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Contents

Kalidas Bhattacharyya on freedom and art: some reflections*

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ABSTRACT: In a forthcoming article Professor Kalidas Bhattacharyya compares and evaluates different notions of freedom. Views regarding freedom according to him may be classified as transcendental and material and these in turn into positive and negative. In another article, on art, he holds: the highest positive freedom is best reflected in art. In his article on freedom Bhattacharyya concludes: both the transcendentalist approach and the materialist approach to freedom could be simultaneously embraced by different groups of people in the same society. The present article critically examines Bhattacharyya's views and discusses some problems arising out of his notion of art. Secondly, the author questions the feasibility of opting for 'alternative standpoints' on freedom.

Professor Kalidas Bhattacharyya prescribes understanding philosophy in the manner of an artist. One should first try to understand the central argument and then move on to the offshoots. In this way the entire argument structure should be developed. Having done this one has to examine how the lesser arguments strengthen or weaken the superstructure. Superstructure however should not be understood in the Marxian sense. Superstructure is to be taken as the overarching structure which guides the entire system. In this process Bhattacharyya feels many contingent arguments made by the philosopher may be ignored.[1] We shall follow the same prescription while trying to understand Bhattacharyya's interpretation of freedom and art. Instead of making sweeping comments on his entire work we shall confine our discussion to two of his recent articles: (i) 'Different Notions of Freedom Compared and Evaluated';[2] (ii) 'Some Reflections on Art'.[3]

Bhattacharyya holds a basically non-empiricist (empiricist in the technical sense) position. This means, according to him, that though all his remarks are entirely about experience (all types of experience), yet his method is not empiricistic.[4] In this respect he comes very close to Immanuel Kant, Edmund Husserl and K.C. Bhattacharyya.

The present discussion is divided into three sections. The first section is concerned with a critical exposition of the main arguments presented in the two above-mentioned essays. The second section deals with ways and means by which Bhattacharyya thinks his version of transcendentalism can peacefully co-exist with naturalism in any given society. The third section attempts to show why the purported application of his philosophy of 'alternative stand-

*Adapted from a paper presented at an All India Seminar on 'Meeting of the East and the West in Contemporary Indian Philosophy' held at North Bengal University, West Bengal in November 1983.

points' seems untenable when the issue is one between transcendentalism and naturalism.

I

We shall begin by examining Bhattacharyya's notion of freedom and then discuss his understanding of artistic creativity as a concrete example of such freedom. He classifies the various approaches to freedom into two broad categories: (*i*) the metaphysical schools (transcendentalism) and (*ii*) the schools which uphold the autonomy of nature (naturalism). He supports a version of the former school and sees the possibility of retaining an important place for the latter. So the disjunction between (*i*) and (*ii*) is not an exclusive one. He even thinks that a cautious practice of the two philosophies of freedom is the best formula for a totally free society.

To fully understand freedom Bhattacharyya thinks we must first learn to appreciate the difference between positive freedom and negative freedom. A distinction which can be maintained both in the metaphysical approach to freedom and in the naturalistic one. Negative freedom is a primitive step while positive freedom is enjoyed only in the final stages of freedom. The former begins with the individual's dissociation from nature. To consider dissociation as a continuous process or as an end-in-itself would be to confine oneself to a lower level of freedom. For the metaphysician the lower negative freedom ideally culminates in free consciousness-in-itself. The acceptance of consciousness-in-itself as the locus of freedom is found in Vedānta in the East and in Kant and Husserl in the West.

Consciousness-in-itself neither asserts nor denies the in-itselfness of Nature. Indifference to the in-itselfness of Nature is a distinguishing feature of metaphysical freedom as generally understood. Though no positive assertions about Nature are made, precautions are taken to acknowledge Nature, however, in an indirect manner. This is achieved by holding that man's free-self-consciousness is a sort of construct of Nature and Nature in turn is experienced in so far as it is constructed. Such views are perhaps commonly shared by all metaphysicians who take recourse to the transcendental argument. It is not very clear, however, whether Bhattacharyya arrives at his notion of free-self-consciousness by the help of a transcendental argument or whether it is a postulation. Perhaps he would not shirk from the more exacting method, namely, the transcendental argument. Bhattacharyya feels that Kant, Husserl and the entire group of transcendentalists have terminated their enquiry regarding freedom at the second stage with the acceptance of a free-self-consciousness. These transcendental explanations are therefore inadequate. The transcendentalist fails to relate man's free-self-consciousness to his lived world of practice.

In order to complete the explanation of freedom Bhattacharyya feels the need to go further and accept a third stage. To stop short of this third stage would be to deprive one of what is true positive freedom. This stage is characterized as 'freedom to...'. This is perhaps a new expression introduced by Bhattacharyya; the more prevalent labels of freedom being 'Freedom of...' and 'Freedom from...'. 'Freedom to ...' is a free dealing with Nature. In this third stage man does not avoid Nature as in negative freedom nor is he determined by any natural constraints. What we have here is an integral free embrace of Nature.

In the third stage free-self-consciousness trifurcates into free cognition, free conation and free emotion. From now on cognition, conation and emotion take on quite different forms, mostly initiated and developed from within, and all of them would be self-conscious.[5] Bhattacharyya feels no strict demarcation can be maintained between cognition, conation and emotion; all three attitudes are always co-present in different degrees of affectiveness. Cognitive freedom is to be understood as freedom to perceive, conative freedom as freedom to manipulate and emotive freedom may be understood as free disposition. In the third stage, 'Freedom to...', there is no wholesale commitment to Nature. We shall return to a discussion of commitment later in this article.

With these initial remarks on Bhattacharyya's version of transcendental or metaphysical freedom we shall now pass on to his 'Some Reflections on Art'. The final stage of emotive freedom is ideally reflected in creative art. The artistic disposition towards things is normative, it is a disposition towards things as they should be. Like all values the artistic norm of beauty is also *sui generis* but at the same time it is not available to human beings as a pre-given. Beauty has to be perfected by man through a gradual process. Thus we find all the values of Truth, Beauty and Goodness appear with capital T, B and G symbolizing their role as proper names of pre-givens. The gradual process of cognition, conation and emotion towards a fuller realization of values, the transition from the imperfect to the perfect is a path to be followed by human beings. At the metaphysical level these values are already perfected and are not resultants of a real historical process. At least this is the thesis that seems to emerge from Bhattacharyya's 'Some Reflections on Art'.[6]

The joint assertion of a gradual process at the empirical level along with a perfection at the metaphysical level is a recurring theme in Indian thought found in oft-quoted lines of the Upaniṣads and in the writings of Tagore. Bhattacharyya, however, acknowledges a close affinity to Tagore's view on freedom.[7] The dispositional norm of art seems to be a guiding principle that constitutes the essence of man, the universal in man. Is it through this creative disposition that man is united to man? For Tagore it is.[8] Whether Bhattacharyya would accept a fundamental creative unity through love or communication is doubtful. He seems to want to begin with the isolated individual, the thinking individual, and then explain the occurrence of communication as a later development. While discussing the problem of communication he once wrote that on the metaphysical level he would like to show that 'I' can exist without 'you' but not vice versa.[9] His anxiety to establish individual freedom

vis-à-vis creativity seems to generate a tension at two points in the articles being presently discussed: (*a*) in the context of man-made beauty versus natural beauty, (*b*) in the context of the individual versus the group. We shall begin with a discussion of the former.

Natural beauty and the sublime are always taken to be ideal or faultless by Bhattacharyya. He goes on to say that humanly created arts are never perfect; they only approximate to (ideal) perfection. He also observes that one cannot remain engrossed in natural beauty for long. 'A sense of monotony and languor is sure to follow.'[10] In the broader context of the thesis under discussion the reaction of monotony or languor in the face of the sublime or natural beauty seems incongruous. Especially in the light of what the author says in relation to man's encounter with reality/facts. Facts are not merely thrust on free man, they are also freely manipulated by him. If man is free to construct facts then the anticipated languor and monotony could be avoided. Does man encounter Nature as a fact or a value? If sublime Nature is an absolute value then how can man help being awe-struck as in the face of some *mysterium tremendum* and how in the same context can he avoid acknowledging the in-itselfness of nature? But then we have been told that in metaphysical freedom we neither fully assert nor fully deny the in-itselfness of Nature. To say that the experience of natural beauty is bound to lead to monotony unless one perceives it in a 'pulsating *religious* attitude' seems to be a thesis Bhattacharyya need not have committed himself to. Incidentally, such a thesis is unacceptable to both Marx and Tagore.[11]

Now let us see how the tension between the individual and the group occurs in Bhattacharyya's thought. The distinctiveness achieved by an artist through *sādhanā* changes his total perspective towards life and art but has limited consequences for society. A more vital social role is played by individuals enjoying positive conative freedom. The possessors of such freedom constitute a group of social elites who make positive contributions to society. In 'Different Notions of Freedom Compared and Evaluated' it has been maintained that: 'Conation, too, passes through similar different stages. At the lowest stage where it first transcends Nature (to return to it immediately in the correspondingly enlightened attitude) it comes out, initially, as a free force defending a community against aggression and doing it internal good'. The aggression referred to here is perhaps anticipated from those individuals who only enjoy negative freedom or from those who are bound by some form of determinism. Since gradualism is recognized in the context of conative freedom as well, aggression may come from those less free fellow-travellers on the path of positive freedom. When two groups fight in defence of two sets of values who is to decide which group is on the side of greater freedom? Bhattacharyya appears to be still in search of some mutually acceptable criterion of excellence. Though every later view is said to be fuller and richer than every earlier, the desirability and acceptability of the later has to be patiently investigated into. Granted that a criterion can be settled on, a further question still arises: What integrates free individuals against aggressors? Sri Aurobindo suggested a co-operative way of realizing conative freedom. But such an explanation is unavailable to Bhattacharyya since communality is not a necessary condition for his true positive freedom. One wonders if one of the characteristics of this free conative force is that it is a natural suppressor of disvalues, a force akin to that spoken of in the *Bhagavadgītā*? But such an acceptance would lead to unqualified determinism. Taking the above considerations into account it is difficult to understand how exactly conative freedom is supposed to work in the face of aggression.

Bhattacharyya speaks of the intrinsic dynamism of art which co-exists with its static aspect. The direction of this dynamism is not very clear. If it is a movement towards the absolute values, the pre-givens, then is the dynamism predetermined by the *telos*? Unless new values are allowed to emerge how are we to understand positive metaphysical freedom *vis-à-vis* values? On the other hand, if creativity is accepted even in the value realm, it is difficult to understand how Bhattacharyya's system will incorporate the inevitable infiltration of history at the transcendental level.

Having given a brief critical exposition of some of Bhattacharyya's views on art and freedom we shall now examine some of the possible areas in which the transcendentalist can co-operate with the naturalist.

II

Bhattacharyya shows a definite preference for the metaphysical approach to freedom. He characterizes the transcendence of a free self-conscious being as a *liquid* transcendence, meaning thereby that it is 'shown' but not 'said'. Given determined efforts, this transcendence can of course be systematized but in that case it is no longer silent.[12] The transcendentalist gains an edge over the naturalist on the spiritual level. Bhattacharyya writes: 'It is difficult to see how either of these forms of freedom could be better working than the other: each is as adequate in its own domain as the other—the naturalist for nature and the metaphysical not merely for consciousness-in-itself but also for Nature as taken up by, i.e., understood from the point of view of, consciousness-in-itself—and neither of these fittingly applies to the other's field'.[13] In metaphysical freedom Nature is understood in terms of consciousness whereas in naturalism consciousness is understood in terms of Nature. Though the concepts of naturalism and transcendentalism do not fittingly apply to each other's field it is felt that they can co-exist peacefully. All the criticisms of metaphysics being an opium and a definite evil, criticisms commonly made by the Marxists (who are naturalists) need not stand in the way of co-operation between the two philosophies. A conflict only arises when the transcendentalist tries to degrade Marxism or tries to institutionalize transcendentalism with an aim to exploit people.[14]

We are told that there are no valid grounds for preferring either the naturalistic conceptual framework or the metaphysical conceptual framework. The

criteria generally used for making preferences are those of truth, better workability and wider coverage. Bhattacharyya maintains that 'Of these two forms of richer positive freedom neither scores a victory over the other' and he goes on to prescribe that people should be left free to opt for either according as is suggested by appropriate circumstances.[15] Ideally no one should be allowed to thrive at the cost of the other. No doubt such a prescription if feasible would lead to a solution of many conflicts. From the thesis that neither framework is superior to the other or neither converges at any point it does not necessarily follow that the two can be embraced simultaneously by two groups as parallels or equiprobable in terms of choice. The feasibility of keeping the choice of accepting a trancendental framework open in a Marxist society will be examined in the third section. (We are persuaded in treating Marx as an ideal exponent of a subform of naturalistic positive freedom primarily at the instance of Bhattacharyya himself who has often referred to Marx as an example.)

III

Bhattacharyya appears to have maintained that the third stage in positive naturalistic freedom borders dangerously on the metaphysical account of freedom given above. Attempts to synchronize these two approaches are conspicuously being made in Poland and, to a great extent, in East Germany. In such societies there seems to be a split, the notion of freedom that guides cognition, conation and emotion at the spiritual level is not the notion that guides social interactions. But a double standard in respect of values would not be accepted by Bhattacharyya. For him there is no permanent value dichotomy, an individual is expected to consistently accept either the metaphysical position or the naturalistic position. Perhaps one of the reasons for believing that metaphysical freedom comes dangerously close to naturalistic freedom at the third stage is revealed in the following remarks: 'There is no case of escapism here, though no wholesale commitment either, all commitment being as far away from animal involvement as from escapism. This is true as much of naturalistic positive freedom of the richer form, as of the metaphysical positive freedom'.[16] The clubbing together of the naturalistic and metaphysical stands *vis-à-vis* commitment hardly seems justified. Values no doubt play a major role in Marxist philosophy but at the same time there is a whole-hearted commitment to the in-itselfness of Nature. This full-blooded commitment is also displayed towards social reality. A free passage from historical reality to an a-historical core and back to history would be viewed as a definite constraint to the practice of Marxism. Any commitment short of absolute commitment is a misnomer to the Marxist and therefore suspect. A transcendentalist may try to balance both sides with one foot in history and the other in the trans-historical realm. The second alternative for the transcendentalist would be one of arbitrarily self-imposed commitment; where one could get involved or uninvolved as and when one desires. Such desires could only be guided by

'being-for-oneself' and 'being-for-others' or the socially situated being. The Marxist demand for total commitment to Nature even at the third stage does not leave any conceptual place for people with partial commitments or pseudo-commitments. For them the clash of interests takes place at the natural level and not at the transcendental level. For the transcendentalist, on the other hand, the programme for a peaceful co-existence with the naturalist is plausible since thereby his prime interest in the transcendental remains unaffected. The consequence of accepting naturalism and transcendentalism by different groups in the same society will either be a basic compromise or a conscious acceptance of the weakening of the authority of reason. But, as Bhattacharyya says, there will always be differences of opinions on philosophical issues. Ironically our differences with Bhattacharyya perhaps proves his central thesis, viz., that there will always be alternative standpoints.

Notes and References

(Kalidas Bhattacharyya is an important contemporary Indian philosopher whose contributions will go down in the annals of history. For this reason it is important that his observation on philosophy made in personal correspondences be kept on record. Such source material are commonly used in the West and there seems no reason to deviate from this tradition. With this in mind personal letters containing philosophical insights have been freely used. All the letters quoted in this article were written to the present author.)

1. A free translation of a letter written by Bhattacharyya on 1 June 1982 is given in the text the original of which is given below:

   "প্রবন্ধ লেখার ব্যাপারে বা অন্য কোন দার্শনিককে বোঝবার ব্যাপারে আমি অনেকটা আর্টিস্টের মতন। একেবারে central কথাটা ধরবার চেষ্টা করি। তারপরে চেষ্টা করি তার যতো developed offshoot গুলি ধরবার। এইভাবে পুরো structure-টা গড়ে তুলি। [অন্যান্য facts এর সার্থকতা হল এই superstructure strengthen করা অথবা weaken করা] অন্য দার্শনিককে, অন্য যে কোন চিন্তাশীল লোককে, বুঝতে গিয়েও আমি ঐ একই পদ্ধতি অনুসরণ করি। ফলে ঐ সব দার্শনিকদের অনেক contingent বক্তব্য হয় আমি সরাসরি বাদ দিই—যদিও অনেকের কাছেই ওগুলি important মনে হয়—অথবা দেখাই ঐগুলি কেমন করে আসল দার্শনিককে পথচ্যুত করার চেষ্টা করছে।"
2. Kalidas Bhattacharyya, 'Different Notions of Freedom Compared and Evaluated', in *Communication, Identity and Self-Expression: Essays in Memory of S.N. Ganguly*, ed. S.P. Banerjee and Shefali Moitra, Oxford University Press, Delhi, 1984.
3. Kalidas Bhattacharyya, 'Some Reflections on Art', *The Visva-Bharati Quarterly*, vol. 46, nos. 1, 2, 3 and 4.
4. These remarks about Kalidas Bhattacharyya's own philosophical position are a free translation of excerpts from the above-mentioned letter where he writes:

   "আমি অনেক ভেবে দেখলাম, আমি মূলতঃ non-empiricist ('empiricist' in the technical sense বোঝবা)। অর্থাৎ আমার বক্তব্য পুরোপুরি experience (সর্বজ্ঞাতীয় experience) সম্বন্ধে হলেও method-টা empiricistic নয়।"
5. Bhattacharyya, 'Different Notions of Freedom Compared and Evaluated'.
6. Bhattacharyya, 'Some Reflections on Art', p. 61.
7. In a letter dated 4 June 1981 Kalidas Bhattacharyya writes:

   "আমি এটাও সর্বান্তঃকরণে স্বীকার করি যে creative silence-এ অধিকার মানুষ মাত্রেরই আছে।...আমি তো রবীন্দ্রনাথের মতো ওটাকেই মানুষের 'মনুষ্যত্ব'—spiritual humanism অথবা humanistic spiritualism—বলতে চাই।"
8. Rabindranath Tagore writes, 'A creation of beauty suggests a fulfilment, which is a fulfilment of love...And faith itself is this, that beauty is the self-offering of the One to the other One!' in *Creative Unity*, Macmillan, pocket Tagore edition, Delhi 1980, p. 19.

9. Kalidas Bhattacharyya's remarks on communication as presented here are based on a letter written on 2 March 1983. The relevant portion is given below:

"আমি establish করতে চাইছি যে, speaking মাত্রেই communication নয়। Speaking এর intrinsic form হল thinking যেটা understanding (by another or by myself as another) তো নয়ই।, Understanding (=hearing) কে presuppose করে না (বা তার প্রয়োজন বোধ করে না) এবং যেটা বরং understanding (বা hearing) এর necessary presupposition. Metaphysically দেখাতে চাইছি—'তুমি' ছাড়াও 'আমি' থাকতে পারে। কিন্তু not vice versa।"

10. Bhattacharyya, 'Some Reflections on Art', p. 34.
11. Karl Marx, *Grundrisse*, tr. M. Nicolous, Penguin Books, reprinted in 1977, p. 11. Also see Rabindranath Tagore, *Creative Unity*, p. 19.
12. Bhattacharyya's remarks about *liquid* Transcendence are made in a letter dated 3 May 1983:

"Apriority কে (বা transcendence কে) যখন আমি liquid বলেছি, তার অর্থ হচ্ছে সেগুলি 'shown', not 'said', so far তবে 'shown' গুলিও চেষ্টা করলে *systematically* ধরা যায়, এবং তখনকার procedure হয় pseudo-logical বা semi-logical।এই pseudo- বা semi-logical procedure *tends* to end, *claims* to end, *demands* to end in sorts of transcendental (mystic) experience which, *as* systematic, is eloquent, not silence."

13. Bhattacharyya, 'Different Notions of Freedom Compared and Evaluated'.
14. These remarks are a free translation of a letter written on 3 May 1983:

"এতেই সৃষ্ট হয় art, religion, transcendental philosophy বা mysticism, মার্কসীয় দৃষ্টির সঙ্গে এর বিরোধ তখনই যখন এই transcendence মার্কসীয় approach অস্বীকার বা degrade করে, অথবা যখন এটাকে institutionalize করে লোকে exploitation-এর সুযোগ ঘটিয়ে দেয়।"

15. Bhattacharyya, 'Different Notions of Freedom Compared and Evaluated'.
16. Ibid.

Fuzzy relations: a non-standard approach for modelling reality

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With the advent of the theory of fuzzy subsets in the year 1965, a new area of research called fuzzy logic has come into being and is advancing with a very rapid pace. The initial cloud of criticism has settled down and at present mathematicians and logicians also are developing their interest in this area. It is now felt that the accepted limitation of former two-valued logic can be removed, at least partially, by fuzzy logic and arguments like 'If a tomato is *red* then the tomato is *ripe*/This tomato is *very red*/Hence this tomato is *very* ripe' (Mizumoto, 1982) are worth paying attention to. Statements involving fuzzy predicates like 'red' or 'ripe' or fuzzy quantifiers like 'very', 'most', 'few', etc., had been left outside the scope of standard logic. If such statements are ever included in some argument their truth value determination remains very artificial in the sense that the statement 'A is red' is taken to be either 'true' (truth value 1) or 'false' (truth value 0). But as the 'set of red objects' is not specified with a sharp border line, i.e., the change from red to non-red objects is gradual rather than abrupt, the above type of value assignment does not reflect the real situation. There may be an object whose redness is almost nil. So if A be that object, it is more natural to have for its truth value a number very close to '0'. Thus essentially fuzzy logic is a many-valued logic. At this point it seems appropriate to quote Zadeh, 'Informally, by approximate or equivalently, fuzzy reasoning may mean the process or processes by which a possible imprecise conclusion is deduced from a collection of imprecise premises. Such reasoning is for most part, qualitative rather than quantitative in nature and almost all of it falls outside the domain of applicability of classical logic' (Zadeh, 1977). Multiple-valued logics have already fuelled the debate on the philosophical question 'Is truth a matter of degree?' (Mamdani, 1983). Fuzzy logic has, possibly, provided us with an answer in the form of a counter question 'Is it proper to enquire precisely about the truth or falseness of every statement?'

Relations occupy a very central position in the study of logic and also in the theory of sets considered as a foundation of mathematics. Fuzzy relations, naturally, have attracted many researchers too, Zadeh (1971) Kaufmann (1975) and Rosenfeld (1975) being the pioneers. Also the ideas relating to fuzzy relations have been very successfully applied to fields like 'pattern recognition', 'clustering analysis', 'medical diagnosis', etc.

The object of this paper is threefold.

(i) To introduce fuzzy relations and the various notions connected with it.

(ii) To investigate into its methodological advantages.
(iii) To consider some alternative proposals by N. Blanchard in defining fuzzy relation as such and its categories.

The conclusion aims at an attempt towards the synthesis of the two approaches.

* * *

Let U be the universe of discourse. A subset S of U can be characterised by a function from U to the set [0, 1], called the characteristic function fs that maps every element of S to '1' and every element not of S to '0'. The three basic operations with sets, viz. complementation, union and intersection can then be characterised by the following operations.: Complementation of S by the function $1 - fs$, union of S_1 and S_2 by the function max (fs_1, fs_2), and intersection of S_1 and S_2 by the function min (fs_1, fs_2). Reversely, to each function from U to [0, 1] there corresponds a unique subset of U. Thus there is a one-to-one correspondence between the set of subsets of U and the set of all functions of the above type and hence there is no difficulty in identifying a set with its characteristic functions. We can assume also that the functions are defined first and the subsets of U are some abstract entities corresponding to each such function. This second approach is more fruitful for defining fuzzy subsets of the universe in which case the image set is not the two element set {0, 1}, but the closed unit interval [0, 1].

