetal development and birth and is in essence the same for all mankind though different in each individual, no matter what the type of society.

Acquisition of the universal form of the human social potential is automatic by means of unavoidable participation, as the only mode of continued existence, in the common everyday life of man within his social environment, and is in essence the same, though in appearance and detail different, for all who live within a similar type of society. Acquisition of the more advanced levels of the social potential is neither automatic nor universal, but is rather a function of the scope and degree of participation by the individual in that potential. Such individual participation is itself dependent on the one hand on the availability to him of the potential within the given society and on the other on his determination to allow nothing to stand in the way of his attempted mastery of it. Failure to acquire the more advanced forms of human potential on the part of any individual can neither be blamed wholly on prevailing social conditions nor wholly on individual characters including development of mirror neuron systems. If, however, responsibility must be assigned as it must as an historical necessity, then the prime cause is the given organization of society, since it is ultimately responsible for the formation of character as well. With such an assignment of responsibility, a cherished goal of man should clearly be the building of a society and a world which will ensure that the maximum human potential (be it mirror neurons or anything else) is made available in a manner that will allow all people everywhere to participate in it, and thereby transform it into universally acquired internalized capacities for productive work and creative living.

Diagram of the brain, showing the locations of the frontal and parietal lobes of the cerebrum, viewed from the left. The inferior frontal lobe is the lower part of the blue area, and the superior parietal lobe is the upper part of the yellow area.

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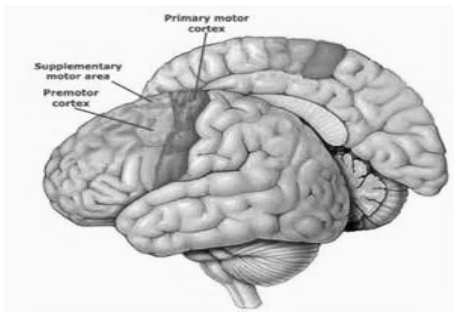
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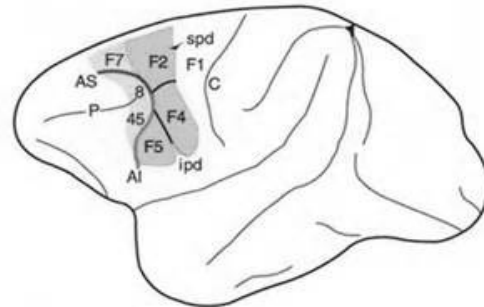
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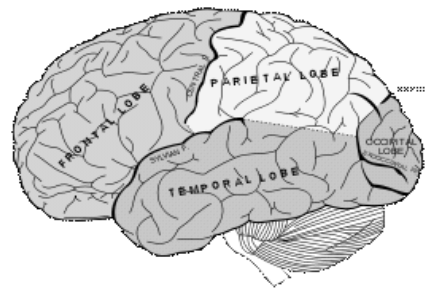
Mesial and lateral views of the macaque brain showing the cytoarchitectonic parcellation of the frontal motor cortex (areas indicated with F and Arabic numbers) and of the parietal lobe (areas indicated with P and progressive letters). Areas buried within the intraparietal sulcus are shown in an unfolded view of the sulcus. AIP, anterior intraparietal area; As, superior arcuate sulcus; Ai inferior arcuate sulcus; C, central sulcus; Ca, calcarine fissure; CG, cingulate cortex; FEF, frontal eye field; IP, intraparietal sulcus; L, lateral sulcus; LIP, lateral intraparietal area; MIP, medial intraparietal area; Lu, lunate sulcus; P, principal sulcus POs, parieto-occipital sulcus; STS, superior temporal sulcus



NLP and Mirror Neurons [back to top]



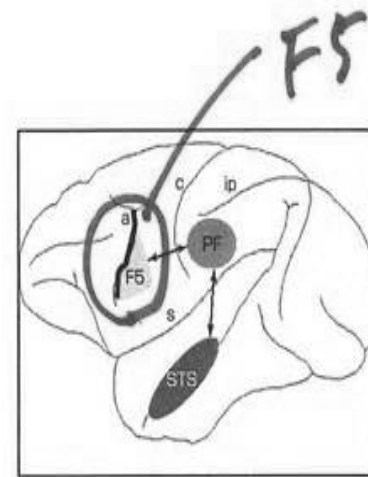
mirror neurons



Mirror neuron system in humans. Later view of human brain showing the areas that form the mirror neuron system.