DEFINITION: A fuzzy subset of the universe U is a function from U to [0, 1].

To each such function, we can assign some abstract entities similar to the subsets of U as above. Once this association is completed we can think in reverse and can assume that there are certain abstract entities called the fuzzy subsets of U which are identified and completely realised by their corresponding functions. If S is thus a fuzzy subset then the corresponding function fs would be called the membership function (instead of characteristic function). Hereafter, by a fuzzy subset or fuzzy set we shall understand this abstract entity that can be realised only by its unique membership function. Complementation, union, intersection of fuzzy subsets are now defined as in the ordinary case.

DEFINITION: A fuzzy subset S_1 is said to be included in the fuzzy subset S_2 if and only if $fs_1 \leqslant fs_2$, i.e., $fs(x) \leqslant fs_2(x)$ for all x belonging to U.

Mathematically, this generalisation is obvious. The previous functions (characteristic functions) are particular cases of membership functions and thus classical subsets (henceforth ordinary sets or subsets) are also fuzzy subsets. Membership or belongingness is now graded and it would be more appropriate now to say that the belongingness of x in S is of grade '0' rather than saying that x is not a member of S. A physical model of a fuzzy subset of U can be visualised by the picture of a region with boundary or more generally with the boundary gradually faded out.

RELATIONS: We shall restrict ourselves to binary relations only. A binary relation on an ordinary set S is a subset of the cartesean product $S \times S$. A fuzzy binary relation R over a fuzzy subset S is a fuzzy subset of the product $S \times S$. The product $S \times S$ is defined as the fuzzy subset of $U \times U$ realised by the membership function $fs \times s$ from $U \times U$ to (0, 1) defined as follows:

$$fs \times s\ (x,y) = \min [fs(x), fs(y)], \text{ for } x, y \in U.$$

Thus $fR\ (x,y) \leqslant fs \times s\ (x,y) = \min [fs(x), fs(y)]$.
For convenience, $fR\ (x,y)$ will be sometimes, written as $R\ (x,y)$.

Unlike ordinary relations over ordinary sets where two elements are either related or not related, i.e., either the grade of relationship is 1 or it is 0. Here, in case of fuzzy relations two elements may be related to each other in various grades. Let x and y belong to an ordinary set S. The fuzzy relation R is defined as a subset of $S \times S$. And let $fR\ (x,y) = .7$. Its interpretation is that 'x is related to y and the relationship is of grade .7.' In fact, in the above statement the part, 'x is related to y' is redundant in the sense that according to the new definition of relation each pair is related and of course, some are related with 'zero' grade ('unrelated' if one likes). In the more general situation S is fuzzy and let $fs\ (x) = .5$, $fs\ (y) = .8$. So $fR\ (x,y) \leqslant .5$. Let $fR\ (x,y) = .3$. Then this can be interpreted as 'x whose grade of membership in the fuzzy subset S is .5 is related with grade .3 to y which is of .8-grade membership in S'. A typical fuzzy relation can be depicted in the following figure (Fig. 1) which is a weighted directed graph (now called fuzzy graphs (Rosenfeld, 1975)).

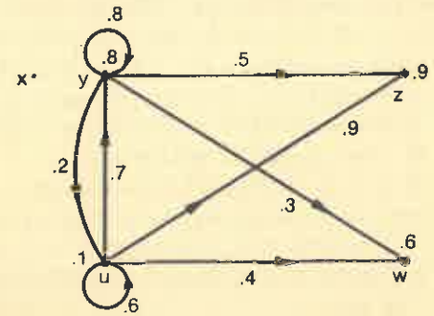

FIGURE 1

In this figure, numbers at the vertices are the grades of their belongingness in the fuzzy subset S of the universe. No assignment of a value to a vertex means its grade is zero. The numbers at the connecting arcs indicate the grade of relationship, the arrow indicates the order. If there is no arc from x to y it means that the grade of relationship of x to y is zero.

Reflexivity, symmetry, transitivity, antireflexivity and antisymmetry have been effectively defined. We discuss them below, considering in each case the fuzzy set S as the base on which the fuzzy relation R is defined.

Reflexivity: Various types of reflexivities have been introduced in recent past.

Type I $R(x,x) \geq R(x,y)$ for all x,y.
Type II $R(x,x) \geq \alpha\ (>0)$ for all x.
Type III $R(x,x) = \alpha$ for all x.
Type IV $R(x,x) \geq 0$ for all x.

Two very important special cases under type I deserve special mentioning.

Subtype I $R(x,x) = 1$ for all x.
Subtype II $R(x,x) = f_S(x)$ for all x.

In fact, these two subtypes are actually same as would be clear from the following consideration. By definition

$$R(x,x) \geq \min [f_S(x), f_S(x)] = f_S(x).$$

Thus the highest possible grade of x's being related to itself is $f_S(x)$, the grade of membership of x in S. So subtype II assigns the highest grade to (x,x). In subtype I, 1 being highest possible value, (x,x) has been assigned to the highest grade. In this case the base set S should necessarily be an ordinary one. In types II and III, α is called the order of reflexivity. This notion of order plays a significant role in the theory of fuzzy relations. Type IV has been given the name of absolute reflexivity. An elaborate discussion on reflexivities may be found in (Chakraborty and Das, 1983a, 1983b).

Symmetry. R is symmetric if and only if $R(x,y) = R(y,x)$ for all (x,y), implying thereby that the grades of relationship of x to y and y to x are same.

Transitivity. R is transitive if and only if for any three members x, y, z of the universe, $R(x,y) \geq \min [R(x,z), R(z,y)]$. The relation depicted in Fig. 1 is transitive. This transitivity condition was given by Zadeh (1971) and he himself said that this requirement is 'too storng', subsequently, the condition was relaxed and 'weak' and 'strong' types of transitivity have been introduced (Blanchard 1981), the above being the 'strong' one.

Antireflexivity. If $R(x,x) = 0$ for all x, then it is called antireflexive. One may consider antireflexivity as a special case of type III reflexivity when its order α is zero.

Antisymmetry. R is said to be antisymmetric if for $x \neq y$, either $R(x,y) = R(y,x) = 0$ or $R(x,y) \neq R(y,x)$.

A special case of antisymmetry is perfect antisymmetry which is characterised by the following, $R(x,y) > 0$ implies $R(y,x) = 0$ for $x \neq y$.

It is apparent that any antisymmetry can be expressed as the union of two perfect antisymmetries. This resolution is, however, not unique. In the next figure (Fig. 2) we give two different sets of resolutions of a simple antisymmetric relation.

It may be noted that if an antisymmetric relation is at the same time transitive, there exist perfect antisymmetric resolutions that preserve the transitivity. This result provides us with some simple methods of dealing with antisymmetries. For example, Szpilrajn-Marczewski like theorems concerning extension of a partial ordering to a linear ordering can be very effectively tackled

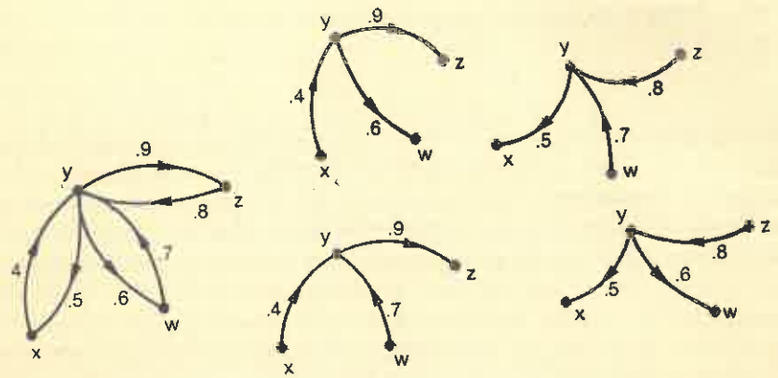

FIGURE 2

with the help of such resolutions (see Chakraborty, 1984). Interestingly, symmetries are also resolvable in terms of perfect antisymmetries. This has been hinted at by Russell himself (Russell, p. 43). We want to add that perfect antisymmetries are basic relations. Symmetries as well as antisymmetries and for that matter any relation is obtainable by the superposition of perfect antisymmetries.

There is still another aspect of antisymmetry that is worth mentioning. For any fuzzy antisymmetry defined over a base of finite set, a notion of 'order of antisymmetry' can be defined as follows. Let $x_1\ x_2 \ldots x_n$ be the elements of the base set and R be a fuzzy antisymmetric relation over this set. Then the order of antisymmetry of R is the number $\sum_{\substack{i,j \\ i \neq j}} R(x_i, x_j) - R(x_j, x_i)$.

This number may be interpreted as the extent to which a relation deviates from symmetry. Except in the trivial case when no two elements are non-negatively related, for an antisymmetric relation the above number is positive and for a symmetric relation zero. Let us consider a real situation represented by the antisymmetric relation of Fig. 2. Let the figure represent a pipeline network through which water flows, the numbers at the vertices being the amount of water that can be reserved at those points and the numbers at the arcs indicate the amount of water flowing per unit time. Then the above order of antisymmetry represents the total amount of water displaced per unit time within the whole network system. In case of symmetry, at any given time this flow is zero:

Fuzzy equivalence or similitude, fuzzy tolerance and fuzzy order may be defined as follows.

Fuzzy equivalence:	Reflexive + symmetric + transitive.
Fuzzy tolerance:	Reflexive + symmetric.
Fuzzy order:	Reflexive + antisymmetic + transitive.

For some details of above notions one may consult (Chakraborty, 1983a,

1983b). Fuzzy partitioning is again a very important concept that has been dealt with in (Chakraborty 1983b).

* * *

The primary advantage of the notion of fuzzy relations lies in the fact that these give us a better representation of real situations. For example, let us consider the statement 'x is related to y, if y is a friend of x.' Such a situation can hardly be captured by the standard two-valued relations where it is considered that 'either y is a friend of x or y is not.' But in reality it is difficult to draw a sharp border line between friends and non-friends and this is not meaningful also. Rather it appears more appropriate to have a gradation among one's familiarity circle that assigns the value 1 to 0 to all the members belonging to that circle. And it is more meaningful to state 'x is related to y of grade α.' Thus if x is related to y_1 of grade 1 and to y_2 and y_3 of grades .6 and .1 respectively, then we can interpret this as that y_2 is a 'lesser friend of x than y_1 is and y_1 is almost not a friend.' The advantage can be realised more clearly with an antisymmetry. Suppose water flows from x to y at the rate of α and from y to x at the rate of β. According to the standard theory, x and y are to be said to be symmetrically related so far as water flow is concerned ignoring the differences in the rates of flow α and β. It cannot distinguish this situation with that when $\alpha = \beta$. Also if one of these values, say β is too low so that the flow from y to x may be considered as almost zero, then for all practical purposes this should be taken as an 'antisymmetric connection' though the standard theory would still categorise it as a 'symmetric' one. If graded relationship are taken into account it would better describe the situation and according to this, the case when $\alpha = \beta$ will be named 'symmetric' and other cases 'antisymmetric'. We quote Bertrand Russell, 'Asymmetry, i.e., the property of being incompatible with the converse is a characteristic of the very greatest interest and importance' (Russell, p. 42,). Russell's asymmetry is in fact our antisymmetry. The incompatibility in case of the above situation is obvious.

Let us consider another aspect of the multiple advantages of this new concept. Graph theory is, at present, a very important branch of study that models natural (rivers with their tributaries) biological (human blood circulation system) or social (marketing-distribution channel) phenomena representable by a network. Now, in many situations this network requires weights both at the nodes and at the arcs, forming thereby a directed weighted graph. *This directed weighted graph is precisely a fuzzy relation.* As the theory of fuzzy relations advances, more and more information about the weighted digraphs are being acquired. Graph theory in turn is again highly applicable in branches like clustering analysis, pattern recognition, etc. The following quotation from R.T. Yeh and S.Y. Bang in connection with the applicability of fuzzy set theory to clustering analysis would suffice to project its significance. 'The usual graph theoretical approach to clustering analysis involve first obtaining a threshold

graph from a fuzzy graph (weighted digraph, Author) and then applying various techniques to obtain clusters as maximal components under different connectivity considerations. These methods have a common weakness, namely, the weight at the edges are not treated fairly in that any weight greater (less) than the threshold is treated as 1 (0). It may be shown that the fuzzy graph T_2 approach is more powerful' (Yeh, Bang, 1975).

There is still another aspect that is always true in case of generalising a particular theory. Let T_1 be a theory that has been generalised to T_2. Let P be an assertion that has not been proved or disproved in T_1. If P is considered in T_2 we face with three possibilities, viz.,

(i) P is proved in T_2.
(ii) A necessary and sufficient condition Q is obtained for P.
(iii) P is again left unresolved.

In cases (i) and (ii) we are in a more advantageous position with P in T_2 than in T_1. In the first case, we can scrutinize the premises relaxed in T_2 and can attempt to check if they are standing against the provability of P in T_1. In the second case we can verify if Q holds in T_1 also and can determine the provability of P in T_1. We have observed manifestation of these advantages in Sanchez's attempt (Sanchez, 1976) to find maximal solutions of the relational equation

$$R_1 \circ R_2 = R_3$$

where '$\circ$' represents the relational product. The question of finding a necessary and sufficient condition for $R_1 \circ R_2$ to be transitive, when each of them is so, is still open. Attempts are now being made to settle this question within the generalised theory, the fuzzy relations.

An Alternative Approach

N. Blanchard has come forward with some new ideas concerning the definition of fuzzy relations and its various categories (Blanchard, 1981, 1982, 1984). Before taking up discussions on them let us state her methods.

Definition of Fuzzy relation on the fuzzy subset S: A fuzzy relation P is the datum for any $(x, y) \in S \times S$ of a monotonic decreasing function Q(x, y) from [0, min ($f_S(x)$, $f_S(y)$] to [0,1] where S is the ordinary set such that $\alpha \in S$ if and only if $f_S(a) > 0$.

S is called the support of S. Also by $N_t(S)$ is denoted the ordinary subset of S such that $x \in N_t(S)$ if and only if $f_S(x) \geq t$. N_t is also called an α-cut of S.

The above definition of fuzzy relation needs a little clarification.

Let $t \in [0, \min(f_S(x), f_S(y)]$ and $Q(x,y)(t) = u$. $Q(x,y)(t)$ is the image of t under the function Q(x,y). This is sometimes denoted also by $R_t(x,y)$ or $R(x, y)$ when Q(x, y) is a constant function). As $t \leqslant \min[f_S(x), f_S(y),]$, x and y are both members of $N_t(S)$. $R_t(x,y)$ or u is fixed for a particular t and (x,y). This is interpreted as 'when you consider that x and y are in $N_t(S)$ the degree

of plausibility for x being related to y is u' (Blanchard, 1983). It is also to be noted that if $t' < t$, then x, y are members of $N_{t'}(S)$ as well and Q (x,y) (t) $= U' \geq u$ as Q(x,y) is decreasing. Hence, while $N_t(S)$ is a subset of $N_{t'}(S)$, the value assigned to (x,y) is lower when x, y are considered members of $N_{t'}(S)$. This fact is again interpreted by Blanchard, 'we are more demanding in $N_t(S)$ than in $N_{t'}(S)$ before saying that x is related to y' (1983). It should be noted further that there is no restriction imparted by the fuzzyness of S on the choice of u (interpreted as the degree to which x is related to y), nor is this assignment unique. The only point where fuzzyness of S has been taken into consideration is that if (x,y) is considered as belonging to a smaller α-cut their grade of relationship should be lower.

The above definition has a special case, when Q is a constant function. In this case this constant value can be taken as the grade of relationship between x and y. If however, this value is less than or equal to min [$f_S(x)$, $f_S(y)$], this coincides with our own definition of relation. In that sense Blanchard has introduced a definition much more general than ours.

With the above definition of relations, Blanchard proceeds to define the categories, viz., reflexivity, symmetry, antisymmetry, transitivity. She suggests a few alternative sets of definitions all of which coincide with their counterparts defined by Zadeh when the base set is ordinary except only the transitivity condition T_2 (see Blanchard, 1983). Without mentioning all of these alternatives we state only one that Blanchard prefers most. For her comments see (Blanchard, 1984).

Reflexivity. Q(x,y) (t) $\geq$ t, $\forall t \in [0, \min (f_S(x), f_S(x)]$. In particular, if Q (x,x) is constant then Q(x,x) (t) = Constant $\geq$ t, $\forall t \in [0, f_S(x)]$. Hence Q(x,x) (t) $\geq f_S(x)$. This special case can be restated as

(r) $R(x,x) \geq f_S(x)$,

meaning thereby the value assigned to the pair (x,x) by the relation R is greater than or equal to the grade of x in S.

Symmetry. $\forall t \in [0, \min (f_S(x), f_S(y)]$,

$t \leqslant \min [Q(x,y)(t), Q(y,x)(t)] \rightarrow Q(x,y)(t) = Q(y,x)(t)$.

Or when Q(x,y) is constant

(s) $(\min [f_S(x), f_S(y),] \leqslant \min [R(x,y), R(y,x)] \rightarrow R(x,y) = R(y,x)$.

Antisymmetry. $\forall t \in [0, \min (f_S(x), f_S(y).]$,

$t \leqslant \min [Q(x,y)(t), Q(y,x)(t)] \rightarrow x = y$.

The special case as above is

(a) $(\min [f_S(x), f_S(y)] \leqslant \min [R(x,y), R, (y,x)]) \rightarrow x = y$.

Transitivity. For any y such that $f_S(y) \geq \min [f_S(x), f_S(z)]$

$Q(x,z)(t) \geq \min [Q(x,y)(t), Q(y,z)(t)]$

$\forall t \in [0, \min (f_S(x), f_S(y)]$.

The corresponding special case is

(t) $R(x,z) \geq (R(x,y), R(y,z)$

for all y s.t. $f_S(y) \geq \min [f_S(x), f_S(z)]$.

Notably, the departure in transitivity definition lies in the fact that the above

inequality should hold for not necessarily all $y \in S$ but only for those y satisfying the restriction.

Blanchard's definition have so long produced many elegant results and have been found applicable to fields like ecology (Blanchard, 1984). In the following paragraphs these definitions are considered vis-à-vis ours. For convenience, the specialised forms of the above definitions, viz., (r) (s) (a) and (t) are taken into consideration.

At the very beginning of our discussion, let me mention that while preferring one definition to another during generalisation of an already established concept (at least a mathematical concept), a few criteria are followed, viz.

(i) That the new concept reduces to the previous one in the special set up.
(ii) That it produces good results and works as a better tool (for mathematical work) for its users.
(iii) That it is elegant, simple and natural.

Now let it be clear at which points the two opinions differ.

Firstly, they differ on the very definition of relation. While the first definition (DI) requires $R(x,y) \leqslant \min [f_S(x), f_S(y)]$ if R is to be a relation on S, the second definition (DII) does not need such a restriction. As stated earlier, a much larger set of values including those within the restriction is admissible as grades of relationship to a pair (x,y) under DII.

Secondly, there appears a strong difference on reflexivity. The only case when both the opinions agree is when $R(x,x) = f_S(x)$, the precise requirement of classical reflexivity and even of Zadeh's reflexivity. But if $R(x,x) = \alpha < f_S(x)$, DI considers it as reflexive while DII does not.

On the other hand, if $R(x,x) = \alpha > f_S(x)$ DII calls it reflexive but DI does not recognise it as a relation at all.

Thirdly, difference lies with antisymmetry and symmetry also. The definition of antisymmetry according to the second view is

for $x \neq y$, $\min (f_S(x), f_S(y)) > \min (R(x,y), R(y,x))$.

One such case is the relation in the following figure.

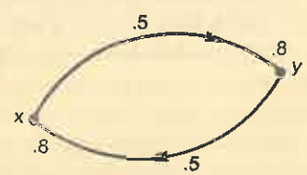

FIGURE 3

But this is a symmetry according to the first view. Remarkably, this is also symmetry according to DII because for this particular pair (x,y) the antecedent, viz., $\min [f_S(x), f_S(y)] \leqslant \min [R(x,y), R(y,x)]$ is false and therefore the conditional for symmetry is true. There is nothing surprising as such in the fact that the above relation has turned out to be both symmetric and antisymmetric. We have already seen, while discussing DI, that some trivial cases

happen to be both. Again consider the relation in Fig. 4.

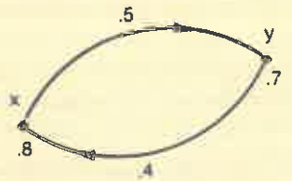

FIGURE 4

This is antisymmetric in DI but symmetric in DII.

The summing up of the above discussion may be clearly viewed in the following diagram (Fig. 5).

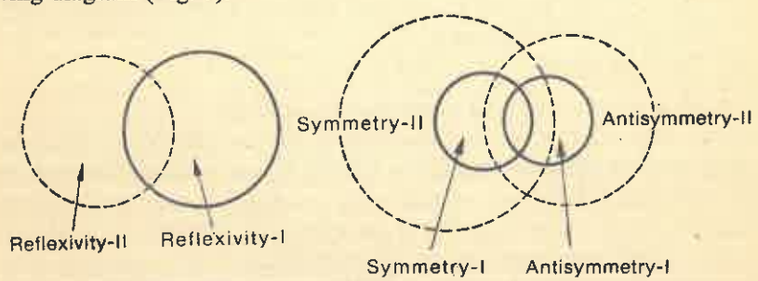

FIGURE 5

Though symmetry II is a larger set than symmetry I, imposing the condition $R(x,y) \leqslant \min [f_S(x), f_S(y)]$ does not reduce the former into the later. Same is true for antisymmetry II and antisymmetry I also. Relations depicted in figures 3 and 4 justify the above assertions.

We shall now take up the above mentioned differences one by one.

How far justified is it to impose the condition $R(x,y) \leqslant \min [f_S(x), f_S(y)]$? Firstly, if the value $R(x,y)$ exceeds this threshold, in no way the fuzzy relation R can be called a fuzzy subset of $S \times S$ which would be most desirable in order to maintain the naturalness of the extended definition. Secondly, the relation R is not being established between x and y but between x with grade $f_S(x)$ and y with grade $f_S(y)$. So in defining the relation, these grades should have, of course, some determining role. In other words, as the relation is again of some grade, this grade must have been closely dependent on $f_S(x)$ and $f_S(y)$. This statement does not stand for the above type of dependence but this certainly goes against the assignment of any arbitrary value as the grade of relationship between x and y.

Thirdly, the grades of x and y may be regarded as their capacities or potentialities. In fact, the way a fuzzy subset has been defined, provides us with these capacities as the only information about x and y. So when a relationship (or agreeability, so to say) is established it is quite natural that the strength of relationship should not go beyond the capacity of the weaker partner, i.e., the minimum of the capacities. Any physical network flow would conform

to this. Moreover when left alone one cannot react with oneself with a strength beyond one's own capacity.

From the above, we may possibly conclude that

(i) $R(x,y)$, the strength of relationship should be strongly connected with $f_S(x)$ and $f_S(y)$, i.e., the strengths of x and y respectively. Mathematically, $R(x,y)$ should be a function of $f_S(x)$ and $f_S(y)$.

(ii) Because of the first and the third points discussed above the connection $R(x,y) \leqslant \min [f_S(x), f_S(y)]$ is quite appreciable.

Let us come to reflexivity. It is stated that any relation that grades (x, x) to a number below the grade of x is not to be taken as reflexive by DII. We consider the following example.