MIRROR NEURONS: THE ARENA OF SHEN AND HUN?

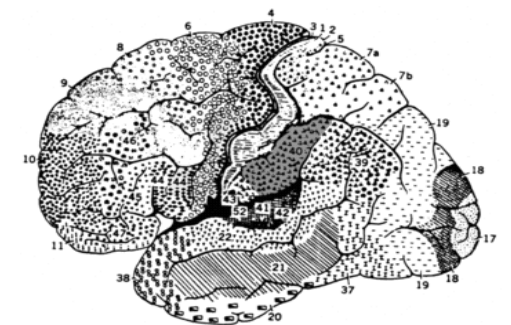


mirror neurons



Mirror Neurons

mirror neurons in homeculus



mirror neurons

mirror neurons

India The World That Music Lives In

Pete Seager

A Friend of ours here is an American working for the Asia Foundation. Last year while partridge hunting he came across a small village inhabited entirely by snake charmers and their families. He took us out there today.

We humped over miles of dusty wagon tracks, through one muddy village after another. Just past the carcass of a water buffalo, being devoured by several dozen huge vultures, we find it. About one hundred people living in a couple dozen small mud huts with thatched roofs, clustered tight together on a couple acres of land.

They have been living in this spot for generations, we were told, but at some time in the past, perhaps a few hundred years back, they had migrated from a province 400 miles northwest. Here they were casteless, and hence outcasts. A neighbouring village allowed them to get water from the village well, but social intercourse between the villages was unthinkable. Only a couple children in the village attend school, "because it is so expensive" : 60 cents per month. Each household has a few chickens and goats, but they have no tillable land, and have to buy their grain from neighboring villages. They have petitioned the government for land, but have not the money to pay for it.

About 25 men, and their snakes, are out breadwinning at any time of year. They take the train to distant places where money is not too scarce, and play for tips in the marketplaces ... and can earn maybe 75 cents a day. Big pay. Then they come here after half a year and spend a few months at home. It is the only way anyone in this village has ever earned a living. Our interpreter says he has met snake-charmer families before, but never a whole village full of them.

Well, of course, they put on a show for us. We got out the tape recorder and cameras. A couple of men produced instruments sounding like bagpipes, except that the only bags were their cheeks, which puffed in and out, keeping a steady stream of pressure on the pipes. While his cheeks expelled air, his nose breathed in quickly. The pipers were accompanied by a couple drums, one of snakeskin, and two others of large earthenware pots with rubber inner tubes stretched over their mouths—they had a deep thumping tone, similar to American Indian water drums. Then some small boys came out and danced in the dust. Beautiful anklets around their bare feet gave a tinkling rhythm as they stamped and swayed.

Now came the snakes. We saw two flat circular baskets with covers. Whoops, up came two big hooded heads, three feet in front of me. Smiling faces indicated that it was quite safe; I was pushed back into my seat.

The man kept moving his hand rhythmically. I'm told that snakes really can't hear, and that it's the motion that hypnotizes them. However, these dopes appeared to be brainwashed. They darted their heads aimlessly, but didn't try to bite anyone ... and a whole village full of children and adults were standing around. Including us. Toshi clicked on the movie camera.

These two six-footers were just the aperitif. Suddenly out of another basket a man brings

the biggest doggone cobra I ever hope to see. At least ten or eleven feet. And out of another basket another just as big. I lift my legs and start to move, but the man next to me smiles and motions that it's all right. Our interpreter says the fangs have been removed. I hope he's right. He may know it, but does the snake know it?

After ten minutes we run out of film, just as the snake is slithering over to Toshi and the camera. The man picks up the biggest cobra, and with a smile beckons to our 15 year-old daughter. Mika; she approaches, and he loops it around her neck. She smiles nervously. We all take pictures. Nothing much else we can do. The pipes and drums are still filling the air with wild music.

After 45 minutes all the snakes are put back. We pack our cameras, etc. Our American friend bargains with the village leaders about the tip—great Oriental custom, it seems. Finally, it is set, and we roll off in a cloud of dust. The rich Americans have departed.

Calcutta, India
December 1963

I wish I knew Bengali, or some other Indian language, well enough to learn a couple of their folk songs. They are charming, and would appeal immediately to most Americans. The vocal tone is not strange or strained, as in traditional Japanese and Chinese music. The harmony is simply that of the drone bass, as in a bagpipe. My ears don't mind this a bit. I prefer not being distracted by tonic-dominant progressions. The beautiful melodies are subtle and quick, and the rhythms too.

Watching the snake charmers Some polyphony is used, such as when a group of singers repeats a strong rhythmic phrase over and over, and the soloist holds a high flowing descant, usually on the fifth of the scale, and descending from it.

Western music has hardly made a dent here. It's no wonder. Their own music is so good. Folk songs : my God, 57 hundred varieties. Each province has got its own style. (There are three hundred languages in India.) Solo songs, group songs, work songs, love songs, religious songs. (Especially religious songs. This is a most God-conscious land. More of that later.) Great rhythms, great melodies, and great sense of poetry in all the people. Here are a couple of themes from some of the songs :

"O people, don't get involved in love ... that sticky stuff. ... Like glue, it will never let you go."

A man says : "I can tame the wild elements, but not a wild girl like you."

A woman's protest, whose husband is taken off to war.

The god Shiva arguing with his wife. Humorous song.

And boatmen's songs. Hundreds of 'em. Mostly with the general theme of comparing the soul to a boat tossing on the waves.

Man's song (by Tagore). "In town they call you just another black girl. I call you a black flower. Like the beautiful black clouds which bring the sweet rain to my land, you also ... Now, whether this black girl ever looked at me, and whether I ever returned her glance, is known only to me and that girl."

The favourite Indian instruments are distant cousins of the banjo and guitar, the sarod and the sitar. Village folk have simple versions; trained classical virtuosos have elegant

masterpieces. Usually accompanied by drums, tapped by hand. Many varieties of them. The most common seems to be the tabla : two drums used together, with a black rubber spot near the center to deepen the tone.

Flutes are popular too. Small cymbals, and bells, and jingles around the ankles. I saw also in a village a neat one-string instrument.

The one string can be tightened with the peg. The other end goes through a hole in the center of the skin drumhead. If a song is in the key of C, the one string is tuned to a C, but the player can lower it from time to time by squeezing the two sides. Called an ektara (*ek*, "one" : *tar*, "string"). The string is kept taut simply by the pressure of the player's left hand. He holds the drum tight under his left arm, and strums with a wooden pick over the knuckles of his right hand. By varying the pressure with the left hand, great "quong quong" sounds come from it.

We saw this instrument played by a religious group known as Bauls, in a small village a hundred miles north of Calcutta. Bauls rarely own their own homes, but travel from place to place. Unlike most religious orders in India, they are not ascetics. They marry and raise children to follow their line of business. Women are more equal to men than in most of India. The Bauls have their own songs and styles, usually singing in a group of three to eight people. One soloist, and the rest joining in from time to time, and then as they get the spirit, dancing and whirling, like the Jewish Chassidim. They sing in the marketplace for tips, and serve God and keep alive that way.