Let a community of people be chosen such that each and every one of them has some knowledge of a particular language, say Bengali. Let each member of the community be assigned with a grade by the member's stock of Bengali words. After this assignment we get a fuzzy set (of course after normalisation, i.e., division of each number assigned by sum total of words known to all the members). Now, let a fuzzy relation be defined over this set as follows: x is related to y if x can communicate to y in Bengali and the grade α of relationship is the minimum number of Bengali words necessary for this purpose. Obviously, α is less than or at most equal to the minimum of the capacities of the referent and relatum. (If for this communication more words are necessary then communication fails and x is then related to y of grade '0'). It is now apparent that the words necessary for communicating to one's own self is usually much less than the stock of words one possesses.

We would feel inclined to name the above type of relation 'reflexive' but by DII we are not able to do so.

Lastly, about symmetries and antisymmetries we have already mentioned that, mathematically speaking, there is nothing against the fact that relations depicted in Figs. 3 and 4 are both symmetric and antisymmetric with respect to DII. Our point is, whether it is meaningful that the above relations fall under such categories. Even if we restrict ourselves to the special cases of symmetry II and antisymmetry II when $R(x,y) \leqslant \min [f_S(x), f_S(y)]$, the above two relations would continue to be both symmetric and antisymmetric. But intuition gets satisfied if the relation in Fig. 3 be called symmetric (not antisymmetric) and the relation in Fig. 4 be called antisymmetric (not symmetric). The second viewpoint DII fails to declare that. In my opinion, this is the most unfortunate situation this second viewpoint has had to encounter.

Regarding criterion (ii), it can be stated that of late many good results involving, in particular, antisymmetry and order have been established successfully (Chakraborty and Sarkar 1984), by the propounders of the first set of definitions. As this set of definitions is simpler of the two considered above, users obviously find it an easier tool to use. Regarding criterion (iii) I would mention Blanchard's comments, 'Cerruti and Chakraborty give a very natural one: R

is a fuzzy subset of $S \times S$' (Blanchard, 1984). Incidentally, with the present author, some others (Cerruti is one of them) have been inclined to give the same definition of fuzzy relations (Cerruti, 1982).

Concluding Remarks

Excepting the requirement that a fuzzy relation R should be a subset of the product $S \times S$, to define R, the restriction $R(x,y) \leqslant \min [fs(x), fs(y)]$, does not seem to be an essential pre-condition, though it has been found to be quite a good one for the generation of good results. On the other hand, N. Blanchard's almost unrestricted value assignment to the pairs (x,y), is also hardly acceptable. The value $R(x,y)$ must be functionally connected with $fs(x)$ and $fs(y)$. It may be that $R(x,y)$ should satisfy a condition like

$$R(x,y) \leqslant \max [fs(x), fs(y),] \text{ when } fs(x), fs(y), > 0,$$
$$= 0 \quad \text{when either of } fs(x), fs(y) \text{ is } 0;$$

or else $R(x,y)$ lies between $fs(x)$ and $fs(y)$.

In general, $R(x,y) = \phi [fs(x), fs(y)]$ and ϕ should have certain suitable properties. Another approach towards the resolution of this problem may be in finding an alternative suitable definition for the product $S \times S$. We hope to deal with these questions and proposals in a future paper.

No doubt that Blanchard's definitions have produced excellent results. How does it sound if I want to give the name 'ultra-relation' or 'super-relation' to the entities that she has called 'relations'? As her definitions are with minimal restrictions, the theory of 'ultra-relations' has had a much wider scope and may prove results that are not only generalisations of old results of relation-theory but are quite novel in this field of study.

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Field on truth and mathematics

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I. Introduction

Sometimes it is worth the effort to examine the relationship between two apparently disjoint proposals of an important author. The significance of the effort becomes all the more transparent when we can locate some crucial concepts playing an important role in both the proposals. It may well be the case that the concept concerned has widely different applications in distinct theories. It is possible also that our initial intuitions about the *same* concept are based on a mere equivocation of terms. Only a detailed examination can show which is the case.

In recent years, Hartry Field has proposed two very influential critiques of received views—a critique of Alfred Tarski's analysis of the concept of truth in a paper called 'Tarski's Theory of Truth'[1] and a critique of the allegedly Quinean version of realism of mathematical entities in a book called *Science Without Numbers*.[2] The initial intuitive connections between the two works may be of the following nature.

The paper on Tarski discusses, in essence, what is required of a philosophically interesting analysis of the concept of truth and how Tarski's analysis fails these requirements. From this discussion, we might expect to carve out an indication of what it is to say that a certain sentence in a language *is true*. The book, on the other hand, raises the question whether we need to say at all that mathematical sentences are true in order to preserve whatever role they play in physical theories which, in turn, are assumed to be true. Field argues that we need to maintain just that mathematical sentences are *consistent* irrespective of whether they are true or not. We might want to see them whether the requirements for a truth-theory outlined in TTT can be attached, uncontroversially, to physical theories but *not* to mathematical sentences without begging any crucial questions.

Given the preceding perspective, the two works of Field fall nicely under the general problem of reference—how is it that the utterances in a language relate to the world. One obvious—and trivial—way of answering this question is to suggest simply that expressions of a language refer to whatever they refer. This answer is trivial because it does not answer the prior implicit question whether whatever the expressions of a language refer to are *real* elements of the world. Until we give an account of that, we remain wholly uninformed about the points of contact between language and the world.

It is our impression that, in a decade of brilliant philosophical work, Hartry Field is trying to address this general problem of reference from several

novel directions. The task at hand for us here is the identification of some coherence between his diverse attempts. As it turns out upon examination, we have to cover a lot of ground before we can appreciate the links between his two works.

What we shall attempt to relate in this study are not the proposals themselves, but some *consequences* of then. In particular, we shall study the bridge between Field's proposals with respect to what we shall be calling the 'Quinean backdrop'. This strategy would not only delimit the scope of our study but also help us raise some general philosophical questions about the nature of reference and ontological commitment, the importance of which, we believe, extends much beyond Field's immediate concerns. In order to set up the framework for raising these questions, we shall concentrate, in about the first three-fourths of this study, on rather compressed expositions of some received views, suitably oriented to our purposes. In the last quarter only, the significance of this tedious expository exercise shall become visible. The study then is divided into the following sections.

In the next section (section II), we present a very compressed outline of those elements of Tarski's theory of truth which may be linked to the concerns of SWN via the Quinean backdrop. We also sketch, and only sketch, a part of one important criticism of Tarski-type theories by Dummett. In the third section, we summarize Field's objections against Tarski and compare this objection with Dummett's. In the fourth, we develop to an extent Field's own concerns regarding a truth-theory and relate it to the Quinean backdrop. In the fifth, we extend the discussion to Quine's views about truth and existence and show that they are perfectly compatible with Field's programme. Having got this far, we outline the issues raised in SWN, in the sixth section, with respect to Quine's views about the truth of physical theories. We carry over this discussion, finally, to a discussion of realism to argue that Field's sharp demarcation between physics and mathematics in terms of a distinction between truth and consistency is not all that obvious and is, in some respects, untenable. We end the discussion by noting that, given the Quinean backdrop, Field's two works do not form a coherent whole although they address similar issues.

Two caveats are needed at this point with regard to our interests in Field's two works.

(1) We are not defending Field's criticism of Tarski. Rather, we are interested in seeing what follows *if* we accept this criticism and whether it can ultimately be related to SWN in a coherent manner. Thus although we would like to carry the impression that much of what Field has to say against Tarski has good reason and merits detailed investigation in various directions, we are by no means arguing that Field's way is the only interesting way of evaluating the merits of Tarski's theory. The brief—and seemingly uncalled for—mention of Dummett is designed precisely to reinforce our particular interest.

(2) With respect to SWN, we shall be concerned primarily with Field's methodological arguments and not with his very interesting reconstruction of physics within a non-realist framework. We shall leave open the question whether the interest in Field's reconstruction can be maintained within Quine's general framework. The constructive work of an author need not be directly related to his destructive proposals. Field might want to urge that interest in his reconstruction of physics be based on pragmatic and simplicity considerations. To urge that, of course, as we shall see later, is to grant Quine's general position on language and theories. Field's reconstruction might simply *work*: that is not the issue. *The issue is whether there is a requirement, philosophical or otherwise, for a non-realist framework in advance* of some proposal to that effect. We address ourselves only to this latter issue.

II. Tarski's Theory of Truth

What Tarski wanted to do in his classic paper 'The Concept of Truth in Formalised Languages'[3] is to give an account of the phrase 'a sentence S is true in a language L'. What Tarski did not want to do is to give an account of the extra-linguistic conditions which make sentences true or false. Since Tarski purported his theory to be a *semantic theory*, he was not explicitly concerned with the sort of beliefs and information acquired by the user of a language in terms of his non-lunguistic interactions with the world. Tarski's concern was simply to give an account of the *linguistic knowledge* displayed by the native speaker when he claims a certain sentence to be true (or false), *presupposing* that he somehow relates his linguistic knowledge to his empirical knowledge.

In particular, this modest task can be related to some intuitions that native speakers of a language already have when they claim the truth (or falsity) of sentences. Thus it is natural to suppose that, at least, what the native speaker wants to maintain when he makes a truth-claim can be schematized in the following manner.

'It is raining' is true iff *it is raining* where the quoted expression 'It is raining' names the sentence under consideration thus representing the user's linguistic knowledge, while the expression '*it is raining*' states a fact which represents the user's extra-linguistic (perceptual, in this case) knowledge.

The device of using quotations as names of expressions then apparently facilitates the representation of the sort of intuition that we want to preserve when we try to relate the linguistic knowledge of the user with his empirical knowledge within a theory *without listing the extra-linguistic conditions under which such relations obtain.* A relational predicate 'is true' captures all that we want to know about the link between language and the world. A schema of the above kind then integrates our natural intuitions about truth-claims with the restricted scope of a semantic theory. The schema

'S' is true iff S

if elaborated for each declarative sentence of the language should work as a semantic theory of that language based on truth.[4]

But, as Tarski proceeds to show immediately, matters are not so simple,

for, the device of using quotation-marks to *mention* an expression to be *used* later within the schema ('S' and S) leads to versions of the familiar liar paradox.

The task then is to preserve the spirit of the schema while eliminating the paradox. In other words, the task is to find appropriate expressions for—and ...in the schema—is true iff..., in a way such that there is a recognisably unique matching between each occurrence of—and...; otherwise, the spirit of the schema cannot be captured.[5]

Tarski argued that this cannot be done for natural languages primarily because of the vagueness and irregularities of natural language expressions. However, given the resources of logic, this can be done for a variety of formal languages. In brief, we insert for each occurrence of '...' a sentence of a formal language L, while we insert for the corresponding occurrence of '—' a structural description of the sentence in the metalanguage, given that the object language is contained in the metalanguage. Tarski came up with an axiomatic system that recursively generates each instance of the schema as theorems of the system. Allowances can be made for translation of expressions of L into the metalanguage when L is not contained in the metalanguage.

However, this procedure has an important limitation which has enormous bearing on the issues discussed in this paper. As Tarski quickly saw, the preceding procedure cannot be immediately extended beyond complexes of atomic sentences. A quantified sentence, for example, need not have an atomic sentence as part and, therefore, the truth of such a sentence may not be accounted for in terms of the truth of its parts. The problem then is to give a *uniform* account of sentences—both quantified and non-quantified.

Tarski solved the problem[6] by introducing a primitive relation called '*satisfaction*' and defined truth by means of this relation. Given now that the object language contains variables that range over individuals and (n-place) predicates, '...the satisfiers are functions that map the variables of the object language onto the entities over which they range'.[7] Further, a complete characterisation of satisfaction requires, obviously, for an interpreted object language, an exhaustive list of individual names and primitive (n-place) predicates of the language. In effect, a list of primitive denotation is built into the truth-characterisation of L.

Donald Davidson has argued recently[8] that these considerations can indeed be extended to natural languages given the advances in the syntactic descriptions of natural languages in recent years due to Chomsky and others. This extension of Tarski's theory takes the meat out of an initial objection against Tarski, viz., that Tarski's theory provides no account of the semantic competence of *native* speakers of languages.

Nevertheless, there are other objections against a Tarski-style truth-theory raised by Field in TTT and by Dummett.[9] Both set of objections, however, are directed more towards the *motivation* behind the theory than at the theory itself. Nobody has yet criticised Tarski on grounds of formal inconsistency and

the like. A detailed discussion of Dummett's views falls outside the scope of the present paper, but since they reinforce Field's objections at some important places, a brief statement of Dummett's views may be in order.

Dummett's argument is that a semantic theory (a theory of meaning) purports to be a theory of understanding, i.e., an account of the linguistic knowledge of native speakers that reflects his mastery of the language. If a theory presupposes a part of this knowledge and gives a representation of the knowledge *using* this part, then, of course, the point about understanding is already begged. If, however, the theory does not beg the question of knowledge, then what the theory does, at most, is an establishment of some relation (call it 'truth', 'meaning' or whatever) between one part of knowledge (metalanguage structure-descriptions) and another (object-language expressions) without giving an account of either. Specially when there is a unique matching between the instances of—and ..., all that a native speaker needs to know is merely that there is a large list of such matchings. A recursive rule which generates this list can be mastered by a speaker without being able to communicate in either of the languages, until he knows what the expressions '—and...' *mean* individually. Thus, to take an analogous example from Kripke, a speaker who has mastered a rule governing quotations can say that the sentence

'Horses are called "Horses"'

is true without knowing what horses actually are. Dummett argues that this result obtains most vividly for translation-manuals, but it can be attached to any *modest* theory claiming to be a theory of meaning. Dummett also raises other objections against the assumption of bivalence behind Tarski and Davidson's work which need not concern us here.[10]

The net result of Dummett's very interesting sequence of arguments is that a Tarski-style theory, given the task for a full-blooded theory of meaning that captures the *entire* story of linguistic understanding, is either trivial or question-begging. It seems, however, that Dummett's criticism is based on too strong a constraint over theories of meaning which might not be available at all—not even for his own Fregean theory of sense and force.[11]

III. Field on Tarski

Nevertheless, what is of interest in Dummett's criticism, viz., that Tarski-type theories end up merely with a large list of metalanguage–object-language pairings without revealing the structure of knowledge involved in the elements of the pairs themselves, is independent of his own motivations for a theory of meaning or from his anti-realist concerns.[12] In a roundabout manner, Field also reaches similar conclusions about Tarski's theory of truth beginning with a weaker and different motivation.

Field argues in TTT that the philosophical significance of Tarski's theory rests on Tarski's claim that the notion of truth can be understood and represented within a theory without depending on kindred semantic notions. Thus the (non-semantic) notions to which the notion of truth is to be 'reduced' lend

some scientific status to a semantic theory. This task, in a broad sense, satisfies the aim of physicalism prevalent in the natural sciences. Thus Quine:

> (N)othing happens in the world, not the flutter of an eyelid, not the flicker of a thought, without some redistribution of microphysical states.[13]

Tarski, need not at once show, of course, the connections between a truth-theory and the body of physics. It suffices, for the moment, to take one semantic notion out of the semantic circle such that the possibility of physicalisation of semantic theories becomes open. Field argues that this is exactly what Tarski has failed to achieve. The argument consists of two interesting strategies.

First, Field constructs a truth-theory for a language consisting of a vocabulary with the following components: individual constants, one-place predicates, and functions. The language also consists of the resources of the standard first-order logic. A truth-theory for this language can be constructed, along Tarskian lines, which patently violates Tarski's 'physicalist' aims. This theory, in essence, would require a theory of *primitive denotation* for each category of the vocabulary, roughly in the following form:

> $(\forall e)$ $(\forall a)$ (e is a name that denotes a$\equiv$(e is 'c1' and a is c1) or (e is 'c2' and a is c2) or. . ., where 'e' and 'a' range over names and nominata respectively.

> where into the dots go analogous clauses for every name of L. Similarly, we can come up with definitions of *application* (of a predicate) and *fulfilment* (of a function) which are acceptable according to Tarski's standards, and which also have the form of mere lists.[14]

Now, given the theory of primitive denotation, a truth-characterisation can be attached to each sentence of the language as in Tarski. The truth-theory (T1) that Field eventually constructs includes explicitly the theory of primitive denotation. However, Field argues that such a theory must be implicit in Tarski's own version (T2), if we want to make sense of Tarski's notion of *satisfaction*. Therefore, if there is no interest in T1, there is no interest in T2 either. The task is to show then that a theory of the form of T1 is indeed without interest.

Secondly, therefore, Field shows why a theory in a particular domain which takes the form of mere lists fails to satisfy the physicalist aims. Thus, he considers the notion of *valence* in chemical theory. Chemists, late in the last century, could have given a 'valence definition' of the following kind:

> E has valence n$\equiv$E is potassium and n is $+1$, or. . ., or E is sulphur and n is -2, (where E is an element and n an integer).

Although such a definition would be extensionally correct, it would fail the physicalist aim until it can be related to the structural properties of atoms, for, *then* the concept of a valence becomes a physically important concept in the explanation of chemical combinations.

Also, given that the notion of valence can be applied both to elements and configurations of them, we can even have a recursive characterisation of valence, in lines with the recursive characterisation of truth in Tarski for compound expressions, roughly in the following manner

$$(\forall c)\ (\forall n)\ (c \text{ has valence } n = B(c,n))$$

The formulator 'B(c,n)' will still contain the term 'valence' but as applied to elements and not to configurations. Field summarises the argument succintly as follows:

> By similar standards of reduction, one might prove that witch-craft is compatible with physicalism, as long as witches cast only a finite number of spells, for, then 'cast a spell' can be defined without use of any of the terms of witch-craft theory, merely by listing all the witch-and-victim pairs.[15]

IV. Quine and Working within a Conceptual Scheme

Thus, both Dummett and Field criticise Tarski on the ground that Tarski's recursive characterisation merely generates extensionally the true sentences of a language as theorems without giving an account of the knowledge that enters in relating expressions with the world.

Despite this similarity, however, there are also major differences in the conclusions Dummett and Field draw respectively from such criticisms. While Dummett takes the radical position that a truth-theory, being intrinsically a modest theory, is no theory of meaning at all, Field merely complains that Tarski's theory is inadequate and that it requires to be *supplemented* with a theory of primitive denotation. Given the naturalness and formal attractions of Tarski's theory on the one hand and the uneasiness of the requirement that Dummett wants to impose on theories of meaning on the other, Field's diagnosis seems much more attractive than Dummett's.

It is not quite clear how Field might want to flesh out his requirement for an adequate truth-theory; it was not the task at hand for his essay on Tarski. Nevertheless, there are a few scattered suggestions in TTT which might have interesting links with SWN. For example, Field maintains[16] that the requirement that a Tarski-type truth-theory be supplemented with a theory of primitive denotation is not a requirement that may be fulfilled only by 'stepping outside' our own conceptual scheme. What we can propose, at most, is an account of how language is nailed to reality from within our own conceptual scheme:

> It seems likely that such things as psychological models of human beings and investigations of neurophysiology will be very relevant to discovering the mechanisms involved in reference.[17]

Thus, if we have read Field correctly here, a theory of primitive denotation is purported to be an empirical theory of what speakers of a language ac-

tually do when they refer to items in the world. So the expression 'S uses e to refer to a' will have, roughly, the following reductionist form:

> S uses e to refer to a≡S undergoes such and such psychological states which are grounded in such and such neural states.

Some people have objected that to do so would be to conflate semantics with physics.[18] Others have argued that a theory of reference (primitive denotation) over and above truth-theory is not a requirement at all.[19] Yet, given the initial assumption about the physicalist nature of our current conceptual scheme, these objections do not carry much programmatic force.

However, the idea of supplementing a truth-theory with a psychological account of how people actually refer falls nicely in piece with the *naturalisation doctrine* of Quine.[20] Although Quine has raised some special difficulties for naturalising linguistics,[21] his view, in general, is that no discipline, whether concerning electrons or meanings, is intrinsically separable from the rest. Quine asserts this not from any *a priori* optimism about physicalist reductionism, but from a consideration of the constraints that govern theories and languages. Briefly:

1. All concepts in a language are linked to each other through various inference-patterns.
2. All theoretical sentences of a language are, to a greater or lesser degree, open to experience and, therefore, to revision.
3. Although, it might be possible tentatively to make local adjustments in theories and in some corners of the language, ultimately, a revision in one corner must affect other corners, as quantum theory affects the postulates of logic.

These cluster of views, sometimes called 'holism', has the important consequence that there is no sharp demarcation between theories and languages and, *a fortiori*, between theories of language and theories of world.[22] A detailed discussion of these somewhat exotic doctrines falls outside the scope of this paper. However, the point of interest in Quine's insights, for the purposes of this paper, is that there is some sort of an inferential chain of the following sort

theories of language→psychological theories→physical theories

and that the credibility of the entire chain derives from the credibility of our total current ways of thinking. Thus, if we ignore Quine's special sort of worries about linguistics, we can possibly find some significance for Field's suggestion that we need to have a theory of primitive denotation within the prevalent conceptual scheme.

V. Existence and Meta-theoretic Criteria

Given the preceding Quinean backdrop, it is now possible to relate the sort of ontological issues that Field raises in SWN to his requirements for a truth-

theory. However, it might be instructive at this point to note, again rather briefly, how ontological issues might be handled within the Quinean framework.

In general, Quine would hold[23] that the availability of individual names and predicates is no guarantee for the existence of entities so named. The name 'Pegasus' may be used to deny that such a thing exists. Also, drawing ontological conclusions from every occurrence of names and predicates leads to the familiar difficulties to which Russell's theory of descriptions is a partial answer.

Syntactically, at least, the question whether an individual a exists reduces to the question whether we want the following quantified sentence to be true: $(\exists x)\ (x = a)$. Such translations into sentences involving existential quantification can be extended to handle other sorts of entities.[24]

To say that '$(\exists x)\ (x = a)$' is true amounts to saying that there is an individual a which satisfies the schema '$x = a$'. In effect, the truth of '$(\exists x)\ (x = a)$' guarantees that the bound variable x has the value a. Thus 'to be is to be the value of a bound variable in a true sentence.'

This strategy clarifies the question *where* to look for ontological commitments: it *does not* answer the question *what* entities we are committed to, for, such commitments depend upon which sentences are taken to be true, i.e., on our *theories*. Aligning this idea with the idea of holism, we get the result that our ontological commitments are settled by the total theory in our language.

A truth-theory then does not give an account of which sentences are true in a language, for, such an account presupposes the possibility of 'stepping outside' our conceptual scheme. A truth-theory, being intrinsically a modest theory under the Quinean backdrop, gives a *characterisation* of sentences already held true (or false) by the native speaker. A theory of primitive denotation merely supplements this characterisation by linking primitive denotation with the rest of nature. In order to break the semantic circle, these links correlate the use of language with aspects of the world in terms of psychological models and so on. Yet the availability of a psychological account is an availability within the governing scheme, within what is already held to be true.

Under Field's conception then a psychological model of primitive denotation plus a Tarski-type characterisation would yield a truth-theory of an empirical nature that would be forever open to falsification in the face of changes in the corpus of true sentences in a language, such changes being largely independent of the truth-theory. This completes the naturalisation of that part of a theory of language which is concerned with reference—reference is now conceived of as a natural phenomenon exhibited by the users of a language. The phenomenon being independent of the theory under any realist conception of nature, the theory seeks to give an account, so far as it goes, of the phenomenon in terms of the current naturalisation vocabulary, i.e., ultimately, the vocabulary of physics.

It might, of course, be possible to list some meta-theoretic criteria which

give some rationale for theories and, correspondingly, for the entities we are committed to. Quine[25] lists some of them as follows:

Simplicity
Empirical laws concerning seemingly dissimilar phenomena are integrated into a compact and unitary theory.

Familiarity of Principle
The already familiar laws are made to serve where independent laws would otherwise have been needed.

Scope[26]
The resulting unitary theory implies a wider array of testable consequences than any likely accumulation of separate laws would have implied.

Fecundity
Successful further extensions of the theory are expected.

Empirical Support
Predictable consequences of the theory happily mesh with the observable data at hand.

Needless to say, this list is neither complete nor its elements non-overlapping. There is also some circularity of explication in each of them. Nevertheless, vague and inadequate as they are, they might serve, for most practical purposes, for identifying which theories might be held true within the current scheme.[27]

However, the important point that comes out of a consideration of meta-theoretic criteria is that *the application of these criteria are based on practical decisions*. We have just no formal ways of applying these criteria to a theory-proposal precisely because none of them can ever be applied exhaustively to a real theory. No theory ever is absolutely simple or absolutely tested or absolutely familiar. Whether some of them or all of them obtain for a particular theory and how far they obtain are all *decisions* heuristically arrived at by the working scientist. Since, under this view, the applicability of meta-theoretic criteria is linked to the *practice* of the scientific community, the truth of theories, *a fortiori*, is linked to such practice as well.

It is in the context of the preceding view that Quine's later realist position—in contrast to his earlier nominalist position[28]—with regard to mathematical entities like numbers and sets can be understood. Quine's realism may be platonistic in effect but pragmatic in spirit.

In line with the preceding view of theories, we can now say what we think—to that extent—of current physical theories to be true because, in some intuitive sense shared by the scientific community, these theories work. When we wonder why they work, we might find, in our philosophical mood, some or all of the meta-theoretic criteria available for them. A theory has to work for sometime[29] before we can decide whether it integrates dissimilar phenomena or whether it implies a wider array of testable consequences. A decision on these aspects, as we urged above, basically depends on the practice of the working scientist. When such decisions favour a theory, we are inclined to label the theory 'true' and commit ourselves to the entities referred by it. The success, on some heuristic measure, of current physics is all that we have to go on with regard to its truth and the existence of the entities posited by it.

These entities involve, along with such theoretical entities like gravitational fields, muons and quarks, some abstract entities like sets, numbers and functions. A current physical theory requires all these for its expression. Since these theories, in totality, are held to be true, they commit us, inevitably, to the existence of numbers, functions and sets. The faith in current physics is thus transferred to a faith in the existence of abstract entities.

It is worth repeating at this stage that theories are, because of holism, accepted more or less as wholes by the working scientist. This is especially true for the sort of general physical theories to which Field addresses himself, e.g., Classical Field Theory, because of the comprehensive nature of the world-view encapsuled in them. This has the effect that, accepting theories as wholes, i.e., accepting that all the sentences embodied in the theory hold together, the scientist is committed to the total ontology of theories. This leaves in turn little scope for *bifurcating the ontologies* of theories, i.e., it leaves little room for a choice about which entities to bring under the scope of the quantifier, while accepting them (the theories) as wholes.

VI. Truth, Consistency and Mathematical Entities

In SWN, Field explicitly opposes the preceding view of linking the acceptance of theories with a commitment to their ontologies. In some sense, Field's reaction is not totally incompatible with Quine's. Thus:

> Suppose someone has for reasons of nominalism renounced most of mathematics and settled for bodies as sole values of his variables. He can still do such part of arithmatic as requires no variables. In particular he can still subscribe to the nine-clause alternation '11 is prime or 12 is prime or...or 19 is prime'. In this sense he agrees with us that there are primes between 10 and 20, but in the quantification sense he denies that there are primes or numbers at all.[30]

There is no *fact of the matter* in such a situation between a nominalist and a realist with respect to numbers, since, in a finite domain, every existence-assertion is extensionally equivalent to a sequence of disjunctions where each of the disjuncts may be nominalistically interpreted.[31] Therefore, it is indeed possible to bifurcate the ontology for theories which are restricted to finite domains; we might keep the full idiom 'there are. . .' for some entities and offer a nominalistic paraphrase for others. This can even be done, in general, for physical theories with such devices as Craig's re-axiomatisation.[32] At some places,[33] Quine even recommends Craig's method when arguing for an austere ontology. Interestingly, Quine compares the difference between actual

physical theories and Craig's re-axiomatisation as the difference between a hop in an aeroplane and a long cross-country walk to the same destination. This metaphor, as we shall see in a moment, resembles Field's 'Conservation Principle' in interesting details. Thus the philosophical point about how far the bifurcation of ontologies may be pushed can indeed be debated for significant corners of science.

Yet the question *which* paraphrases are interesting and which are not cannot be settled by philosophical debating and Field seems to agree with this while rejecting Craig's method. Ultimately, this question is settled by the working scientist in his practice. He may be using one or more of the meta-theoretic criteria for such settlements, but, as we urged earlier, the application of these criteria are themselves decision-based.

Now, Field's point is that the entire Quinean argument can be undercut by questioning one vital premiss on which the argument rests, viz., that we are committed to the total ontology of the working physical theory. Although Field's strategy raises the possibility of bifurcation within physical theories, the structure of his arguments is novel and wholly different from what is usually employed in the nominalist literature.

Field's principal strategy involves the use of some common-sense ideas about the nature of mathematics. The standard difference between, say, a physical-object sentence and a mathematical sentence runs somewhat like this: a physical-object sentence, if true, is true in the actual world, while a mathematical sentence, if true, is true 'in all possible worlds'. The standard reasoning draws the further conclusion that, since mathematical sentences are true 'in all possible worlds', they must be true in the actual world as well since the actual world is one of the possible worlds.

This no doubt is a terribly bad argument, especially when it comes to the premiss 'the actual world is one of the possible worlds'. Field proceeds to rectify[34] this argument by de-epistemologising 'possible worlds'.

Thus Field argues that to say that a sentence is 'logically true' or 'a priori true' or 'true in all possible worlds' is to say nothing more than that it is *consistent*. What makes physical-object sentences true in the actual world are their very openness to experience 'in such a way as to yield genuinely new claims about observables'.[35] The thesis that what is at stake about mathematics is simply its consistency may be semi-formally stated in what Field calls the 'Principle of Conservation':

Let

1. S be a mathematical theory.
2. N be a body of nominalistic assertions.
3. Mx be a one-place predicate expression meaning 'x is a mathematical entity'.
4. A* be the result of restricting, in a nominalistic assertion A, each quantifier of A with a formula 'not Mx_1'.

5. N* be the body of all A* assertions.

Principle of Conservation: A* is not a consequence of $N^*+S+(\exists x)—Mx$ unless A is a consequence of N.

Informally:

> any inference from nominalistic premisses to a nominalistic conclusion that can be made with the help of mathematics can be made without it.[36]

The Principle of Conservation, for Field, does not apply to those sentences within a physical theory which employ either exclusively theoretical terms or a mixed bag of theoretical and observational terms. Field states, mostly without arguments and examples, that the new and surprising consequences that can be reached with the theoretical sentences cannot be reached without them. Since the indispensability of theoretical terms is generally recognized by philosophers of science today,[37] we might agree with Field here. This is what makes Field's contribution novel and philosophically challenging, in contrast to his earlier nominalist predecessors.

However, this qualification in Field's programme also separates him quite radically from other nominalists in spite of the somewhat misleading sub-title to SWN—'A Defense of Nominalism'. It is worth mentioning at this point that some of the criticisms directed against Field in reviews[38] of his book are quite misplaced. Since Field is not defending full-blooded nominalism, the charge that his reconstruction uses the notion of infinity or that he allows space-time points within the primitive basis of his system are out of place.

The same can be said about the doubts that have been raised[39] about the feasibility of Field's programme for more advanced physical theories. This doubt can be raised only under the assumption that Field's programme works so far as it goes, viz., for classical field theories of a certain sort. *If* it works for a significant portion of physical theories, then obviously, Field's programme turns into a research programme which, under the assumption, becomes open.

The central question, however, is 'what is the requirement that Field's programme should work at all?' If there is no philosophically interesting requirement that questions Quine's views, then the question whether Field's programme actually works becomes independant of its philosophical interest. Our main concern here, as outlined in the introduction, is not this last question. In particular, a case can be made, if we restrict attention only to the re-axiomatisation of theories, that even Craig's method works in some sense. Craig's method, however, is unattractive just because it fails to capture the point of the real physical theories it attempts to canonize, in that it requires an infinite list of axioms for the re-axiomatisation. If Field wants to improve on Craig's programme, he must provide ways of maintaining the original theory. For, the Quinean views about meta-theoretical criteria apply to the working theories.

In other words, if Field's requirement is for attractiveness just at the level of canonization, then there is simply no quarrel with Quine. Quine grants

cheerfully, as we noted in the beginning of this section, that it is possible to come up with very different paraphrases embedding very different ontologies. Quine himself uses this technique frequently in his discussions about modalities and other propositional attitudes. But the question of paraphrasing arises only if there is a conflict with physicalism, as in the case of propositional attitudes. Since physics is the paradigm for physicalism, such questions cannot arise, interestingly, for physics. Epistemology and linguistics need to be naturalised, not physics. It is for this very reason that the question of meta-theoretic criteria becomes so important for physical theories—there is simply no other way of arbitrating for their ontologies.

Returning then to the Principle of Conservation, it is clear that this principle is now used to force a novel kind of bifurcation of ontology within physical theories—a bifurcation between observable and theoretical entities on the one hand and the abstract entities on the other. As such, it seems to oppose squarely the Quinean view about the commitment to the total ontology of theories held true.

But is the argument against Quine conclusive? One important corollary of Quine's views is that, since the truth of theories is pragmatically related to a set of meta-theoretic criteria, the question whether a theory ought to replace another must involve a redistribution of meta-theoretic criteria resulting in a *net optimal increase* in (meta-theoretic) success. This corollary needs some explanation.

Usually, a theory-change from T0 to T1 is considered when (a) T0 loses some of its attractions in terms of simplicity, scope, familiarity, empirical support, etc., (b) T1 promises some definite advantage in some criterion without any significant loss in the others, (c) T1 promises so much advantage in some criterion that a loss in others can be tolerated. We can say, under these circumstances, that T1 promises a net optimal increase (i.e., taking all criteria together) in meta-theoretic effectiveness. Thus Quantum Theory was adopted, in spite of its unfamiliarity, due to great advantage in simplicity, scope, etc.

Thus, when we are concerned with real theories, a theory change cannot be motivated, until some such increase is promised. In principle, i.e., as a matter of logic, there could be indefinitely many equivalent—but incompatible—theories fixing one meta-theoretic criterion at a time.[40] The point about *net* optimal increase thereby becomes significant. What is the significance of Field's programme with respect to this point?

Field partially avoids the question by maintaining that his argument is *not* that physical theories should dispense with mathematics. Instead, he shows clearly[41] that, in fact, the *use* of mathematics lends a certain power to the physical theories in that the consequences that could, in principle, be reached *in a long-winded manner* without using mathematics can be reached quickly with it. His argument is just that such use does not require the truth of mathematics. Since the question whether the truth of mathematics is required or not is settled in an axiomatization of physical theories where the choice about

the range of variables must be indicated, Field's strategy consists only in showing that such axiomatisation, in each particular case, can be achieved *attractively* without letting variables to range over numbers and sets. In particular, the idea that the continuum of space-time points is isomorphic to the system of real numbers need not be maintained at the axiomatic level; a more long-winded route, in each case, can indeed be devised.[42]

In scattered remarks, Field claims that his theory is attractive at least on the following counts:

1. It does not require giving up the use of mathematics by arbitrary reconstructions of mathematics; thereby it does not disturb the practice of the working scientist.
2. It does not involve obviously impractical strategies like introducing an infinite axiom set as in Craig.
3. It preserves the *theoretical* importance of physical theories.
4. Its elaboration on the particular nature of mathematics derives as a corollary from some common sense intuitions about mathematics.
5. It is a radical extension of Hilbert's seemingly innocuous and intrinsically attractive axiomatisation of geometry.

It is possible to contest each of the above on various grounds. For example, 1 assumes, controversially, that the practice of the working scientist is independent of his beliefs about mathematical reality; 4 is not compatible with some recent psychological findings about the acquisition of mathematical concepts in young children; the admission about long-windedness casts doubt on 2, and so on.

However, granting all of 1-5, the point remains that Field's claims about the attractiveness of his theory do not bolster any of the meta-theoretic criteria listed above. If his claim is only about the re-axiomatized theory—and not about some real theory using the long-winded route—then Quine's case about *working* theories, as we argued above, is unaddressed. More significantly, if the claim is about re-axiomatisation only, then its success necessarily becomes *post-hoc*—one can re-axiomatize only *after* the real theory is proposed, sufficiently articulated and found working. Therefore, it must fail to meet the criterion of *fecundity* independently of the working theory. If, however, the claim is about some real theory using the long-winded route, then it fails to meet the criterion of *simplicity*. It is clear, as well, that under no version of his claim can there be any increase in scope and testable consequence.

It follows that Field's theory is either a non-working theory or it indicates net optimal *loss* in meta-theoretic success. Under both circumstances, Quine's case remains unchallenged. It remains unchallenged, in particular, because a non-realist re-axiomatisation is incompatible with the general policy of naturalisation.

Thus either Field must abandon the idea of working within the current governing scheme that proved so effective in his criticism of Tarski, or, he

must give up the principle of conservation for *physicalist reasons*, the reasons which he directed against Tarski. In other words, either Field must cease to look at truth and reference on par with natural phenomenon demanding an empirical account, or, he must give up his case for the bifurcation of ontology. He cannot maintain both without some inconsistency in his meta-philosophical views.

[I am indebted to James W. Van Evra and William P. Abbott for many illuminating discussions on issues raised in this paper.]

Notes

1. Field, 1972, henceforth TTT.
2. Field, 1980, henceforth SWN.
3. Tarski, 1956.
4. That is, the schema is *materially adequate*.
5. To preserve material adequacy along with formal.
6. See Davidson, 1969, p. 759ff. for an excellent discussion of this point.
7. Davidson, 1969, p. 759.
8. Davidson, 1967, 1969.
9. Dummett, 1975, 1976.
10. See, for example, Dummett, 1973.
11. For an excellent discussion of Dummett's constructive proposals in this respect, Pravitz, 1977.
12. It seems to us to be an intersting question whether the anti-realist concerns of Dummett and Field (as advanced in SWN) are both rooted in their dissatisfaction with Tarski-type theories. If so, it would exhibit an important convergence of seemingly diverse motivations. For the present, however, we shall leave this question open since (i) it is not clear that Field's anti-realism immediately involves bivalence, (ii) it is not clear that Dummett's dissatisfaction with Tarski-type theories can be linked to the Quinean backdrop in some interesting way without jeopardizing Dummett's explicit objections against 'holism'.
13. Quine, 1981, p. 98.
14. TTT, p. 102, emphasis added. For reasons of space, we cannot give a fuller presentation of Field's complex arguments here. To get to our point quickly we shall assume familiarity with Field's paper with regard to the development of what he calls the 'truth-theory of Tarski'.
15. TTT, p. 101.
16. TTT, p. 104-5.
17. TTT, p. 105.
18. McDowell, 1980.
19. Davidson, 1980.
20. Quine, 1969a.
21. Quine, 1953c, for an early exposition and Chomsky, 1969 for some criticism. Also see Mukherji, 1983.
22. For Quine's account of these theses, Quine, 1953a, 1960, 1969a, 1975a, 1981, etc.
23. Quine, 1953b, 1969b.
24. Quine, 1969b.
25. Quine, 1966c.

26. Alternatively, *Explanatory Power*.
27. There could also be some questions about the relative importance of the preceding meta-theoretic criteria with respect to each other. Since according to Quine, there is no interesting way of distinguishing between the truth of theories and the availability of meta-theoretic criteria for them, this question about the *relative* importance is really significant. Thus, some people have argued that empirical support is the really important criterion (van Fraassen, 1980) and the rest are simply *pragmatic* ways of bolstering the idea of empirical support. van Fraassen argues further that since empirical support has to be couched in terms of observable consequences—after all that is what empirical support *means*—the realist argument for theoretical and abstract entities is left without a *further* criterion. However, *this* anti-realist argument is incompatible with Field's since, as we shall see below, he is commited to the ontology of theoretical entities.
28. Quine and Goodman, 1947.
29. We can depend on the fact that no serious working scientist is going to come up with theories that do not work at all.
30. Quine, 1969b, p. 99.
31. Such as 11-is-prime and not as . . . is prime; I am thankful to William P. Abbott for this observation.
32. Craig, 1956.
33. Quine, 1966b.
34. According to Quine, this sort of argument needs to be abandoned, not rectified. Quine's strategy would be to naturalise 'possible worlds' and nest it within theoretical corners of the talk about actual world.
35. SWN, p. 10.
36. SWN, p. x.
37. Cf. Suppe, 1974.
38. Friedman, 1981.
39. Malament, 1982.
40. Cf. Quine, 1975b.
41. SWN, Chapters 2 and 3.
42. Cf. the extended use of Hilbert's Representation and Uniqueness Theorems, SWN, pp. 49-53.

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The 'horseshoe' of western science

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Introduction

The aim of this paper is to propose a metaphor which can model the course of Western science's conception of mathematics from the time of the Greeks until the present day. The image chosen is that of a horseshoe (⊃). Like any trend line that is drawn on the basis of a given set of points, this representation is of course incomplete. It cannot be imagined that all individual philosophers and their philosophies can be neatly and simplistically located within the model employed. Nonetheless, it is the contention of this paper that, as a general pattern, the 'horseshoe' image does seem to apply. Moreover, it appears that the model can be *used* to suggest a new set of interesting questions about the philosophy of science and mathematics.[1]

In what sense, then, might the history of philosophy of science be compared with a 'horseshoe'? The answer is (at least) twofold: on the one hand, it is the horseshoe's circularity which is of particular interest. If science can indeed be said to have traced some shape through time similar to the horseshoe, then this suggests that its progress has not been linear; but, to the contrary, it has tended to curve back towards its own point of origin. That is, there must be some key respects in which modern trends have tended back towards viewpoints held near the time of Western science's own emergence. Yet, in keeping with the horseshoe model, one must suppose as well that the initial and the current portions of the 'curve' remain separated by a significant gap.

This same image of a horseshoe is significant from a second point of view. In symbolic logic, the 'horseshoe' is the symbol for material implication, the 'if. . .then' relationship. This logical operator plays a central role in the logical rule 'modus ponens'—a rule which many deem essential for the possibility of deductive reasoning. But it is just this rational, deductive approach—the supplanting, as it were, of myth by reason, and magic and ritual by abstractions and methodology—which characterizes the appearance of Western science among the Greeks.[2] Given this, the 'horseshoe' of logic seems a fitting symbol for the scientific era which was then begun.

In the modern era, we find that the power of the rational orientation, symbolized again by the horseshoe of logic, is still strongly felt in science. Yet its sphere of usefulness has already reached its limit. Aware that models, and the conclusions drawn from them, have only limited application (compare, for instance, how the model in which light is a 'particle' simply cannot be applied in all contexts), thinkers such as van Fraassen and his contemporaries are al-

ready holding back from claims that which may be named or described, provisionally, within their current theories is, by any means, a deductive certainty.

But if science is, in this sense, retreating from certainty, it is suggested in this paper that its new direction is towards a return of some kind to a pre-rationalistic mode of thought. One is reminded, for instance, of Heraclitus. Realizing the 'static nature of concepts and language,'[3] and thus their inability to convey the true nature of the world, he turned instead to a mode of paradoxical expression; (as when he says, for instance: 'In the same river we both step and do not step, we are and are not').[4] When science, today, speaks paradoxically of waves which are at the same time not-waves, i.e., particles, it has in some sense rediscovered this old way of revealing and describing truth. And, just as a horseshoe, if its tips were connected, would no longer be a horseshoe, but a circle; so too, if science were fully to return to that ancient perspective of myth and paradox, it would no longer be based on logic (the 'horseshoe'), but on some new principle.

We begin this discussion, therefore by exploring the birth of mathematical science, represented here by the work of Pythagoras. The radical transitions in these ideas during the so-called Copernican Revolution will next be discussed; followed by a treatment of modern Western science and its philosophies, as represented especially by van Fraassen. On the model of the horseshoe: Pythagoras appears on the one tip, van Fraassen on the other; and the scientific revolution occurs at that section of the curve which is midway between the two.

In choosing Pythagoras and van Fraassen as the virtual representatives of their respective ages, I have not meant to imply, by any means, that they and their contemporaries were in full agreement. Rather, it is thought that these particular thinkers come closer to that conceptual path in the history of thought which, according to this paper, represents the overriding trend. With respect, it is felt, to this general theme, almost all of the disputes and differences within each given era can be treated as embellishments and minor variations.

In short, the emphasis of this paper is to present, in outline form, a general schema for a history of philosophy of science (with special emphasis on its treatment of mathematics). For the sake of narrowing its field, it will focus on the outset, the turning point, and the present era of this process. Also, as space permits, the sketch will be coloured in with limited reference to contemporary debates.

Before concluding the paper, some mention will be made of the work of Hartry Field. His work is useful in that it shows, in practice, the limits to the applicability of any model—including the model presented in this paper. For though, according to the horseshoe image, Field's contribution belongs most forcefully to the middle stage (as will be shown), he is, nonetheless, of the present age chronologically. In the attempt to map Field's ideas onto the horseshoe model, it is believed that both the strengths and inevitable limits of that model will be revealed. It is therefore hoped that the image which this

paper presents of the progression of scientific thinking through time will be instructive, essentially accurate, and—most importantly—provocative of new ideas.

The 'Horseshoe'

Tip of the 'horseshoe': Pythagorean period

To discover a time of origin for mathematical thinking would seem an impossible task. Although, as stated, this paper will begin with Pythagoras (c. 570 B.C.), it has been convincingly argued that 'all the factual mathematical knowledge which is ascribed to the early Greek philosophers was known many centuries before', in Europe and Babylon.[5] According to Neugebauer, in *The Exact Sciences in Antiquity*, even the Pythagorean theorem, itself, predates Pythagoras by over one thousand years.[6]

Thus, what distinguishes Pythagoras and the other early Greek philosophers from their predecessors is not so much that the Greeks *invented* the mathematics with which they are credited. Rather, as expressed by Maziarz and Greenwood, in *Greek Mathematical Philosophy*, their contribution was especially to discover and emphasize 'the abstractive and deductive process in mathematics', and to begin, thereby, 'the rational tradition which characterizes Greek philosophy and science.'[7] For instance, whereas the Egyptian interest in geometry 'consisted of empirically obtained simple propositions about areas and volumes, Thales [the earliest recorded Greek philosopher] visualized a geometry of simple lines, an essentially abstract subject which has remained the basic part of geometry.'[8]

If this new approach to mathematics was already evident in the work of Thales, it was nurtured and greatly enhanced by Pythagoras. Yet, Pythagoras' own links with tradition were still quite strong. No less than the adherents of the contemporary mystery religions, he too was directing his search towards the discovery of that Divine Soul or God which, in their common belief, underlies the nature of all things. But, although he retained the mystical base, Pythagoras was distinguished by his view that this Divine underpinning of the world could, in fact, be identified with Number and mathematics.

Like the believers of the mystery religions—for whom their secret rituals were taken as the divine re-enactments of the cosmic world drama—Pythagoras too acknowledged the importance of this first-hand 'emotional experience of re-union'. Thus, in the Brotherhood he founded, mathematics was not to be taken as simply an area for intellectual study; but, rather, it should be contemplated—as being the central focus for a whole way of life. That is, for him the ritual experience was expanded to encompass one's whole life; and what was required was 'the passionless contemplation of rational unchanging truth, and...[the pursuit] of wisdom.'[9]

We thus find that, with Pythagoras, mathematics provided a most suitable interface for the emerging transition from cult to philosophy, and from emotion to reason.[10] To be sure, numerical relations had long played a part in mys-

tic speculations, and their practicality in 'commerce and everyday social intercourse' was well known.[11] It was left to Pythagoras, however, to observe that *every* experience of life—in whatever realm—seemed touched by number. Even the harmonies of music, he discovered, can be related to the ratios of the strings which produce the tones.