One of their songs again said. "O Lord, my boat is tossing on the waters of life. Please see me safely to where I am going—wherever that is." Within the next three days I heard no less than seven other songs, both classical songs and folk songs, which had the same essential theme. And in conversation with different persons I found that this was India's main tradition : God rules the world. Our fate is in his hands. The best we can do is pray that he shows us how to act.

The city intellectuals tell me that this is just because India is a very poor country. When people have so little, they have to have faith in God. But I've seen other poor countries that didn't have it so intensely as here. And Tagore, the poet, was an aristocrat, and deeply religious too. His song "Jana Gana Mana" is the national anthem and translates roughly as follows : "O Thou who leads the minds of the people, unite us now from the Himalayas to the Ganges ..." It is a fine song—along with "The Marseillaise" the best national anthem I know. I sang it with 10,000 people in Calcutta's Park Maidan last Sunday.

But I'm afraid I have my doubts—at least concerning this definition of God. God helps those who help themselves.

I wish our movie film could return some day and be shown on Indian TV. India needs TV more than it needs new industries, hospitals, hydroelectric dams. After twenty years of "independence" they are still prisoners of poverty and ignorance. Only 20 percent can read and write. The average peasant does not know if his nation is square or round. But a battery-operated TV set in each village could have all 500 million Indians learn one common language in a year, could unite its disunited and demoralized population.

Of course the crucial problem would be : who would control what goes on that magic tittle screen? If it is to be sold to the highest bidder, as in the U.S.A, you might as well forget the whole idea.

In calcutta an economist described to me India's plans for economic expansion. I interrupted to ask what India was doing about the population problem. His face suddenly sagged. "Last year we had a 5 percent increase in productivity. We also had a 5 percent increase in population. If something is not done soon, we will have to have forcible sterilization of millions."

November 1969 :

What I have learned now about population problems is that it is the rich nations of the world who must FIRST limit their (our) numbers—we who burn up most of the world's oil, use up most of the world's raw materials, and are mostly responsible for polluting the world's air and water.

(Remember, it was Hitler who thought he could decide which people are the surplus people.)

From *The Compleat Folk singer*, ed. Jometcalf Schwartz. Lincop : University of Nebraska Press, 1992. **P A S**

From the Desk of the mind-Painter

Corporate Mind

Goutam Bandyopadhyay

All through Anirban is academically sound. He is sane and sober, quiet, soft-spoken, does not spoil his time in any worthless job and has no habit of taking cigarette or tea. He is choosy regarding friends. Actually he has few friends and they are also like him. They are not asocial. They feel other's problem and try to help them as and when required. Anirban is respected in his locality for his good nature. He is also ideal regarding performing duties and responsibilities towards his parent. The neighbours site example of Anirban to their children as he is so much caring towards his parents in spite of being a good student. They say, you just try to be good like him. Anirban is not fond of viewing cinema. Sometimes he follows the news in TV and spends some time viewing sports programme.

Naturally in this age of globalization in a simple equation after passing his degree course Anirban is placed as an IT engineer in a famous American Corporate House. And it does not take much time for a sincere student like Anirban to become an asset of that House. He is loyal, faithful, honest, sincere, intelligent, deligent and is never oppositional. Problem arises when he encounters party where drinks like beer and whisky are served such as in the corporate house meeting. There people of our middle class family are in the habit to take it just like a cup of tea. Though Anirban informs his parents about this problem. Besides this Anirban quickly gets few promotions in his job. So he is selected to go America for further training. His Managing Director tries to explain, 'My grandpa used to worship the morning sun after taking a bath. And now I see the morning sun beside the flat of Mr. Duek and have a

feeling that it is also splattered with alcohol. Listen my brother, the world is changing very fast and what I mean, try to adjust yourself. Be smart and flexible. You are a promising young man.'