Inspired by observations such as these, Pythagoras saw in numbers both the divine subjects for contemplation, and the basis for a rational understanding of the universe. Since numbers appeared to be the unifying principle behind the varied manifestations of being, they were considered divine; and so, to ponder them, was a sacred contemplation. Yet, beyond this mystical significance, the fact that numbers represented the fundamental principle of the universe, while having properties which can be discovered and explored, provided a basis for rational inquiry about the world. Namely, one could learn about the world by studying the mathematics of which it is comprised.[12]

However, once the 'secularization' of science had become more pronounced and sophisticated (i.e., once the departure of science from its own mythological and religious roots became more complete), then this lofty role of numbers could no longer be maintained. To be sure, the sense of awe among thinkers at the properties of number remained for centuries, and still continues. Yet, Pythagoras' assertion that 'Number is the essence of all things'[13] could not withstand the criticisms which were soon to follow. Nonetheless, many of those arguments which were subsequently made against Pythagoras failed to grasp that clear sense of Pythagoras' own mystic vision, which, had it been taken into account, might otherwise have made his meaning transparent.

For instance, consider Pythagoras' aim in relating how the universe unfolded from a central Monad; or else, in affirming that 'the whole Heaven is harmony and number.' Throughout, his central purpose was to express a mystical truth: that one should seek 'the meaning and nature of the whole in every part.'[14] For him, this 'meaning of the whole' was best expressed by number; since in every occurrence or phenomenon he found evidence of number, and hence of the number One, the Monad. In speaking of numbers, he thus encapsulated the mystical ideas by which alone, in his view, one could comprehend the mystery of the world—as a 'processional movement [of divinity] out of unity into plurality, out of light into darkness.'[15]

However, many of the criticisms which were later directed against the Pythagoreans assume that a distinction has been made between the 'procession of [idealized numbers from] the Monad and [some supposed physical] procession which generates the visible world in space.' Thus arise such questions as how the extended number-atoms could possibly be related to, or 'participate in' the 'pure' numbers, abstracted by thought. And, to be sure, the later Pythagoreans, themselves, had begun to speak in such terms (as about atom-like numbers) as to actively invite criticisms of this sort. Nevertheless, it should be emphasized that by the time mathematical numbers had been conceived in this way (i.e., as extended, separate 'atoms' of which things are said to be physically constructed), the core mystic doctrine of unity had already begun to be lost.[16]

Cornford describes this process, which occurred within as well as outside of Pythagoreanism, as the tendency to dualism.[17] Elsewhere in this paper, I have referred to it as a process of 'secularization' of science. What this involves, pramially, is the removing of the *immanence* of divinity from the world. Nature is taken to exist, in some sense, independently of the divine, and to be a subject of inquiry in its own right. In fact, in the extreme example of Aristotle's self-contemplating deity, divinity has almost ceased to interact with the world at all. To ask, therefore, how Pythagoras' numbers could serve as causes on earth, is already to assume their separateness from the world described.[18] Yet, it is just this dualistic premiss which Pythagoras himself had denied.

However, the distinction between the views of Pythagoras and his ancient critics can by no means be rigidly drawn. For, the tendency towards dualism was already present among the Orphics, by whom Pythagoras was himself strongly influenced. The Orphic religion, in turn, developed from the older mystery religion of Dionysus that believed in the endless cycle of life-death-rebirth. But the rebirth, in their case, was not considered a rebirth for the individual person; the eternal soul was the *group* soul, not the individual soul.[19] By introducing the idea of an individual soul which persists through reincarnation, the Orphics made possible a hope of personal release and redemption; yet, in the process, they divided the unity of Being.

Of course, the Orphics too were expressing the impulse of the time. In Finley's *Four Stages of Greek Thought*, he describes the cultural process which led to the rational orientation attained in Greece by the time of Plato and Aristotle. As life itself became more diverse, complicated, and individuated, the 'desire for reasonable decency [in contrast to the 'irrational' excitements of the Mysteries] set the tone.'[20]

Of those who came after Pythagoras, perhaps Plato came closest to a Pythagorean form of expression when he spoke of the Forms as the unifying principle behind appearances. Perceived as immanent, they serve a similar mystic role to Pythagoras' numbers. Yet just as later Pythagoreans allowed their numbers to become crystallized into separate entities—thereby sacrificing the original aim for unity—even Plato himself succumbed to attempts at rational analysis of his mystical concept of participation; and thus allowed the forms to 'ultimately dry up into mere "concepts" or "logical objects" of thought—immutable still and independent of the subject which knows them, but without life and power.' The trend, in other words, was for forms to become simply 'the relation of logical subject to universal predicate'[21] and for numbers to become, as for Aristotle, 'a mere elaboration of the category of quantity.'[22] In short, the dualistic tendency was, even then, very strongly in evidence.

The turning point: the scientific revolution

If any philosopher of the time could be said to represent the essence of the

new natural philosophy and science of the 17th century, Descartes is perhaps the most likely candidate. As aptly described by Westfall in his excellent survey, *The Construction of Modern Science*, Descartes, with his unshakable faith in reason, uttered the clarion call 'for the abolition of wonder by understanding.'[23]

In the previous section of this paper, it was shown how the tendency towards dualism was inherent in the very emergence of science and rational thinking among the Greeks. But what was latent, or only just developing, at that time reached full maturity in the writings of Descartes. Here, the mind/body distinction has been made complete; and all traces of the spiritual or psychic have been removed from matter.[24] Not only the occult qualities of Scholasticism, and the enspirited nature of Renaissance Naturalism gave way to this new vision, but even the apparently 'real' qualities of heat and colour and the rest, proposed by Aristotle, were dismissed; since even these could not conform within the reigning dichotomy of mind vs. matter.[25]

To be sure, this new philosophy did not arise at once, 'full blown'. In fact, the science of the time was characterized throughout by a dynamic tension between the so-called mechanical philosophy which was being created, and a still strong attachment to the Pythagorean tradition in mathematics. This tension, in turn, can be related to the shifting aim and focus of the scientific enterprise itself.

According to Cornford, in his talk on the *Laws of Motion in Ancient Thought*, the science of the Greeks was simply not addressing the same problems as those confronted by modern science. To the contrary, says Cornford, the Greeks lay stress on discovering the essence of what *is*. Since their science was dissociated 'from the pursuit of power and wealth,' they were 'not bent on influencing future facts to [their own] advantage.' Thus, he continues, 'Greek speculation took geometry in particular—that static science—as the pattern and ideal of all knowledge.'[26]

In opposition to the Greeks, however, in Cornford's account, more modern science is not so much concerned with static existence, 'i.e., with that which Mill dubs the uniformities of 'simultaneity among co-existent phenomena'. Instead, commencing with the work of Copernicus and Kepler, science has shifted its emphasis to the study of *motion*, and the laws of succession; since it is these which give power—the power to predict correctly and to act on the basis of these predictions.[27] As Westfall expands this image: the Pythagoreans' search for order was 'satisfied to discover exact mathematical description, which it understood as an expression of the ultimate structure of the universe. The mechanical philosophy, in contrast, concerned itself with the causation of individual phenomena'[28] in order both to vanquish uncertainty, and to provide the basis for prediction and control.

But this distinction between the two opposing viewpoints of science, for the Greeks and for the science of the 17th century, is not just the contrast between two ages. In practice, the allure of Pythagorean mathematics still lingered, and had its effects in the science of the new era. This explains, for instance, why Kepler, who is renowned for his discovery of the three laws of planetary motion, which we still accept today, held also to diverse speculations (e.g., relating musical harmonies to planetary motion, or regarding the geometric architecture of the universe) which now seem unfamiliar and outdated.[29] Ironically, Galileo, who helped discover the more modern concepts of mechanics, could not himself resist a return to the more traditional picture of the physical solar system (which was based on that staple of the Pythagoreans, the circle); a picture which Kepler had already discarded as unworkable.[30]

Even today, this Pythagorean strain can still be detected in science. This 'throwback', as Cornford calls it, is evident wherever the laws of science are conceived not merely as statements of causal relations, but in a metaphorical aspect as 'timeless', universal properties, inherent in the world.[31] The advantage of this approach is that if such eternal laws could indeed exist, then, with Aristotle, one might hope that the rest of science could be rigorously explained by deduction from necessary principles. Descartes, in fact, hoped to retain just this privilege by identifying the space of pure geometry with the extended plenum of physical matter—so that certainty could still be possible for scientific knowledge. This hope was dashed in the potent writings of Pierre Gassendi (1592-1655), who affirmed that 'atoms are extended, but extension is not their essence.' In short, man cannot hope for certain knowledge of the essence of things (which only God can know).[32]

The other tip: van Fraassen

In the image of this paper, Western science has traced through its history the figure of a horseshoe. Pythagoras, it was said, and the science he represented could be imagined to exist at one of the horseshoe's tips. The crucial turning point, at the centre of the curve, would lie at about the 17th century during the scientific revolution. Then, with modern science, the other end is reached.

The second stage, as shown above, was a science most characterized by an inner dynamic tension. On the one hand, a view of nature was being promoted which sought to explain all phenomena on the basis of solely mechanical interactions. On the other hand, a Pythagorean confidence remained in the role of abstract mathematical formulations to comprehend and accurately describe the phenomena.

In this picture, the modern era in science and its philosophy can be described as seeking to resolve the paradoxes of that second stage. An interesting representative of this current era is Bas van Fraassen. Like his predecessors from Stage 2, he identifies his concerns with the 'facts'. Not for him is talk of essences, or focus on divine intention. Then, too, he shares their attraction to elegant and usually mathematically-based theories which can serve to unify the diverse data. But, to avoid the paradox which befell his forbears when attempting to reconcile these two strains, van Fraassen changes radically the

nature of his 'theories'. For him, the theory has become relative and provisional; and the interests it serves are largely pragmatic.

In other words, it might be said that the 17th century dilemma was due to their holding simultaneously to two polarized positions, while yet insisting dogmatically on each. Since its science was so largely a study of mechanics, it was presumed that the world itself was literally mechanical in nature. And, since mathematics owed so much to the ancients for its impetus and development, the original prejudices regarding the meaning and nature of mathematical discoveries were adopted. The conflict arose, essentially, from the uneasy juxtaposition of such vying perspectives. But, nonetheless, these viewpoints *can* converge, if only they are each interpreted less rigidly—which is to say, in the 'agnostic' fashion of van Fraassen.

According to the critics of the so-called mechanical philosophers, the latter abandoned in their method that which they themselves put forward as a guiding principle. Namely, in the interests of disavowing any reliance on occult forces in their explanations (an aim shared in the current era), these older philosophers nonetheless relied on hidden causes and unseen movements of their own. This appears an unacknowledged regression. Some philosophers have tried, as an alternative, to simply remove all reference to the 'hidden'. van Fraassen, in the opinion of this paper, is more truly representative of the direction of modern science when he permits continued theorization involving the unobserved, but holds back from the ontological commitments which, if made, could embroil him in paradox.

What van Fraassen presents as the definitive summary of his own position is the following (italicised in his original text): 'Science aims to give us theories which are empirically adequate; and acceptance of a theory involves as belief only that it is empirically adequate.' To say that a theory is empirically adequate is to say that it 'saves the phenomena'; i.e., that 'what it says about the observable things and events in the world is true.'[33] The bulk of his text *The Scientific Image* is an elaboration and a defence of that position.

van Fraassen thus continues the tradition, begun with the scientific revolution, of focusing on the predictive aspect of theories, which enable control and power. The only predictions which could possibly be confirmed or denied are those whose outcomes are seen to be at least partially *observable*. What goes beyond the observable, from this perspective, may contribute perhaps to a 'good story' about what may happen in some predicted situation; yet, ultimately, it is the observable portion alone which can be explicitly 'watched for'—to discover either that it does in fact occur, or that it fails to.

Therefore, many criticisms which have been levelled against van Fraassen's dependence on the concept of observability can be countered by recalling this purpose, just described, for his employment of the notion. Musgrave, for instance, in his review of van Fraassen, questions whether such 'a distinction [between what is or is not observable by humans, in general], which is admittedly rough and ready, species specific, and of no ontological significance, [can] really bear such an epistemological burden?'[34] That is, he questions whether we should base our inferences regarding what exists on the almost arbitrary consideration of what the physical human species happens to be capable of observing. But in response to this, it must be emphasized that van Fraassen is hardly suggesting that existence is conditional on our ability to observe it; only that if and where existence *does* go beyond our ability to observe it, then the best one can hope for is speculation—not knowledge.

Perhaps an example can make this clearer. Suppose there is a theory which says that in ten hours, the 17th dimension will collapse into the 16th. Since, so far as we know, there is no way in which all, or even some part of this event could be observed by humans, then van Fraassen would need to say that adherence or non-adherence to such a theory is wholly optional. This is not because these dimensions depend on man for their existence, but, rather, since there is no prediction *which touches man* that can be affirmed or denied on the basis of such speculation about these esoteric states.

Contained within the above example is also a clue to van Fraassen's second claim regarding 'observables', which has caused some upset among his critics. It would seem that the line which separates the 'observable' from the 'non-observable' is far from clear. Is the image of someone's knee on an X-ray plate, for example, an 'observation' of that kneecap; or is the only true observation involved that of the plate, itself—while the kneecap remains unobserved? van Fraassen, clearly, would favour the first interpretation; and he would say that what counts as an observation is determined by the accepted current body of theory. Since, in the present case, the accepted theory of X-rays confirms the correspondence between its images and that which is imaged, it is therefore sufficient to see the exposed plate in order to say that one has observed the features shown therein, as well.

The complaint about van Fraassen's answer is that it seems to involve one in a vicious circle: On the one hand, as already described, van Fraassen seeks to tie all theories back to tangible observations. Now, in turn, it seems that what is 'observable' is itself determined by some given theory. Surely, say some, this displays a basic circularity in van Fraassen's account.[35]

This paper would argue, however that this second objection to van Fraassen's use of observables is, like the first, somewhat off the mark. For consider again that image of a theory which predicts the collapse of higher dimensions. As originally expressed, the theory was unsupportable in van Fraassen's terms, since, *so far as we know*, it was said, the claims the theory makes are not subject to observation. But, for the sake of the present argument, let us now suppose that the theory includes also the following assumptions:

1. The 16th and 17th dimensions, though not subject to direct experience as such, *do* nonetheless have observable effects.
2. For instance, they do determine the relationships that hold between our phenomenological perceptions of colour and the corresponding wave-

lengths of light, which can be independently measured.

3. Thus, when the 17th dimension collapses into the 16th, as is predicted, an observable effect will be that when the familiar colour 'red' is perceived, the measured wavelength of light which corresponds will be increased times pi (compared with the previously expected measurement); and so, too, for all the colours, the corresponding frequencies will be increased times pi.

The addition of such further assumptions to our imagined theory draws attention to these two important points, which bear on problems raised above:

(1) Let us assume that, at the predicted time, the change in correspondences between perceived colours, on the one hand, and the measured wavelengths of these same colours, on the other, actually occurs; or, rather, let us assume that the holders of our imagined theory *assert* this change to have been made. What could they point to in order to support their claim? Clearly, they would describe the work of those experimenters who have actually seen certain colours, and read certain numbers from the dials and monitors of their test apparatus, in some specified order. To be sure, it is their theory itself which has said *which* numbers the researchers should expect to see on their displays (namely, in this example, those numbers which are roughly 3.14 times larger than the numbers which they would formerly have expected from otherwise similar experiments made prior to the dimensional collapse). This, then, expresses the sense in which the theory determines the role for observation. It says where to look, and what to be watching for. Yet there is nothing in this which should be problematic for van Fraassen. If, for whatever reason, theory predicts the appearance of certain numbers, at certain times, on particular display devices, the bottom line of confirmation or disconfirmation still rests with the very human-dependent question: 'But did the researchers actually *see* those expected numbers, or did they not?'

(2) The same example helps, also, to show the way in which the realms of 'observation' can expand in theory-related contexts; though, always, it is bound to the final criterion (vague as it may sometimes be to define) of what the actual human being can confront and recognize. As of now, we presume, there corresponds with each colour we perceive a certain wavelength of light. To affirm this is to embrace a certain theory—a theory which is supported every time the 'seeing of some colour' and the measurement of its anticipated wavelength are conjoined. Once we accept this theory that affirms a certain constant conjunction of what is (or could be) perceived with what is (or could be) measured, there is a readily understood sense of 'observe' in which the direct experience of the one conjunct can be taken automatically as a case of 'observing' the presence of the as-yet unseen member of the pair.

So, for instance, we may say a star is 'red', based on a direct observation only of a reading of its wavelength from a meter, though perhaps no one has actually ever perceived its alleged 'red' colour in their visual field. Or again,

we *say* we have observed a kneecap upon inspection only of its X-ray exposure without (fortunately) feeling the need, every time, to first cut through the flesh and look directly. Have we really observed the 'red' star or the kneecap? Well, what we have done is 'as good as' having observed it, provisional upon our continued acceptance of the theories which conjoin these phenomena to those we have literally experienced in a direct sense. But our example shows what can happen when one of these provisionally accepted theories is overturned (as when the expected relationship between colours and wavelengths is allegedly altered). Clearly, this reveals the tentative nature of all such indirect observations; and shows, once more, how consistency with strictly direct observation is the more fundamental test.

The essence, then, of van Fraassen's case is this: the crucial test for any theory is its compatibility over time with observed phenomena. In dispute, 'observation' must be taken in its crudest (though vague) sense, as what a human can actually perceive (such as e.g., 'red' or 'the displayed representation of the number 112'). In practice, however, a far more expansive sense of observation is permitted; provided only the theories and presumed associations on which this observational method is based are not, in the given context, being questioned. If these premisses are questioned, the disputants must fall back to observations they can agree on—with direct reports of literal experiences comprising the last resort. (It should not matter that what, exactly, a 'literal experience' is, is unclear; provided the disputants themselves can reach a tentative agreement on the subject.)

Having thus summarized van Fraassen's position at some length, it next remains for this paper to relate it more fully to the general flow of the history of philosophy of science. In particular, it must be shown that his views can be appropriately mapped onto the 'second tip' of the horseshoe image—the position reserved for the thinkers of the 'modern era'.

Supporting Modern Trends

As the reader will recall, this paper has suggested that the emergence of Western science involved at its outset a tendency towards 'secularization'. That is, the pre-scientific emphasis on ritual interaction with nature was progressively diminished in favour of an increased attempt to stand back from it for understanding, and, eventually, for control. This trend, described also as a tendency towards dualism, reached its climax with the scientific revolution, when the mind of the observer and the matter under study were seen as rigidly distinct.

Yet, since ultimately man, his culture, and his reason are themselves *also* a part of nature, i.e., of that which is under study—this strict dichotomy of mind vs. matter, of scientist vs. his subject, could never really be supported. Once the divinity of mathematics passed from favour as part of this dualistic tendency, it was never clear exactly where or how to classify its content. Who could deny the close kinship of mathematical and deductive thinking with the activity of the mind? Yet, if mathematics were *simply* of the mind, would this

not abandon nature to randomness and chance disorder? Once Descartes had failed in his attempt to enforce a strict and conveniently necessary parallel between mathematics and the actual geometrical properties of the extended universe, it became the pressing problem for all future philosophy of science to resolve this unpleasant dilemma.

It is thus that van Fraassen has been chosen in this study to represent the current stage in this historical development. In him, mathematics has completed its transition from its divine station with Pythagoras, through its uneasy period of co-existence with mechanical philosophy, to finally (and in answer to the post-cartesian problems), an essentially pragmatic role. But, in the process, a new sort of unity has been restored to science from the forceful dualism of its past. For, since, in current science, both mathematical formulas and physical particles alike are postulated—not as certainly existing, but as being *effective* for certain specific explanations—the need for holding rigidly to the old divisions between their realms is breaking down. And, in the age of science where particles have also become waves, perhaps the only supportable approach is to reduce, along with van Fraassen, one's commitment to the dualistic view.

But even if van Fraassen's views can be plausibly related to an historical pattern of development in the philosophy of science, many readers may yet object to this paper's selection of van Fraassen as the special 'representative' of the 'current position' in that field. Unfortunately, there is not enough space here to fully justify this choice. (At least a book would be required to fully elaborate all the issues and debates which have occurred in the modern philosophy of science, and to clearly demonstrate convergence on a single view such as van Fraassen's.) Instead, what will be offered here is a somewhat eclectic comparison of van Fraassen's position with a few other modern views, in order to show their common, basic similarity in key features.

Perhaps the earliest expression of the theme here attributed to the modern era in science was provided by David Hume in the 18th century. Famous for his arguments that no one has ever seen a 'cause', but only the 'constant conjunction of two objects', he calls it merely the result of 'custom or habit' 'to expect the one from the appearance of the other.'[36] What this leaves as the role for sound philosophy is to avoid dogmatism, and to confine itself 'to such subjects as fall under daily practice and experience.'[37] Such a view is clearly compatible with van Fraassen's more recent injunction that a scientific theory can only be judged on the basis of how it tallies with experience; van Fraassen, like Hume, takes a pragmatic attitude to all that exceeds this limit.

In reaction to this initial statement of a position akin to van Fraassen's, the constructivist schools (including, e.g., Kant, and the 20th century positivists) attempted to restore certainty to reason and to mathematics, and, thus, to rational deductions about the world. The key to this attempt was to consider the world of experience, itself a construction, built up by the mind on its own mathematical, deductive principles. Therefore, it was felt, these latter

principles could be relied on just as surely as for Pythagoras or Descartes. That is, we can *know* the world conforms to these rational principles precisely because, in the final analysis, it has in fact been *constructed* from them.

Perhaps, it might seem that *these* schools, if any, are antithetical to the viewpoint of van Fraassen. How, then, can van Fraassen be said to speak on behalf of modern philosophy of science in general? The reply is that, although the constructivists definitely *aim* to restore a place for certainty, which van Fraassen himself has finally abandoned, they nonetheless contain within themselves the seeds for their own collapse. Once this occurs, they tend to merge within the general 'modern' perspective, represented by van Fraassen.

Kant, himself, acknowledged that, barring total scepticism (that is, avoiding the premiss that nothing external really exists), there must remain a certain externally existing 'stuff', the 'noumena', about which nothing specific can be known. All descriptions of the known world are already constructions built up from man's own logical framework; one can therefore never know the thing itself. This suggests that the accounts we give of our experienced environment are provisional upon our own adoption of a certain logico-mathematical framework. But, in the current era, when there have been shown to be possible alternative mathematics and logics, the relativity which was inherent but hidden in this constructivist outlook has now become apparent. For, which mathematics is to be chosen for our constructions? That is, with which mathematical or logical framework should we model the world; since, by definition of the case, we cannot know the world itself apart from the models we choose? Once the constructivist viewpoint is confronted with such questions, then it soon becomes obvious that even their views tend to merge within the van Fraassenean 'agnosticism' of our time regarding the possible 'truth' of accepted theories.

Ironically, van Fraassen sees his second main adversary, after the positivists, as the so-called realist schools. Perhaps the classical spokesman for such schools is C.G. Hempel. In this author's view, however, van Fraassen's attempt to maintain a polarity between his own view and that of his other contemporaries seems essentially shallow, and hinges on trivialities. Hempel, no less than van Fraassen, acknowledges that 'we can never establish *with certainty* that a given theory is true, that the entities it posits are real. But, that is not to disclose a peculiar flaw in our claims about theoretical entities, but, to note a pervasive characteristic of *all* empirical knowledge.'[38] In other words, Hempel is in full agreement with van Fraassen that, regarding things empirical, certainty is simply not possible. But, once this is acknowledged, the so-called distinction between Hempel's realism and van Fraassen's view collapses to the following:

HEMPEL: If *my* theory says that unobservable entities, 'A', exist, then, if that theory is true, I would of course be committed to believing also in the existence of A's.[39] But since, of course, I can never be certain that this

theory is correct, I am never quite certain about the existence of A's, either.

VAN FRAASSEN: If *my* theory says that unobservable entities, 'A', exist, then, even if I totally accepted the theory, I would not consider myself committed to believing also in the existence of A's. So, even if I accept the theory, I am never quite certain about the existence of A's.

So where is the great distinction between these two positions? Clearly, neither van Fraassen nor Hempel would acknowledge the existence of entities which are posited only in theories which they do not accept. But, suppose they share the acceptance of some given theory which happens to purport the existence of unobservables. Would one of these thinkers be more committed to the existence of these objects than the other? No. Hempel would hold back, because no such theory can be believed with certainty; while van Fraassen would likewise refrain from belief, in his case saying that theory-acceptance does not entail such ontological commitment. The outcome, in terms of what is or is not believed on the basis of accepted theories, is essentially the same for both thinkers.

Further parallels with van Fraassen's ideas can be found in the work of Israel Scheffler. In his *Anatomy of Inquiry*, for instance, he speaks in ways which complement van Fraassen's notion that a theory itself determines what are its observables. Scheffler holds the events we select to confirm or explain a theory cannot be looked upon as simply 'raw' happenings, but always too as events-described-as-P. That is, the theory itself must indicate which features must be present in some event, (if it is to be characterized as such an instance of P).[40]

In short, although these few examples could hardly be called a 'proof', they do help to illustrate how the current views in the philosophy of science tend to have a great deal in common. If van Fraassen has been chosen as the spokesman for this era, this has only been to provide a point of focus for this study. As illustrated above, many other thinkers have had valid points to add to this essentially common view.

FIELD AND THE HORSESHOE MODEL

Throughout, this paper has tried to present the history of the philosophy of science as a smooth transition from Pythagorean towards van Fraassenean perspectives. Hopefully, at least the nature of an overriding *trend* has been expressed, though the variety and richness of published opinion on the subject can hardly be captured in a single such account. For instance, there has been in each period a diversity of schools and doctrines—which, even if they expressed some common themes, had nonetheless some sharp disagreements with each other.

With Hartry Field, however, we see evidence of another type of diversion from the pattern here presented. He is distinguished from his other modern contemporaries not so much by holding to another view within a common framework of shared ideas, as because, in a very real sense, his ideas are a sort of throwback to an earlier time. In particular, the thrust of his arguments appear to belong more appropriately to the time of the scientific revolution and Descartes than to the present debates. It is therefore useful to take a special look at Field's proposals to see how they can be mapped onto our present model.

The essence of Fields's arguments in his *Science Without Numbers* is a claim that mathematics and numbers are expendable (in his words, 'conservative')[41] for the pursuit of science. That is, whatever science needs to express or demonstrate can be accomplished without the employment of numbers. Thus, though mathematics may provide a useful tool, the existence of its entities need not be at all acknowledged.

Ironically, it is Field's strong *attitude* towards mathematics which places him so out of step with his peers. His general set of beliefs is not particularly distinct from common views. For instance, Kemeny, in his excellent work *A Philosopher Looks at Science*, virtually paraphrases Field (though writing twenty years in advance of him) when he says of the scientific method: 'it starts with facts, ends with facts, and the facts ending one cycle are the beginnings of the next cycle.'[42] Where does mathematics fit in? For Kemeny, no less than for Field, mathematics is an extension of pure logic. From facts we induce theories; mathematics, as simply a convenient shorthand for logic, helps us to deduce predictions from these theories; and these predictions are verified or refuted by reference to other facts.[43] The van Fraassenean emphasis on confirmation-by-facts reveals the modernity of this view; and Kemeny has already made clear his own assessment of the ultimate 'conservativeness' of mathematics.

In fact, we are reminded here, of the modern emphasis—which van Fraassen also employs—on models in scientific theories. Like the mathematics described by Kemeny, models (according to Hesse in her *Models and Analysis in Science*) are required to make theories predictive.[44] Even if verification depends on discreet observations, a theory must somehow contain within itself a basis for deciding where next to look—for what to expect. Strict logico-mathematical deduction from accepted theory is one such basis, though by no means the only one.[45]

So what is Field's point in insisting that numbers have no existence? In the present phase of science, surely, there is no need to devote a book to such a subject. Since numbers are not observables as such, they must be considered parts of those theories or models which are alleged to connect our observations into some more or less unified picture. In this respect, their status is no better or worse, no more or no less 'real', than that of quarks or the fourth dimension. Since the role they play is provisional, in any case, in agnostically-held theories, there simply seems no point in focusing on them (as opposed to other unobservables) for special exclusion from our ontology.

In the second phase of the 'horseshoe', however, there would have been reason for concern; and it seems that Field's attitude is largely an inheritance

from that period. At that time, when the dichotomy between mind and matter was in its heyday, the role of mathematics was indeed a sore point. If it belonged on the mind side of the barrier—and surely it must—then how could its role in the explanation of the movements of objects be accounted for? When questions such as these were still in vogue, Field's contributions would have been most welcome. (Notice, by the way, that his examples are drawn primarily from Newtonian physics—which is science of the second stage, not today's.) Field's solution: 'Though it is convenient to employ mathematics in scientific explanation, all reference to mathematics can, with effort, be removed; and, thus, the 'matter' side of our rigid dichotomy can remain untainted by mind, in the form of numbers.' This would seem, no doubt, to have been an excellent solution for this problem, for those involved at the second phase of the horseshoe; but, for today, unfortunately, the problem itself seems anachronous.

Conclusion and Afterword

A model for interpreting the history of the role of mathematics in the philosophy of Western science has now been drawn. According to this model, the philosophy of science has traced a horseshoe-curve through time. The emergence of this 'horseshoe' with Pythagoras and the other Greek scientists can be seen as the rise not so much of the *content* of what we now recognize as Western science and mathematics, as (more importantly) the emergence of that rational and deductive orientation which has since been characteristic of the scientific enterprise.

From what has just been said, one of the two interpretations intended for the horseshoe image of this paper can be derived. As mentioned in the introduction, the 'horseshoe' is perhaps the one symbol in logic most characteristic of the deductive mode of thought (since it represents the 'if...then' operator employed in modus ponens). So, from this perspective, to say that the period in Western science from Pythagoras to the present day has traced out the curve of a horseshoe is to say that, in that period, reliance on the deductive mode of logic has been a central feature in the corresponding science.

But, again, as mentioned in the introduction, the horseshoe image can be seen in another way. For, to trace a horseshoe pattern is to begin a return, at some point, towards the place of origin. We have seen, in this paper, a number of respects in which science has, indeed, curved 'back' in this way:

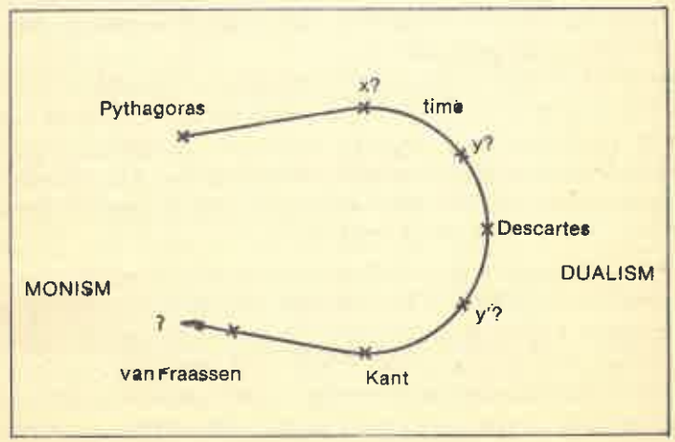
(1) With Western science began a trend towards dualism. By the time of Descartes, this tendency had reached its extreme possibility, with the rigid mind/body distinction. By van Fraassen, a return has indeed begun, as theories blend waves with particles, and define to large extents their own observables.

(2) Also, science began with a search for certainty. Pythagoras, indeed, focused nearly all his attention on the certain numerical relations which underlie the manifestations of nature. With the scientific revolution, the grasp

on certainty became more tenuous, as matter itself was seen as mechanical and devoid of its own intelligence. In our own era, a great deal of this hope for certainty has been simply abandoned. Thus, it might be said, there has been somewhat of a return to the attitude of Heraclitus—according to which it might be preferable, in some respects, to acknowledge one's limits by employing paradoxical, but useful and non-dogmatic, models, rather than insisting always on a literal adherence to some one perspective.

In short, this paper has completed its attempt to briefly trace the history of philosophy of science in the image of a horseshoe's curve, and to clarify and support that model. In the course of this discussion, a number of philosophers have been quoted or described to discover how their contributions reflect the general theme of some stage within the 'horseshoe'.

Of course, the presenting of this model proposes at least as many questions as it (hopefully) solves. For, let the model be drawn as shown below:



The Horseshoe of Western Science

The philosophers indicated are taken to hold increasingly dualistic views the further to the right they appear on the figure. Time is represented as the progression of the horseshoe curve (approximately clockwise) from the emergence of Western science. Where is the curve heading next? How—more explicitly—should individual thinkers be placed on the curve? What does the vertical distance between points represent (if anything)? Is there a philosopher, or at least a general philosophical period or position, corresponding to point x (which is 'opposite' from Kant)? What is x's precise relation to Kant's own views? These, and many like these, are the sorts of questions for possible research which the model is intended to suggest.

To close this paper, the reader will be left with a question: If indeed the horseshoe image of the philosophy of science provides a useful model for the tendencies and progress of this field, then what can we expect with regard to

its future? Will it, perhaps, complete its cycle in the direction of its origin; and, if so, what would this mean?

To answer such questions, even if possible, would be clearly beyond the scope of this paper. What follows is not intended as a rigorous argument. Since the case for this paper's claims has already been presented and defended above, all that remains is to offer, as an *afterword*, the following two quotes, each of which suggests a vision of where the next steps of science may lie. Whether these contain some truth, or whether some more traditional path will be followed, it is perhaps too soon to say. But since the trends revealed in this paper suggest that science is not likely to remain stagnant, but is changing in its form and content, it is felt a fitting close to present these thoughtful views.

FRITJOF CAPRA (*The Tao of Physics*): The age-old tradition of exploring complex structures by breaking them down into simpler constituents is so deeply ingrained in Western thought that the search for these basic components is still going on.

There is, however, a radically different school of thought in particle physics which starts from the idea that nature cannot be reduced to fundamental entities, such as elementary particles or fundamental fields. It has to be understood entirely through its self-consistency, with its components being consistent both with one another and with themselves. This idea... is known as the 'bootstrap hypothesis.'[46]

CARL JUNG (Preface to Wilhelm's Translation of the *I Ching*): My position in these matters is pragmatic, and the great disciplines that have taught me the practical usefulness of this viewpoint are psychotherapy and medical psychology. Probably in no other field do we have to reckon with so many unknown quantities, and nowhere else do we become more accustomed to adopting methods that work even though for a long time we may not know why they work... The irrational fulness of life has taught me never to discard anything, even when it goes against our theories (short-lived at best) or otherwise admits of no immediate explanation. It is of course disquieting, and one is not certain whether the compass is pointing true or not; but security, certitude, and peace do not lead to discoveries.[47]

NOTES

1. Regarding this interpretation for the usefulness of models in suggesting further questions for research, compare Mary B. Hesse, *Models and Analogies in Science*, p. 8.
2. Edward A. Maziarz and Thomas Greenwood, *Greek Mathematical Philosophy*, p. vii.
3. Warren A. Shibles, *Models of Ancient Greek Philosophy*, p. 44.
4. Heraclitus (49aFr), in Walter Kaufmann, ed., *Philosophic Classics: Thales to St. Thomas*, p. 19.
5. O. Neugebauer, *The Exact Sciences in Antiquity*, p. 142.

6. *Ibid.*, p. 35.
7. Maziarz and Greenwood, pp. 7 and 9.
8. *Ibid.*, p. 7.
7. F.M. Cornford, *From Religion to Philosophy: A Study in the Origins of Western Speculation*, pp. 198ff.
10. *Ibid.*
11. Maziarz and Greenwood, p. 12.
12. *Ibid.*, p. 17.
13. Aristotle (*Metaph.* 987a) in Kaufmann, p. 389.
14. Cornford, p. 207.
15. *Ibid.*, p. 209.
16. *Ibid.*, pp. 212f.
17. *Ibid.*, p. 213.
18. Edward Caird, *The Evolution of Theology in the Greek Philosophers*, p. 20.
19. Cornford, pp. 194ff.
20. John H. Finley, *Four Stages of Greek Thought*, pp. 84f.
21. Cornford, p. 255.
22. Maziarz and Greenwood, p. 158.
23. Richard S. Westfall, *The Construction of Modern Science*, p. 30.
24. *Ibid.*, p. 31.
25. *Ibid.*, pp. 31f.
26. F.M. Cornford, *The Laws of Motion in Ancient Thought*, p. 17.
27. *Ibid.*, pp. 15f., 20.
28. Westfall, p. 1.
29. *Ibid.*, p. 12.
30. *Ibid.*, p. 18.
31. Cornford, *Laws of Motion*, pp. 22f.
32. Westfall, p. 40.
33. Bas C. van Fraassen, *The Scientific Image* (Oxford: Clarendon, 1980), p. 12.
34. Alan Musgrave, 'Constructive Empiricism vs. Scientific Realism', *Philosophical Quaterly* 32 (July 1982): 265.
35. Michael Friedman, 'Bas C. van Fraassen: The Scientific Image,' *Journal of Philosophy* 79 (May 1982): 278.
36. David Hume, *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*, p. 43.
37. *Ibid.*, p. 162.
38. C.G. Hempel, *The Philosophy of Natural Science*, pp. 80f.
39. For this notion of ontological commitments being a function of the variables which are bound within an accepted theory, see also Willard Van Orman Quine, *From a Logical Point of View*, pp. 12ff.
40. Israel Scheffler, *The Anatomy of Inquiry*, p. 59.
41. Hartry H. Field, *Science Without Numbers*, p. 13.
42. John G. Kemeny, *A Philosopher Looks at Science*, p. 85.
43. *Ibid.*, p. 86.
44. Hesse, p. 19.
45. For more on models, and their potential employment, see also: (a) Martin H. Cundy and A.P. Rollett, *Mathematical Models*, p. 11; and (b) Philip J. Davis and Reuben Hersh, *The Mathematical Experience*, p. 78.
46. Fritjof Capra, *The Tao of Physics*, 1976), pp. 301f.
47. Carl Jung, Foreword to *The I Ching: or Book of Changes*, p. xxxiv.

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Purpose of man in the tradition of Indian orthodoxy

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I

The attempt at explaining the mainspring of philosophical systems has been an interesting endeavour in philosophy. Until recently, it has been almost a common place in the subject to hold that philosophy starts either with the problem of nature, taken to imply objectivity, or of man, signifying subjectivity. That man himself is a combination of both or that nature includes man also has not been totally unknown, but in the matter of laying emphasis, this is forgotten and it has been laid either on the one or on the other.

The early western thinking seems to have started with the problem of nature or the world. The Greek thinkers started wondering on the ultimate stuff of the universe and so, they are legitimately claimed to have also been the first scientists. It cannot, however, be an exclusive affair restricted only to nature. Some have naturally mused on the nature of mind (*nous*) and the masterminds on the nature of human knowledge and values especially Socrates, Plato and Aristotle.

In the case of Indian philosophy, it seems to have started the other way round. The seer of the Ṛg Veda has wondered at the natural objects, but the centre, which has prompted him to explain or utilize them, has been man himself. To unfold the mystery of human nature, to clinch the essence of man, has been the primary motivation of the traditional Indian systems. *Ātmānaṁ viddhi* (know thyself) is the key-word of Indian philosophy. And this knowledge, as developed through the *Vedas*, the *Upaniṣads*, and other systems based on them, is not a mere epistemic affair. Knowing is for being; they interpenetrate. The dichotomy between thought and action, between the knower and the agent, is transcended in the concrete being of man. It is the full man in his perfection (*Mokṣa*) that is the object of quest for the Indian systems. It is for the realization of man's true self, it is for his liberation that thought, feeling and action converge. This philosophical motif makes no rigid distinction between philosophy and religion. Philosophy is that of human existence or being; so, it is religion in practice and action. *Dharma* (a synonym for religion) is that which sustains a man—it is the philosophy of life. Philosophy and religion supplement each other. They tend to fuse together to depict the true nature of the concrete man, who not only thinks but acts and feels too. With all its diversities and dimensions, life is one. Science of *Dharma* is the master science of life.

This has been a source of confusion to some who fail to see anything in Hinduism more than a mass of codes of conduct. The real life seems to flow underneath these codes with the admission of immense diversity in life. Traditional Indian Orthodoxy usually means the Vedic tradition which includes the *Vedas*, the *Upaniṣads*, the *Bhagavadgītā*, and the philosophical systems,[1] which are based on the teachings of the *Vedas* and the *Upaniṣads*. Though Buddhism and Jainism are claimed to be independent of the Vedic philosophy, they are in perfect concord with the spiritual outlook expressed by the tradition. Only the Cārvāka system, though sharing the same concern for man, presents an altogether different brand of thinking, rather materialistic in character. And it has been claimed, in some quarters with some amount of justification, that it represents another distincttive tradition of Indian thinking, i.e., the tradition of *anātmavāda* (svabhāvavāda being included in it).

It is too much to claim that the Vedas formulate an articulate philosophy of man. The Ṛg Veda seer has wondered at the natural objects, at the manifestation of power in nature but somehow he has started thinking from the standpoint of man. He has raised the problem of purpose and has given a historical meaning to the flow of events. This concern for the purpose of man prompts him to offer prayers to the Gods and to seek the exact relationship between man, nature and God.

Philosophy has gradually crystalized through the *Upaniṣads* reaching full maturity in the systems. The key-problem seems to have been man's relation with nature and the spiritual reality, to find out the purpose and meaning of life. So considered, Indian tradition has to be reckoned as anthropocentric. One could try to answer the question by extolling man or the individual and trivializing the absolute. Or, one might trivialize the individual and capitalize the absolute. The third alternative could be to establish harmony between the two. By and large Indian traditional endeavour has been to achieve this harmony and derive all meaning from this harmony. No Indian system would maintain that human life is devoid of purpose. The denial of purpose goes against the anthropocentricity of Indian tradition. What this purpose is the most important question.

We may try to understand the solution of this problem by trying to answer a few questions that may be formulated in this connection. They are:

1. What is the concept of man in the traditional systems? Is there a unity in this regard?
   1.1 Does the individual have a choice of purpose? Or, is destiny controlling him, i.e., is there a freely chosen purpose or is it preordained?
2. Is there a teleology in nature?
   2.1 Is, then, human teleology a part of the wide teleology in nature, or,
   2.2 Is human teleology the determining factor of the natural teleology?
3. What is the place of God in Hindu thought?

All these problems could be compressed into the following three and this paper will try to deal with them in an attempt to understand the nature of the individual and his purpose.

A. The relation of the individual to nature,
B. The relation of the individual to society, and
C. The relation of the individual to God/Absolute.

II

In a way, the answer to C would solve the basic problems involved in A and B. If Indian tradition in general advocates a purely theistic or absolutistic philosophy, there will be little scope for nature existing independently of such an all-comprehensive reality. Nature and man will be integral parts of reality and as such their relation will be one of that between parts of the same whole.

This broadly may be the line of thinking in Indian philosophy. But a close examination is called for. The logical alternatives one can think of in settling the relation between individual and nature may be of the following types:

(i) Nature is hostile to human existence with its values and purposes;
(ii) Nature is indifferent to human existence;
(iii) Nature is conducive to the pursuit of human purpose.

(i) One does not generally come across such a view in Indian philosophy where it is maintained that human existence is not within the scheme of nature. The boundlessness of space and time has been a common background but there is nothing to show that nature is hostile to human existence. The so-called natural evil has to be explained from the moral point of view.

A principal reason for the absence of such a view could be that on its admission, 'physical living' itself becomes the primary value as it is for this that man would have to struggle. Other values, should they be accepted, slide downwards in a value-structure based on such an ontology. The Cārvāka system, though without a developed scientific view on which such a theory has been offered, philosophically works on such a background. It takes nature to be indifferent, if not hostile, to human living. The value-structure that is developed is consequently primarily materialistic. The body, treated as a thing, becomes the sole value. Indian orthodoxy, generally known to be pessimistic, is not a tradition of despair. It does not look upon human existence as transitory always facing up to the challenge of death. Nature at least does not intend it. Physical death, again, does not mean much for the Indian systems. A brief discussion on the role of human body will be made towards the end of this section.

(ii) Absence of hostility is not necessarily to be constituted as being congenial to human purpose. Nature could be regarded to be totally indifferent to human existence. Such a view would imply that there is no teleology in nature-explicit or implicit. This theory also does not seem to have been held

by the Indian thinkers as they speak of purposiveness in nature. But some amount of naturalism has been accepted.

(iii) Purposiveness in nature could be explained in two ways: (a) There is cosmic purpose and human purpose is only a part of it. (b) Nature as such does not have a purpose of its own; but it serves human or divine purpose. Both these views have their difficulties. If (a) is adopted, human values might become insignificant as part of nature's own scheme. If (b) is advocated, the explanation of nature becomes completely anthropocentric and might go against an independent development of natural sciences.

It is not the case that the traditional thinking has been clear on the alternatives from the very beginning. The possibility of nature being indifferent to human endeavours for the realization of values has not been ruled out by the early Vedic thinkers, though there has always been an undercurrent for reading teleology all around in nature. The cosmogony of the Ṛg Veda presents an interesting picture. One finds here a dual suggestion of ordinary naturalism and divine purposiveness presented in the garb of mythology. The universe is regarded as the result of mechanical production on the one hand and the *Brahman*[2] (Supreme Being in the later development of Vedic thinking) is looked upon as the material cause of everything in nature on the other.[3] In the Man-hymn[4] the Supreme Man is regarded as the lord of everything in the universe, and of immortality. The animate and inanimate things are nothing but his diffusion. The Supreme Man is supposed to pervade the whole of the world with only a fourth part of Himself, while the remaining parts extend to the region beyond. He is beyond time—as He is at once past, present and future.

There has been an interplay of naturalistic and teleological tendencies in the course of later development of philosophy. In the vast Vedic literature with diverse philosophical thinking, it cannot be expected that there has been complete unity on the point. But there has been general unanimity in attributing some sort of broad purposiveness to nature without completely denying natural flow of events. In the Upaniṣads, nature is viewed more or less as fulfilling the divine purpose and this is further developed in some of the theistic systems; but the limited independence of nature is not completely taken away. The agreement in the attitudes may be brought out in the context of two philosophical systems, one believing in God and the other without such a belief. Nyāya system accepts God and Sāṁkhya rejects it; but both of them believe in the purposiveness in nature, though in varying degrees. What I intend to point out is that the teleology in nature may sometimes be independent of a belief in an Omnipresent God.