The son will go to America. Parents give flowers in the picture of Ramkrishna-Vivekananda for blessing. In the thursday mother figure out the legs of goddess Laxmi on the door. At the time of going to office Anirban is touched with holy flowers over his head. Yet his parents feel a bit perturbed at the time of his departure to America. What they have heard about that country is not at all good. Perhaps it is a country of liquor and meat. Again there is open free mixing among man and women, it is fearful to think. Though they feel a sense of pride as it is matter to tell story to others in proud. So before going to America they decide to give marriage to their son with a bride befitting to their middle class household.

They select one girl of Brahmin Bhattacharyay family of Naihati Bhatpara. That family is religious and maintain traditional Hindu culture-rites. Her grandfather is famous erudite Sanskrit scholar of Nyayay. The girl is sane and sober and also educated. She has done post-graduation in Bengali language and literature but is not imbibed of any kind of modernity. In the first day she touches the feet of Anirban's parents and for this reason his parents are very much pleased. As if she is born to be the bride of Anirban.

Newly wed bride arrange all the details of her husband before sending him to office and then only she takes care of her in-laws. They need breakfast, morning newspaper, hot water for bathing. In the next turn she starts supervising the handy man and women of the house and then comes the hour of regular worshipping the household gods. The whole family is now composed in a beautiful rhythm in the hand of Madhumita. In the afternoon there is crackling sound of cup-dish so we can assume that tea is coming. And in the cool breeze of afternoon the creeper of Madhabilata is swinging like pendulum. So now the life is very much pleasant to the parents.

In the dusk daughter-in-law will accompany them into the nearby park and road. Then in the evening Madhumita will lit the lamp offering to the household god. Meanwhile Anirban will arrive from office so she has to prepare for him tea and tiffin. In the meantime they will make holiday tour to Digha, Bakkhali, Taki for two-three days. This life is quite enjoyable to his parents. The bride and groom are seems to be made for each other.

Father became ill so Anirban's America-programme is cancelled. His workload is increasing day by day. Now it is difficult to maintain the daily workload of office as a daily passenger from suburban house. Regular meeting, seminar keeps him two hours in the office. So he decides to reside with his wife in a flat nearby office at Rajarhat. In the weekend they come to their parents in the old house. Father is reluctant to go the environment of din and bustle of Kolkata leaving this old house encircled by creeper Madhabilata. Grandpa will wait for the whole week in the verandha sitting in the easychair when his little grandson will arrive.

On the otherhand Anirban becomes increasingly busy day by day due to his office works. Over and above all the years he has tour programme for Chennai, Guahati etc.. Daily after office there is party meeting so he returns at dead of night. So Madhumita is assigned for the whole day to look after their son. In addition she regularly enquires about the health of in-laws over phone, whether they are taking medicines or not, lest they do not catch cough and cold, suggesting not open the window of north side of the house. In the rest time she engages herself in TV serial as and when it happens.

One day Anirban's parents rushed to our chamber in a very anxious and deplorable

condition. I came to know from them for the first time the story what I have narrated to you uptill now. In this age the heavy stress and anxiety toll their face. Perhaps they are unable to carry this disaster anymore. It seemed that they would immediately break down on my table. For the last few weeks they are not coming in the week-end to their old house. Sometimes Anirban did not get leave from office. Sometimes the grandson fell ill or there was meeting of their residence building committee. They had heard it but think it as gossip. Anirban is beating their daughter-in-law in inebriated condition. Is it a matter to believe! They think, it may be somebody's publicity out of jealousy. They cannot tolerate our good condition. But it is a matter of suspicion that they are not coming to their old home on most of the week-end. So to verify the matter in their own eyes parents rushed to their son's polished multistoried flat. While they reached in the fifth floor flat through lift they heard a huge uproar inside the closed room. They had not dare to switch on the calling bell. At last suddenly their daughter-in-law darted out opening the door and faced her in-laws. She immediately bow down her head and tried to close her mouth to avoid the alcoholic breath. Inside the house there were scattered belongings, half-torn. The small broken parts of the TV were scattered through the room. The liquor bottle were rolling on the floor. For a moment all of them were spellbound. At last father walked hesitatingly inside the floor and stood still at the western side balcony. The grandson rush to his grandfather and after embracing him he whispered, you could not believe, both my father and mother took alcohol now a days.