Nature is generally taken to be the background for the moral or religious struggle of man in his march towards self-realization. Nature not only does not repel human endeavour in the moral life but it sustains such an endeavour. Nature does this either in its own way or to fulfil divine purpose. Sāṃkhya[5] philosophy presents independent teleology in nature. In this system two fundamental realities are accepted—*Puruṣa* and *Prakṛti*. Puruṣa stands for

pure consciousness (*cit*)[6] or soul. Prakṛti is the unconscious principle (*acit*), the dynamic causal matrix of everything but Puruṣa. Puruṣa is unchanging, non-active and eternal. In its own nature, it is pure and free. But consciousness appears in conjunction with a body in the subjects of experience, i.e., the ordinary individuals. Puruṣa does not have any control over Prakṛti. Prakṛti, composed of three essential components (*guṇas*) like Sattva, Rajas and Tamas, is always evolving. This evolution is of two types—homogeneous (*svarūpavasthā*) and heterogeneous (*virūpavasthā*). In the homogeneous evolution the guṇas change into themselves and Prakṛti is non-creative at this stage. But in the heterogeneous evolution these elements get mixed up one with another and this results in the emergence of things of nature. Human body itself is a product of Prakṛti and the ordinary ego or individual is an amalgam of consciousness and the body—a product of unconscious nature. The activity that belongs to the individual is due to the contribution of Prakṛti which contains the principle of activity and change. Puruṣa is present as a catalyst to move Prakṛti to creative (heterogeneous) evolution.

The entire scheme of this evolution appears to be intentional in a peculiar way. It is for the enjoyment of the Puruṣa that Prakṛti evolves. Prakṛti evolves for the pleasure and suffering of the different Puruṣa in accordance with their potency of activities.[7] Prakṛti thus engages Puruṣa in an intimate way and the Puruṣa falsely identifies itself with its body or the products of Prakṛti. But Prakṛti not only binds down the Puruṣa but also helps it to realize its nature by understanding its distinction from the Prakṛti. Thus Prakṛti always moves in a purposive way; there seems to be teleology all around. Prakṛti or nature presents Puruṣa with the results of its activities and finally helps it in liberating itself through proper knowledge of the category-mistake it commits by identifying itself with the unconscious principle. *Sāṁkhya* does not accept the existence of God as the guiding force for the evolution of the Prakṛti (*Yoga* accepts God in that fashion). Prakṛti is independently purposive and the purpose is to involve and liberate Puruṣa.

This novel theory of the *Sāṁkhya* system, which is one of the oldest of the systems of philosophy, tries to avoid the difficulties of cosmic purposiveness which might logically be independent of human purpose. The purpose of nature, completely independent both of the individual and of God, is to serve human purpose in assisting it by offering the suitable background for the realization of its moral value. There might be difficulties in accepting unconscious teleology, but the entire character of the ontological scheme is anthropocentric. Though ontologically distinct there does not seem to be a purposive duality between man and nature.

The basic concept does not appear to be different in a theistic view of nature. One may take up the *Vaiṣṇava*[8] point of view for consideration as it is believed to represent Indian theism at its best. It regards the whole of the universe as the *Līlākṣetra* (playground or sport) of *Viṣṇu*—the Lord, God. Nature is regarded as the manifestation of God who offers it as the back-

ground for the devotees to work out their union with God. The devotees are His parts and parcels and nature presents the necessary field for the individuals to make their religious march. Nature, in this thinking, is taken to form a part of the cosmic divine purpose. Nature is like body to God, while the details of this type of thesis will be taken later, we may briefly consider here the role of body in the tradition of India.

Except in the anti-orthodox Cārvāka system, body has not been identified with human soul nor has it been regarded to be spiritual in the same sense. But body as a product of nature has been regarded to be closely related to human soul. Consciousness is ordinarily taken to be embodied. Body is not just a 'thing'—it is a value, though an extrinsic one. It is created by moral values to some extent and is instrumental to a person's liberation. It acquires a level of subjectivity. It is compared to the temple where consciousness lives in. It is, again, compared to a chariot[9] with sense and motor organs as the horses. This chariot is driven by consciousness and the individual is the master of this chariot. Bodily value is not generally[10] neglected in the value-structure of the tradition, though it is not regarded as an end in itself. Properly trained and controlled through Yoga, body may be of great assistance to the attainment of the ideal which is perfection.

This attitude to body may be taken to represent the Indian way of evaluating nature. Nature, dependent on or independent of the moral governor (God is accepted only as the efficient cause and the moral governor in the Nyāya system) or an all-creating God (Vaiṣṇavism), appears to be the background of the moral life of man. It exhibits purposiveness—primary or secondary. The separate existence of nature does not offer any special problem to Indian philosophy. In the teleological scheme, the passage from nature to the individual is not difficult. Being is for knowing and knowing leads to greater realization of being. Nature's purposiveness does not necessarily imply that it is ontologically secondary or derivative. Its independence and telos may well go together. But the key-concept is that nature is either a means or the background of man's march to perfection. The march towards perfection might extend through many lives. The body might change, but the soul having different bodies in accordance with the law of *karma* has a continuous march. Thus body or nature is a necessary though secondary means for the successful pursuit of values.

> The Indian idea of the world, of nature and of existence is not physical, but psychological and spiritual. Spirit, soul, consciousness are not only greater than inert matter and inconscient force, but they precede and originate these lesser things. All force is power, or means of a secret spirit; the force that sustains the world is a conscious Will, and Nature is its machinery of executive power.[11]

The Indian tradition, as has been pointed out here, does not look upon human existence as a chance entrance into an unfriendly environment. The

environment or nature is to some extent the background of moral life as also it is to some extent determined by voluntary human activities. The Indian mind aspires to break through the vegetative existence as conditioned by the material and vital situation and reach the higher level of spiritual conscious existence through which alone human existence becomes meaningful. And in this spiritual significance of life consists the main spring of Indian tradition.

One may recount here with profit the broad scheme of the spiritual evolution as envisaged by the *ṛṣis* (seers) of the Upaniṣads.[12] Material nature seems to be the first level of existence but it is surcharged with a deeper purpose. Matter seems to be in constant movement towards the higher and higher values. There is a 'nisus' in matter (*annamay sattā*) towards vital existence (*prāṇamay sattā*) which leads to the next higher level of psychical existence (*manomay sattā*). There are different strata of knowledge corresponding to these differing levels of evolution. Psychical state finds its culmination in the state of wisdom (*vijñānamay sattā*). Knowing, however, is not the final state of being. The fruition of this spiritual evolution is achieved in the state of perfection which is blissful (*ānandamay sattā*). In this gradual progress of the spirit no barriers are recognized between matter and life, life and mind, and, mind and blissful soul. The unconscious nature with progressive stages of evolution reaches its climax in the blissful state of the human soul. But for each man it may not reach the same level of development. One might be thing-like and live only in the material level while the other could attain liberation. Thus for one without proper wisdom all the different stages might be hard realities with rigid edges while for the other, the truth of spiritual unity might be the only acceptable position. Each has, however, to attain this state through the progressive march to perfection and the entire set-up of the universe is the background for the march. The value-structure for each individual is the same, though different persons might be placed on different positions in the march towards the realization of value/s.

III

In the previous section references have been made to spiritual evolution and to the law of action (known as *karma-vāda* in Indian philosophy). A fuller discussion, though not an exhaustive one, may be considered to be in order.

Karma-vāda and the theory of rebirth associated with it have always been regarded by the Hindus as a very necessary part of their tradition. It is largely so to the common Hindu even today. Even in Buddhism and Jainism there is general acceptance of this theory. Associated with it, there are certain fundamental problems and wide misconceptions about them. So, a presentation of the theory in its ordinarily accepted form and an examination of it on the philosophical plane is what is presented in this section.

Karma-vāda or the law of karma implies among other things the belief that there is no loss of the potencies of the actions done with desire (*vāsanā*). There are intricate problems regarding the nature of the karma which is the

object of consideration. But that need not detain us here. Karma or action would generally mean voluntary action of man motivated by a desire (*sakāma karma*). Every such action has certain potencies, good or bad, in accordance with the nature of the action. And these potencies must come back as results to the agent. So, broadly, the law of karma is a law suggesting conservation of moral values. The results might not all be actualized in the agent's lifetime; so, a continuity and a rebirth in some form also are logically implied by the law.

The Ṛg Veda speaks first about an inexorable moral law governing the universe in the *Ṛta-sukta*. Even the gods are not above the jurisdiction of the law. They are rather the keeper of the law (*Ṛtasya gopa*). Since the Ṛg Veda this belief in a moral order appears, either explicitly or implicitly, throughout the Vedic tradition. This law appears as *Apūrva* in the *Mīmāṁsā* system and as the law of *Adṛṣta* in the *Nyāya*. The Yoga system gives a classification of the different types of karma, with the approval, if not under the influence, of the Jainas. Whether it has a special name or not, the principle is accepted by all the traditional schools and by some others independent of the Vedic origin, as already mentioned.

There is some amount of misunderstanding in some quarters regarding the nature and scope of *karma-vāda*. It is pointed out that the law implies complete determinism which wrecks the possibility of moral life. The denial of freedom of choice or of action which the law is supposed to imply makes moral life unreal by negating moral responsibility and moral obligation. Should it be so, human pursuit of values which implies freedom becomes non-existent in the Hindu tradition.

On closer examination, however, the law would appear to do just the opposite; it makes moral life and progress a reality in the true sense of the term. Moral life without moral progress or evolution seems pointless. If moral progress is to be a fact, progressiveness in moral attainment does necessarily imply a conservation of the values generated by the free activity of man. Not all results are obtained just at the completion of an action. Nor can we take the action to be totally lost if we do not believe in a different value-structure. To believe in moral progress is to accept the theory that the potencies of the actions performed through freedom of choice must somehow be conserved to come back to the agent at the appropriate time. *Karma-vāda* is simply this acceptance. It advocates conservation of moral values and their retribution to the agent in a regulated way.

Actions could be broadly of two types from the point of view of the presence or absence of potencies. Actions which have yielded results are morally exhausted (*prārabdha karma*); those which are yet to bear fruit (*anārabdha*) could be again of two kinds, e.g., those which have been performed and have not yielded results (*sañcita*) and those which are in the process or the current actions (*sañciyamāna*) whose results are being accumulated. From the standpoint of merits actions could be classified into either bad (*kṛṣṇa*), or good

(*śukla*), or a mixed type (*śukla-kṛṣṇa*) neither good nor bad (*a-śukla-kṛṣṇa*). One does not have a control over the past actions or the potencies left by them. But one may carefully choose the present actions and try to reach the state of perfection through them. Should the actions be good, the agent must reap the good result and conversely in the case of bad actions. But if one chooses to perform the value-neutral activities (*niṣkāma karma*) as spoken of in the *Bhagavadgītā*)[13] he may stop the process of accumulation of results and when the accumulated potencies are exhausted through their results, there remains nothing to be enjoyed or suffered by the individual. The ordinary process of birth, death and rebirth stops and the soul shines in its pristine glory.

This is the popular version of *karma-vāda*. It may also be considered on a different level. But we may take up the implications of the popular view first. It seems clear that *karma-vāda* is an attempt to put forward a reasonable explanation for the apportionment of good and evil in the world without bringing in the notion of God or any other agency. But the theory may well be maintained even in the context of a thesis where God is regarded as the moral governor, the keeper of the law. The potencies of the actions done of free choice comes back to the agent in the form of reward or punishment in the present life or life hereafter. It is popularly maintained that the nature of the next birth is determined by the potencies of the activities so that the enjoyment or punishment could come in the proper form and proportion. If the suffering earned by an individual by his actions in a birth(s) can be meted out only if he is born as any other animal other than man, he has to be born as such.

Such a suggestion opens up new fields of discourse. It becomes evident on the one hand that the moral world does not end only with the human world but it includes within its scope the whole of the kingdom of living animals, the whole of nature. This might imply the extension of the concept of moral responsibility to the non-human world. On the other hand, a belief in the conservation of values seems necessarily to imply the continuity of the soul with or without a body and this ushers in the question of immortality and transmigration of soul.

Indian tradition believes, as pointed out, in the beginningless, though not endless process of birth, death and rebirth in the process of the sojourn of the soul. Soul achieves its perfection only gradually. The realization of perfection is a gradual process extending through continuous life interpersed with physical deaths. But the soul does not die as in that case the question of appropriation of moral potencies is rendered pointless. It appears that a belief in the continuity of soul is quite reasonable for the pursuit of moral values. Immortality of soul is thus accepted as a postulate of moral life; but the justification sought to be given is not merely of practical necessity. Theoretical reasons, as ordinarily adduced, have been mentioned. There is nothing to assume that the cleavage between pure and practical reason has been at all thought out.

No barrier is suggested between thought and action, or in other words, between pure and practical reason.

There is an apprehension that the stock of potencies of activities might determine a good deal of the present life and in that case the freedom of choice becomes seriously narrowed down, if not completely denied. It may be that in a significant way, the individual is controlled by fate and range of his activities is determined. Talk of perfection under such circumstances becomes an idle talk and the ideal might remain well beyond the individual's capacity to attain. An answer to this, though not always very clear, definitely points out the fact that all the activities of any life are not pre-determined. The stock goes to determine the nature of the birth and some peculiar actions pertaining to that type of birth. Within that framework, there is enough scope for freedom and by a judicious choice of actions the individual might march to perfection. Absolute freedom, unless in the state of liberation, seems, however, to have been denied.

An explanation of evil on the assumption of the law of karma becomes rather easy. Individuals suffer or prosper in accordance with the potencies of the actions performed, either in that life or in the lives before. The question of the first birth seems illegitimate since any answer to it is nothing better than arbitrary. Those, who believe in God, make Him the moral governor, the keeper of the law. Those, who do not, make the law self-operative; they would believe in moral naturalism. In any case, God may not be held responsible for the retribution one has for his actions. The law thus can be held independently of any belief in God or conjointly with a belief in such a being.

As to the question formulated earlier regarding freedom of choice and action, we have already indicated the answer. Both destiny and freedom of choice might have been accommodated in the law. There is no absolute freedom if that means complete indeterminism. The past is determined and the present and future are conditional. Absolute freedom is the goal to be achieved. And in the way to its achievement man is controlled by destiny (*adṛṣta*) to some extent. But this should not be construed as leading to fatalism. Destiny is not inscrutable fate operating as an external agency. It is the accumulation of the potencies of actions done by free choice by the individual. But the point which confuses the modern mind is perhaps the notion of the individual itself. The individual seems to have a series of lives—*heretobefore* and *hereafter*. The 'I' in Indian tradition appears extended quite far—both ways—beyond the present 'I'. It recurs in changing bodies and carries on the march towards perfection. The individual thus is generally (a case is different in staunch thesis like Vaiṣṇavism) the determining agent of his future. There seems to be a double-order concept of the individual. In one of these senses, the ordinary notion of the individual as the present 'I' with the common code of conduct and regulations seems to have been accepted. In the other sense, however, the present 'I' is only a member in the beginningless 'I'—series continuing endlessly either embodied or without it as in the final state of liberation. That 'I' then would either trivialize the ordinary notion of an individual *vis-à-vis* the Absolute/God or it would trivialize the Absolute/God and instal altogether a different concept of the individual. In either case, common morality and religion would become pointless. A synthesis in the theistic way has been attempted in the *Bhagavadgītā*. All these problems will engage us in the last section.

From an analytic point of view, a few questions could be raised regarding the problem of rebirth and transmigration of soul, the complexity of the different types of free activities (e.g., some being concerned with beauty or general health, a pursuit of love or fortune or happiness or a pursuit of individual or collective objects). A blanket law like the law of karma might have to be readjusted, at least reinterpreted to do proper justice to multi-dimensional character of human experience and action. A question regarding the types of world could also be formulated.

It appears that rebirth cannot just be taken mechanically. The soul is not to be taken as being impelled completely by the mechanism of the law of *karma* in an altogether determined way. There may be a gap between births and rebirth is/may not be understood as an automatic continuation of the previous personality with all its features. There has to be a rearrangement of the different components of the personality so as to prosecute the spiritual movement in a better way. This march is from the physical to the spiritual level through the vital and mental stages and all these phases are contained within the spirit itself. Different types of activities are the manifestations of the same spirit in different strata of development. The present individual is the end-product of his own previous actions and emotions, his inner and outer, vital and spiritual energies. But it is the end-product only in relation to what has been, and not what has yet to be. The reason why the law of karma is spoken of in terms of action may be that as no rigid distinction has been, or can be, admitted between thought, emotion and action—action has been spoken of indifferently. A more plausible reason could be that as action constitutes the greater part of human life and is the norm for man's values for being, the law of karma is primarily expressed in terms of actions rather than in those of thought and passion. From a linguistic point of view too, one may note with interest that verbs express all ranges of human existence.

The law of karma, though evidently suggestive of moral naturalism, is not a mechanical law of nature. Its significance is not in determining the spirit but in conditioning its functioning. The law in its simple application has a dominant say with regard to the body and life, but in relation to the spirit it tends to become more complex and less rigid. Spiritual freedom manifests itself through the law and transcends the deterministic bounds of the law. Human progress is progressive realization of greater freedom and in this process of spiritual evolution the law helps rather than hinders the process. This law, even if considered as a part of nature, does not stand out completely indifferent or antagonistic to human purpose. It is through the operation of

the law that human purpose expresses itself gradually finally going far beyond the law which offers the suitable environment for the spiritual growth of the individual.

We may now sum up the answers obtained through the discussions made so far to some of the questions formulated in Section I.

1. There is no rigid dualism between man and nature. Man contains nature within himself as does nature contain him.
   1.1. Nature is purposive, even though it could be purely material in character. Nature might be called 'the vale of soul-making.'
2. The law of karma is a semi-natural moral law guaranteeing the conservation of moral pursuit.
   2.1. Individuals are in a sense under the spell of destiny. But the destiny is his own creation. The individual is not a pre-determined machine, but a free agent working under regulations. One may recall in this connection Spinoza's or Marx's views on freedom—as recognition of the necessary.
   2.2. Values are genuine, perfection being the highest value. Man's spiritual evolution starts with his breaking through the physical and vital existence and gradually reaching the level of joyful existence in complete freedom.
3. The evolution goes on through an indefinite series of physical lives, with the probability of the soul being associated with different bodies. It is held to be the same individual with reinforced energies, so to say.
   3.1. The notion of disembodied persons is not necessarily suggested, but the continuity of the soul in changing bodies or even without a body seems to be the traditional notion.
4. The question, then, is about the exact nature of the individual and his fulfilment.

IV

In the *Ātmavādī* tradition of India the highest value for the individual is *mokṣa* or liberation; but this is not the only value nor are all values a-social. The value-structure (*puruṣārtha*) commonly accepted in the Indian tradition appears unanimous in accepting perfection as the supreme value. It, however, cannot be attained all on a sudden. There are other wider though extrinsic values and they cannot be ignored. The other values are '*artha*', '*kāma*' and '*dharma*' standing for the economic values, the hedonic values and a proper harmony between all these ideals. The individual under normal circumstances is a social being enjoined to pursue the common values as a member of the society. It may be contended that an excessive emphasis on the spiritual values of the individual tends to undervalue or devalue the social aspect of man. The social values might be sacrificed at the alter of the individual values. This, however, is not the case. It cannot be contested that the highest good in the traditional value-scheme transcends the realm of social values as it does those of the individual in the common sense of the term. But the common social life of the average human beings seems never to have been neglected. The tradition on the other hand has attempted to construct the social pattern by codifying the conducts considered conducive to the realization of man's supreme end. The dignity associated with human existence, the purpose inherent in the continuity of life permeates both the natural and social conditions of existence and their interpretation.

The structure of the society and the position of the individual therein may be discussed with reference to the principal Hindu social institutions like *varṇa* and *āśrama*. The *varṇāśrama dharma* has unfortunately degenerated into narrow casteism in later period whatever the historical justifications for it. But the spirit in which it was originally conceived and followed for quite a few centuries in the early Hindu society can still be discerned from the way it works today. The Hindu social institutions are historically recognized to have been the few most stable ones. It must have succeeded in achieving social harmony and inculcating a proper sense of values in the individuals. This is most likely the source of the vitality of the Indian culture.

The institution of *varṇa* (caste) emphasizes the social aspect of the individual and that of *āśrama* deals with the different stages of individual in his preparation for fulfilling the highest purpose. Both the institutions have their sanction in the Vedic tradition.[14] In the *Bhagavadgītā* the Lord (Kṛṣṇa) says that the four castes *are created* by Him in accordance with principle of *qualitative division of labour*. The four *varṇas* are: (a) *Brāhmaṇa*, (b) *Kṣatriya*, (c) *Vaiśya* and (d) *Śūdra*. The principle of division is the original quality of man and not any other extraneous consideration. It is rather like a social division on the basis of the qualities of the soul as conceived by Plato.[16] (a) *Brāhmaṇa* as suggested by the term is one who knows the *Brahman*[17]—the infinite, ultimate reality. A Brāhmaṇa is the person having the highest intellectual qualities and most advanced in the quest for perfection. He is the philosopher in Plato's society. He knows the truths of *Vedas* and *Upaniṣads* and it is his duty to inculcate the sence of righteousness and urge for perfection in others. He is to initiate people in the significance of life which is divine and eternal. *Brāhmaṇas* are to be the advisers and ministers of the rulers and kings, but never kings themselves. In the Hindu society this class has supplied the teachers, priests, preceptors, ministers and advisers. Brāhmaṇas, as enjoined by *dharma*, have to enjoy the least of physical pleasures and comforts and set example by their own living of the deeper meaning of life which consists not in material enjoyment but in the realization of spirituality. All values are to be recognized and harmoniously organized for the fulfilment of man and a Brāhmaṇa by his living must be a pointer to the practicality of such a life. The power, this class would have enjoyed in the society, was not bestowed on them by any ecclesiastical authority or any political decree. They must have earned it by virtue of their qualities and spirituality. They were the spiritual leaders of the society. The value-

orientation of the society is symbolized in the leadership allotted to this class for their spiritual superiority. It must have continued to be so for many centuries. But gradually the vitality of the principle based on qualitative division must have become a hereditary fact and degenerated into narrow casteism. A Brāhmaṇa is not by birth but by the qualities of his soul. A substitution of this principle, as quite natural for man, has eaten into the vitals of the principle itself.

(b) The actual governance of the society and country, its defence from internal and external strifes, the whole range of military operation—all these have been left to the *Kṣatriyas*. This class has supplied the kings, governors, military generals and personnel in general. They were to be the defenders of *dharma*, the dignity of women and the social order. In all their activities, the rulers would have to be advised by the spiritual leaders, i.e., the Brāhmaṇas. This guaranteed the proper type of governance which was to be based on *dharma*, social harmony and justice. The best society is that which offers the maximum opportunity for the individual's multi-dimensional spiritual growth and the *Kṣatriyas* were to seek for establishing or stabilizing such a society. This saved the society from pursuing economic and hedonic ends as the supreme values. The king was the protector of *dharma* which was not his creation. The balance between autocracy and democracy was maintained by the social value-structure which converged in individual perfection, as the highest value. References may be made to the *Rāmāyaṇa* and the *Mahābhārata* which, in an allegorical way, present the social order and the nature of Hindu polity. The hierarchy of the society is designed on the assumption of spiritual hierarchy and not on any other factor exclusively.

(c) The class known as the *Vaiśya* comprised of the merchants, traders, bankers and businessmen in the society. The economic and commercial aspect of the social life was entrusted with this class. The material well-being of the society was taken care of by the *Vaiśya*. He must have possessed sufficient money; but the social code would not allow him to look upon riches as his own. The riches would have to be regarded as social property and the *Vaiśya* was merely keeping them on trust. In the heydays of Hinduism, the *Vaiśya* by and large would take care of the wealth of the society as care-takers on behalf of the society. He was never to use money as a lever of power to gain social supremacy. This ensured a form of social justice and helped checking economic disparity in the society. The basic point that emerged is that money corrupts only when it becomes an end-in-itself or it is used as a means for securing other things. But the moment the final end is regarded as something beyond the purchasing power of money and the entire social valuation is directed to it, money loses much of its charm. *Artha* (economic) is a value but only an extrinsic one; its instrumentality lies in its assisting man in the realization of perfection which cannot be bought for money, directly or indirectly. So, it is the scheme of telos and values and the success of its imprint on the common individual that accounts for the common norm of valuation.