I had enquired to the old persons, sitting in front of me, how it could be possible? That we do not know. Still we do not believe our own eyes. Sometimes we do feel whether we are dreaming or not!

At last it was made possible to accompany Madhumita and Anirban to me. After discussing with them I realised that from morning till night in each and every day Anirban was so pressurised by the tremendous workload of his office that it could become impossible for him to maintain a happy healthy life with usual normal human qualities. In his new flat he developed some adjustment problem as it seemed to him not previously known. Perhaps it seemed to him that nothing was belonged to him. Even Madhumita was nothing special to him except a women. He missed his parents very much. Though he did not get much opportunity to think of it. However he realised, what the result by ruminating all this things! He had to swim in a current like this. Life denotes only present and truth is only momentary. Due to workload everyday he returned home in late hours. After regular office hours in the meeting he had to take even a small amount of alcohol at the request of his M.D. Then he felt relaxed for the rest of the night. If the amount was a bit more then he felt good even Madhumita appeared to him more pretty. Whether she appeared to be his wife or not she looked much more attractive. He had a good sleep with a better free morning. Again he tried to concentrate his office works. He became engaged to complete the future big assignments.

Madhumita could not pass her time. After coming this flat she also missed her in-laws. She waited through out the day only to receive Anirban at night. Due to Anirban's workload they could not attend the in-laws for a long time. Day after day she could not find any job except gazing to the other flats standing beside the balcony. Besides there were TV serial with the stories of homicide, kidnapping, crime, violence, attache full with money, interception by police van, hysteric heroine, disco dancer hero, suspiciousness to others, infidelity among couples etc..While thinking she highly missed her school, college days. She wished very much to be a school teacher. Abhirupda carrying a cotton bag in his shoulder with various

little magazines in it. Hesitatingly once he called Madhumita in a lonely place and recited his poems. He said, if you like it then my poetry is worthwhile. It is heresy that Abhirupda is still unemployed. Somewhere he has managed a job of a proof reader.

As Anirban could not accompany him so one day she created fuss and Anirban suggested to take her to the office party, you can verify with yourself what happens there. Madhmita frowned at the suggestion, exclaimed, only to swallow all this rubbish! But she could not pass her time so with a small request she agreed to accompany Anirban. Everybody was there in dressing suit and closed shoes and there was prohibition to attend the party without tie. All of them interact with laugh, sentences, stories measuring in inch in scale. The ladies were consciously loose, a bit talkative. Seeing Madhumita Anirban's MD came forward, he exclaimed, oh my god, how smart is your partner and you have captivated her in the house. As everybody pester so Madhumita had to take a little amount of drinks as courtesy. It had an obnoxious odour but that was familiar. Perhaps it reminded her of some antisocial behaviour in the street. But in quite astonishment, returning home Madhumita felt relaxed. After many days she made an intimacy with Anirban. Henceforth Anirban often carried liquor in house. Though he opposed when Madhumita wished to take it. On the contrary she threatened that she would take it if Anirban indulged it regularly. To make her threatening a reality she often took it against resistance and felt relaxed, trypsy and euphoric. She felt as if all the anger, contradictions, disgust, irritation of life had vanished.

In this way gradually both of them transformed into chronic alcoholic. Often they became intoxicated and under influence of alcohol created uproar and tortured one another. One day being intoxicated Madhumita recalled her Abhirupda loudly exclaiming - I will see your high salaried job, I can not tolerate your unemployment. Listening all this Anirban became furious and began to assault Madhumita, through away the TV set on the floor. In protest Madhumita through away the official papers of Anirban on the floor.

In a breath Anirban's father described the whole incidence and stared at me in a vacant look. Then after a deep sigh he said, this is not a single day affair, it happens in regular basis. I suggest, then call both of them, I think both of them are in distress. They are not doing it of their own wish, they are compelled to behave in this way. Definitely there are some cause behind their such type of behaviour.

Then Anirban and Madhumita visited to me. The picture was same what I had heard from their father. Neither there was any deep rooted cause of it. Actually they are suffering from a very complicated social problem, not from any personal problem. Everywhere we can find this problem. So they need a joint session of counselling. We discussed the matter in this way.

Our society is transforming very fast. The joint family set up has been broken down. We are finding its relics. Neither we can find any development of collective emotions of equal power. On the otherhand for rapid globalization man becomes alienated from his root. Equally he is alienated from his language, his folk culture, his history. He has lost his own culture. Actually he cannot identify his culture anymore. He is like a hyacinth floating in this current without any geographical root. He can only recognise a speed. Nowhere is his own place. Frequently he has to change his flat. Frequently he has to change his job and company. The job is not his own, he only possesses the monthly salary. The character of all the private companies are profit-motive. The company only want to be more rich. It has no relation with the welfare of mankind. Naturally there is a huge competition for survival. So they are

selecting many Anirbans with huge salary. They are purchasing Anirbans intelligence, leisure, labour, all days and nights etc.. So our Anirban will attend office in early morning and returns in late night. Off course they will provide the vehicle. This type of life style of Anirban's is normal and natural in this modern period. And it is quite natural that maintaining this life style Anirban will be chronic alcoholic and a psychiatric patient.

On the other hand Madhumita is an educated housewife. After doing post-graduation she is unemployed. She does not know where she can get her sense of pride for her productive work. Her relationship with Anirban is dull and monotonous. There is no creativity in this relationship or her living. She has no immediate social relationship. Here her immediate society is not that much familiar to her. It is the company club that is the immediate society. Here everybody are homeless. They only need home for night shelter. This relationship has a speed but without depth. It has shallow root. Here relationship breakdown easily as because here everything is disposable like all household goods. When they scatter from this speed they only see some void around them. Because speed is the money and everybody are engrossed in it. When they feel restlessness for this inner void they take shelter in alcohol. It is the momentary balm for the bruise heart. So he is returning to this tranquility for temporary emancipation. When his higher cerebral cortex is going down under influence of alcohol his conscience, ethics, judgement, morality everything envelopes into deep sleep. In this opportunity the submerged unsatisfied wish and dream, unexpressed anger, allegation, disgust all get freedom. Though both Anirban and Madhumita are so much conscious about their familial responsibility but cannot cope with this new unhealthy unnatural situation. While they are under influence of alcohol they lost their valuable 'conscience' and they engage themselves with all sorts of unrestrained nuisance behaviour. And we are stunned seeing this abnormal behaviour which is not at all befitting for them. Even their parents cannot believe it on their own eyes.

Still now Anirban and Madhumita have given a patient hearing. Now they want to know, do you apprehend that this would be our fate? There is no way to get out from this situation?

Actually the solution is rest on the change of this social structure. But there are some process to navigate against the current of adverse situation. If we think in that way then I would suggest that Anirban would take such a job that he can maintain it from his ancestral house as a daily passenger. Or he can take her parents to his flat. His parents' presence is essential for his composed family structure. The child is also missing his grand parents and if this situation continued he may suffer from some mental problems. This child would play the role of a bridge of relationship between his parents. Because now Madhumita and Anirban have no common area of thought or realisation. Anirban has to give time to his family. And he would not think it as a wastage of time. For this he needs such a job that may not be high profile but it would much more creative. Madhumita should make her educated self of existence prominent in outside job also. She would not go round the clock in the family circle as a meek docile housewife but she has to go round the outward circle of the society with her valor in education, culture, knowledge. The family would be based not only on consumer goods but on love, respect. Then all the family members would feel essential to each other. **P A S**