(d) All the three classes mentioned so far—*Brāhmaṇas*, *Kṣatriyas* and *Vaiśyas*—were looked upon as twice-born (*dwija*), one the physiological birth and the other the spiritual birth after the initiation, and all of them would put on the sacred thread as a mark of initiation. The *Śūdras* were a class apart. They were the class of workers and peasants. They, however, had their rightful place in the society. The Indian social order at that time seems to have been one based on the recognition of the fact that by natural potentialities human beings differ in their intellectual and practical skill. This difference also was sought to be explained through the law of karma. Not everybody is capable of everything; so, a coerced unity is arbitrary, artificial, and harmful to harmonious social and individual life. Social harmony was established by admitting the reality and dignity of each man's station in the society and his duties. The entire system of class-division would work ideally so long as the basis of the distinction would be quality and the social dynamism of accepting anybody of a particular talent in the appropriate class moves on smoothly. The *varṇa* (caste) system seems originally to have been based or designed to be based on the basis of qualitative distinction rather than on any other factor, though there might be other opinions. A Brāhmaṇa incapable of intellectual pursuit but expert in military activities was to have been regarded as a kṣatriya, and a vaiśya well versed in the *Vedas* would have to be reckoned as a Brāhmaṇa. This interchange of castes must have been the original design. There are allegorical stories in the *Rāmāyaṇa* and the *Mahābhārata* of Śūdras attaining liberation and regarded superior to Brāhmaṇas.

In the course of history, however, the institution degenerated into rigid hereditary caste system. The basis was still valuational but the dynamic core of it was missing. The flexibility of the social division must have been lost and the principal point for consideration became *jāti* (birth) rather than *guṇa*. A Brāhmaṇa would then mean one born of brahmin parents and intellectual ability might not be associated with him in an essential way. As a matter of fact, many of the Brāhmaṇas have been intellectually great but that is a different point. One might seek the historical reason of such a phenomenon in the advent of Islamic thought and its culture coupled with the hostility of the muslim rulers to the Hindus which contributed largely to the rigidity generated in the Hindu society. The society defended itself by entering into a protective shell which resulted in the loss of social dynamism which was the ideal. But the basic value-orientation of society saved it from complete ruination. Perfection and harmony, not material prosperity and military prowess, was still the highest value. There has always been a question of the conflicting demands of the essential values (*svadharma*) of the individual and the changing social values (*yugadharma*). But the individual has been urged to fulfil himself in all possible ways (*sarbabhāvena*).

The rivalry among castes, if actual, might not have been central. The individual has always been impressed by the meaning of human existence, its spiritual mission. There is no bar to any individual fulfilling himself through

the social harmony which suggests unity in diversity. This is the meaning of life in general.

So, the caste system under ideal conditions is not to have been mainly an economic class division though it tends to degenerate into it. But the core of spirituality must have continued unabated for centuries. The truth that everybody is a potential Brāhmaṇa[18] seems to have been a matter of common knowledge. Even the Śūdra could be a Brāhmaṇa by his deeds,[19] as already pointed out. Some of the greatest sages universally admired by the Hindus are said to have been of a low origin.[20] Whatever the virtues or vices of the caste system and whatever the reasons of its present shape, a basic truth emerges from the ancient social system which must have been free from the type of economic competition one notices in the present-day societies. Human existence has a dignity of its own. The individual is poised for his fulfilment, for his perfection by a harmonious play of his entire personality. He is a social being and has to abide by the social norms. But Supreme Value goes beyond the society and the individual in the ordinary sense of the term. All the social norms are preparation for the ideal. So society, just like nature, is the appropriate background to prepare the individual for realizing his purpose.

The institution that has concerned the individual's life in the society was known as *āśrama*. *Āśrama* refers to the different stages of the individual's life in its development. The four stages are: (a) *Brahmacarya*, the period of training through physical and mental restraint, (b) *Gārhasthya*, the period of all normal works as a householder in the society, (c) *Vāṇaprastha*, the period of voluntary retirement and retreat from the social bonds and obligations through withdrawal from the society and (d) *Sannyāsa*, the period of complete renunciation of the ordinary social duties and ties and single-minded application to the realization of freedom and perfection.

This fourfold scheme dividing life into four periods exhibits the way of preparing the individual to achieve his purpose in life. In the beginning the youth with plasticity of mind is moulded into a life of duty and temperance. A sense of restraint and of purposiveness is instilled in him so that the entire plan of life becomes orderly and oriented in the proper value-scheme. In this he has to be properly initiated and the success of the scheme depends on the quality of man working as the preceptor (*guru*). The *guru* is to train him up about the worldly life and the significance of human existence. Only one who has the highest intellectual attainment and greatest integrity in character is to be a *guru* and generally the *Brāhmaṇa*, as explained earlier, is to perform the function of the initiator. The youthful student is given lessons in the scale of priorities of values in life—*artha*, *kāma*, *dharma* and *mokṣa* and shape his life accordingly in actual living. He has to learn it through great hardship living in the house of the preceptor as a preparation for the journey ahead.

After the successful completion of the period of training, the young student now maturing into full-bloom manhood, enters into actual life starting with the role of a householder. With the knowledge of the secrets of life he

enters the society as a full partner and performs his duties to the society by marrying and begetting children in the process of continuation of the race, by contributing a substantial share of his earning to the benefit of the society, helping the poor and the sick, treating reverentially parents, women and old people. He has to do the duties prescribed by the *śāstras* and live in the society as a normal, cultured, disciplined member. None of the basic instincts are overlooked; they are taken care of in a regulated way so that no one has an undue predominance over the other. Much importance is placed on this stage of *gārhasthya* as it is this stage which puts an individual to the acid test of life. There are detailed discussions regarding the types of marriage[21] and groups of girls[22] from whom to select the life-partner. The role of the wife is quite important. *Dharma* has to be performed along with her. She is like *prakṛti* helping the *puruṣa* in achieving his end. But she herself is also a conscious principle, unlike prakṛti, trying to fulfil herself through the proper discharge of duties and actions. Though marriage has been the accepted institution, living as bachelors or spinsters[23] has not been uncommon. There does not seem to have been any compulsion in this regard as the individual variation in the need and differing way of fulfilment has always been accepted. But the common practice has been to enter into marriage which has been regarded as sacred. This seems to have been the method of regulating the sex life of the individuals with religious and social sanctions. A marriage in which both the man and the woman are in perfect harmony is regarded as the ideal marriage. Rāma and Sītā are taken as an ideal couple. Incidentally, the general sanction seems to have been for monogamy though polygamy was not uncommon. Broad rules and regulations are there, but not its detailed codification. So long as the spirit behind the regulations is considered supreme rigid formalization seems unnecessary. All individuals do not require the same code for achieving perfection. So, that being the point of unity, diversity has to be accepted as genuine and harmony becomes meaningless without this diversity.

The third stage is of voluntary retirement from the social position, power and enjoyment—it is *vāṇaprastha*—a stage for preparation for the final renunciation. After the life as a householder, there is a time to cry halt and giving up all responsibilities and powers to the next generation. The individual withdraws from the society which is symbolized by his going to the forest along with his wife, who is always a companion in *dharma*. This stage begins when the physical powers of the individual are on the decline and he has attained the age of a grandfather.[24] The man and the wife avoid the din and bustle of life and apply themselves exclusively to the meditation on the higher values of life which have been pursued all through in the other stages of life.

The last stage is of complete renunciation—the stage of *sannyāsa*—where the individual is on the march to attain spirituality through freedom. He develops a sense of detachment and bears all suffering with calm and resignation. It is renunciation in action—*karmasannyāsa* as spoken of in the *Gītā*. This

stage of life is indicative of the progressive transcendence of the stages of relative values and entering into the realm of the intrinsic value.

The institutions of *varṇa* and *āśrama* manifest the regulated character of individual life both in the aspects of social as well as private living. It has been an attempt at achieving harmony in life in both the aspects with full recognition of difference between one individual and another. Life has been infused with a deeper meaning and human existence has been surcharged with a sense of dignity and purpose.

To some it might appear as an external imposition on the individual in his free actions and thinking. The value-orientation, it might be argued, cripples the expression of free life and leads to an excess of other-worldliness. It might in a subtle way deny the freedom of choice inasmuch as perfection as the highest value is sought to be impressed upon every individual. An obsession with purposiveness of life, it may be contended, tends to take away the zest of life and determine it in a particular way. Teleology might turn out to be an inverted mechanism.

To the observation that Indian traditional value-orientation makes man care more for something beyond the present world and less for the material prosperity of the present life, one has perhaps to admit it to some extent with some rejoinders. It is most likely historically true that Indian tradition has cared less for the ordinary values of life in the sense that they have not been regarded as ends in themselves. This might even have encouraged a sense of selflessness in a common understanding. None of the early thinkers has cared to keep any record of themselves and there is no authentic bio-data available of the great thinkers, not even of the great *Advaitin* thinker Śaṅkarācārya who was probably born as late as the eighth century A.D. Something else other than one's strong assertion of his present self has appeared as more worthwhile and the other aspects might have been counted less. But this is not the whole truth. The normal pursuits of material prosperity and healthy sense of sex life have been admitted and given due weightage. They, of course, have not been regarded as intrinsic except in the *nāstika Cārvāka* philosophy. This system stands out prominently as distinct from every other system in the complete rejection of spiritual values. The emergence of such a system shows the vitality and variety of the Indian mind. The general trend, however, has been for attaching greater importance to *dharma*, i.e., harmonious living in accordance with one's own nature and the common codes of social, moral/religious life. All this is directed to the same end—perfection, liberation or *mukti*. This determines the hierarchy of values and purposes of human life and living is regulated, both individually and socially, accordingly. Taking this into consideration, one perhaps has to admit some amount of other-worldliness in the traditional teaching though the transitional order always points out the need of other values.

This brings us to an important problem. The question of a choice among values is in the final analysis associated with the way of one's looking at life.

If human existence means only the present life and death of the body is regarded as the end of the individual, the scale of values seems to become one of a transitory nature. It may have a tendency to cling to the material values as the body becomes the principal determinant in the value-order. Physical values readily appeal to the senses and assures satisfaction through their intensity. In such a view human existence may not have any special dignity about itself as the purpose of such existence does not very much differ from that of the other forms of existence.

If, however, human existence suggests any speciality, a meaning distinctive about itself, a totally different value-scheme may be worked out.

Does human existence possess a special significance? The answer of the tradition is strongly in the affirmative. And the logic of admission of this purposiveness of man's being leads the tradition to the consequent acceptance of a continuous process, a progressive march to the achievement of the supreme value, which is spiritual in nature. It is spirit's fulfilment—realization of its own nature. But, does it not appear as an imposition on the free agent? The answer is equally strongly in the negative. The tradition does not end merely with theorization about the meaning of life and establishing speculative metaphysics on the nature of the individual. It urges the end as practically attainable and makes a pointer to that direction. A man can answer demands of his being through all means (*mārga*)—knowledge, action and devotion (*jñāna*, *karma* and *bhakti*). And there are people—the sages and seers—who have fulfilled themselves by all means (*sarvabhāvena*). They inspire faith in the methods and fact of realization.

But what is the individual and what does he become in perfection? Does the latter destroy the former? Is there any sense in which the same individual continues? These questions will engage us in the next section.

V

The main burden of the discussion made so far has been to show that the scheme of values accepted in the tradition puts the spiritual freedom of the individual on the apex and the natural and social order derive their meaning from this value-structure. Proper individuality is suggestive of harmony. Both in nature and in society diversity is the rule, but there is a deep sense of unity which pervades the shades of diversities. Difference between individuals is admitted. There is attempted explanation for this and the society does not intend to coerce all individuals into one pattern of living. To offer all possible assistance in man's quest for self-realization seems to be the basic theme behind the natural and social movement.

The notion of the individual may be taken both from the point of view of religion and philosophy. But it does not make much of a difference. There are many schools of thought or different sects and shades of Hinduism. But each philosophy is backed up by its practical application in actual living while each religion as a way of life has a sound philosophy behind it. So, the con-

flict between philosophy and religion is not the order. But there are different philosophies of life or religious shades each trying to understand the nature of the individual and the problems of its life. *Dharma*, generally taken as the synonym for religion, has a much wider connotation. It is the way of living, it is that which keeps up the individual. *Dharma* is not necessarily tagged up with a personal goal, but a sense of deep spirituality must pervade it. It is quite possible to be *dhārmika* (religious or virtuous) without accepting a god. In the advanced stages of the spiritual progress it may not at all be necessary to take recourse to a medium like God, though it might be considered necessary to do so on the common plane. *Dharma* is righteousness, a dedication to the spiritual values.

Generally, however, people did (as many still do) believe in god/gods and for the ordinary individual the institution of *dharma* implies a belief in a supernormal being or beings. We may call this theism in the western sense (in a wide way implying belief in god) of the term and try to assess the position of the individual in theistic beliefs. We may next try to find out the philosophical systems. Of the different types of theism, special mention may be made of the following three: (a) *Vaiṣṇava*, (b) *Śākta* and (c) *Śaiva*. The discussion here is by no means exhaustive for that does not fall within the main scope of this paper. Only the broad features will be examined to find out the status of the individual. Other minor sects will be ignored here as also we shall bypass Buddhism and Jainism as these religions do not accept any god. Reference to them may be made in the context of philosophical discussion.

(a) *Vaiṣṇava* religion: As is suggested by the name, *Vaiṣṇava* religion centres round *Viṣṇu*—a Vedic deity. Though only a few hymns are addressed to him in the Ṛg Veda,[25] he gains importance in the *Brāhmaṇas* and is regarded as the Supreme Being in the Purāṇic period. In the Brāhmaṇic period *Viṣṇu* is regarded as the highest god.[26] We have it from a mythological story in the Sāma Veda[27]—that in a mutual competition held among the gods for reaching the end of sacrifice directed to the achievement of greatest glory, *Viṣṇu* reached the end first and became the highest of all gods. Visṇu is identified with *Vāsudeva* who again has been identified with *Nārāyaṇa*[28] who has been regarded as the Supreme Lord. The idea of such a being is abundantly found in the different *Upaniṣads*.[29] All these diverse expressions might have been synthesized in the concept of *Puruṣottama* in the *Bhagavadgītā*. The *Gītā* is the earliest articulate exposition of the *Bhakti* system (religions of devotion to the Lord) known as *ekāntika dharma*. And in this sense, the *Gītā* is one of the principal sources of Vaiṣṇava religion.

The *Gītā* presents the *Bhagavat* (may be identified with Nārāyaṇa) speaking of three different ways for liberation: (1) *Jñāna-Yoga* or *Jñāna-Mārga*, (ii) *Karma-Yoga* and (iii) *Bhakti-Yoga*. Each of these is capable of taking the individual to perfection. While the first two may not logically presuppose a personal god, for the third it is a logical necessity. Vaiṣṇava religion is a religion of *bhakti*, devotion being considered to be the path of one's union with

god. From this point of view this religion represents Indian theism (in the ordinary sense) at its best.

The first six chapters of the *Gītā* discuss *karma-yoga* and the emphasis is put on renunciation in action (*karma sannyāsa* or *niṣkāma karma*). Such actions are based on proper knowledge and judicious discrimination between the right and the wrong. *Karma-Yoga* appears to contain a core of theism as the injunction is to place all the actions at the disposal of the Lord. One may be a '*Karma-Yogi*' or '*Jñāna-Yogi*'—but these are not necessarily exclusive. It is a question of emphasis.

In the next six chapters, *Bhakti-Yoga* (the path of devotion) is treated of. Mention has been made of two types of meditation with two types of objects—*Akṣara Brahman* and *Vāsudeva* (*Bhagavat*). Here is probably the beginning of the cult of personal God and his worship in the form of *Vāsudeva*. But the other method of meditation on an impersonal being leads to the same end. It appears that the Gītā is striving for harmony at two levels. At the philosophic level, it suggests the conception of *Akṣara Brahman* as the *Absolute*, the ultimate reality. On the other hand, *Vāsudeva*, the personal God, is taken to be the highest deity. Both these conceptions are synthesized, one being regarded as the alternative for the other, finally both being identical. The other synthesis is in the attempt of treating *jñāna*, *karma* and *bhakti* as alternative ways to perfection. How much success the *Gītā* has achieved in this attempt at dual synthesis is an open (though secondary) question. One point appears to be clear, however. The *Gītā* implicitly but unmistakably puts emphasis on *bhakti-yoga* and the personal god as the object of *bhakti* (adoration and devotion). The entire discourse of *Bhagavat* to *Arjuna* is summed up by Bhagavat Himself when He asks Arjuna to surrender himself to Him,[30] with all the heart and promises eternal joy (*ānanda*) to him in the love of God. One who performs nothing but attaches himself to God with intense devotion and love, adores Him alone, is sure to realize perfection.

This is the beginning of *ekāntika dharma* (monotheistic religion) which is typically represented in Vaiṣṇavism. The *Gītā* has its course in the *Upaniṣads* and some philosophical systems (like the *Sāṃkhya-Yoga*). The Gītā is the culmination of the progress of the religious and philosophic speculation that prevailed before the rise of Buddhism. And the conception of *bhakti* can also be traced to that of *upāsanā* mentioned in some of the *Upaniṣads*.[31] It might be possible to show in this way that the different elements of the *ekāntika dharma* could be traced to earlier traditions.

The principal theme of Vaiṣṇava religion is deep love of Viṣṇu (or Vāsudeva, Kṛṣṇa or Nārāyaṇa). Viṣṇu in the form of cowherd Kṛṣṇa or as the lover of Rādhā or as the benevolent Lord of the universe is taken to be the only object of love and adoration and this deep personal love of the devotee (*bhakta*) for his God (*bhagawān*) is marked out this religious sect from others. The devotee aims at complete union with God. What becomes of the individual in such a state, or what he normally is, is our problem. And this can be

brought out on the background of later Vaiṣṇava thinkers like *Rāmānuja, Mādhva, Nimbārka* and *Vallabha*—the leaders of the four main sects of Vaiṣṇavism.

Of the two classes of Vaiṣṇava teachers of the South, viz., *Ālyars* and *Ācaryas*, the former has been concerned with the culture of love and devotion to Viṣṇu while the latter concerned more with the philosophical aspect of the religion in an attempt to prove its theoretical soundness on the face of opposition. *Rāmānuja*, a Vaiṣṇava of the latter class flourishing most likely in the twelfth century A.D., has engaged himself in answering the fundamental philosophical problems brought out primarily by *Śaṁkarācārya* in his commentary on *Bādarāyana's Brahmasūtra*. There have been challenges from Buddhism and Jainism too. Rāmānuja's principal philosophical concern is to find out the exact position of the individual (*jīva*) and its relation to God/Absolute.

It is rather difficult to give an adequate account of the philosophical position as developed by Śaṁkara from *Gauḍapāda*. This, however, is the background of the context of which Rāmānuja's thesis can be understood. Śaṁkara's philosophy, famously known as *Advaita Vedānta*, presents an apparent paradox. From one point of view, it seems to suggest complete trivialization of the individual through illusionism. *Brahman* alone is stated to be real, everything else is treated as unreal making its appearance through cosmic illusion (*māyā* or *ajñāna*). Śaṁkara does not claim to have established any new truths; he modestly professes only to illucidate the basic truth of the *Vedas* and the *Upaniṣads*.[32] He does his job with very subtle dialectics and tries to clinch the issue in favour of non-dual (*advaita*) reality[33] which can be realized actually but only from the transcendental point of view (*pāramārthika dṛṣṭi*). The multiplicity of the universe including the plurality of the individuals (*jīva*) is treated as false appearance on the substratum of Brahman. The things of common experience and the experiencing agents are less unreal than the contradictory things like sky-flower. They seem to possess a phenomenal reality. On closer inspection, however, all these multiple things are detected to be unreal as there is no genuine principle of individuation. Difference (*bheda*) in all its forms is unreal. Relation being unreal, the terms in relation also logically become unreal. The 'I' in its common sense is not identical with the self. It also is due to a false projection on the ultimate reality which is pure consciousness (*śuddha caitanya*). The change from one (*Brahman*) to many (*jagat* or world of many) is only apparent (*vivarta*). There cannot be any real change; such a theory negates the reality of the ordinary individual from the transcendental standpoint though some phenomenal plausibility (*vyavahārika sattā*) is associated with it. Practical life is not impeded but the moment one crosses the frontiers of the world of practicality with superior knowledge, he starts understanding its unreality. Finally, when proper knowledge dawns on him, he realizes that the plurality is false and *Brahman* is the only reality. He realizes himself as identical with the *Brahman*.

This theory admits the practical necessity of religion and morality. But

since both of them logically presuppose duality, they cannot be ultimately valid. Religion must admit a distinction between the worshipper (*bhakta*) and the worshipped (*bhagavān*) and as such it implies unreality. Morality presupposes a duality between the ideal and the striving for it. Moral obligation suggests a duality between the agent and others to whom the agent owes obligation. This indicates invalidity. Any vestige of duality and plurality is shown to be born of ignorance or *māyā*. Māyā is a potency in the Brahman in a sense. But it itself being negative in character though appearing as positive (*bhāvarūpam ajñānam*) the question of its reality does not arise. It is nothing distinct from *Brahman*. Māyā functions in a dual capacity; in its cosmic aspect it makes the world show of variety possible, while in the context of the individual it functions as *avidyā* over and above its being the apparent causal agency. Māyā acts in a twofold role in a more definite way. It covers up (*āvaraṇa*) the reality which is Brahman and distorts it (*vikṣepa*) into manyness. Plurality in all its senses is denied reality. So, multiplicity of things as well as individuals are unreal.

Considered from this point of view, Advaita Vedānta presents a clear example of the philosophical trivialization of the individual. It has a practical though apparent reality. And only from this angle of vision does itst houghts and actions, sentiments and passions gain any meaning. But this is anun stable position always sliding into falsity. The individual quâ individual loses its significance and it may be pointless to speak of any purposiveness in the individual. But just in this simple manner Advaita position regarding the individual cannot be brushed aside. There is another equally legitimate viewpoint from which the entire philosophy could be judged as one ascertaining the highest dignity of the individual and equaling it with the fundamental reality not only ending in treating it as a necessary component of reality. In this sense, it is the negation of any reality other than the self. Śaṁkara asserts not only that *Brahman* is the only reality, but also that it is identical with the self, with the 'I' (*Soham*—I am that *Brahman*).

The identity asserted between the 'I' and Brahman is unqualified total identity. The state of this assertion logically implies the supersession of the stage of phenomenal knowledge which necessarily involves a 'category-mistake' by assigning reality to what is not real. Ignorance (*avidyā*) is dispelled by proper knowledge and the false world-show of plurality vanishes. Knowledge or pure consciousness as the only being shines forth in full glory (the concept of *satcidānandam* is being referred to). The individual devoid of the false bond of its ego turns out to be pure consciousness, which is nothing but Brahman—the non-dual reality. The 'I' freed from its 'ego-logical consciousness' realizes itself as consciousness quâ consciousness. There is, however, a slightly different way of understanding the concept of *sat-cit-ānanda*.[34] The non-dual Brahman may be looked upon as having the three aspects of existence (*sat*), sentience (*cit*) and bliss (*ānanda*) which might be analogically taken as the unity of the triad of values—*dharma, artha* and *kāma*. But the identity

between the 'I' free from its ordinary epistemic and ontological association and the *Brahman* is asserted in all seriousness.

From such a transcendental point of view (*pāramārthika dṛṣṭi*), the normal distinction of 'I-it and I-thou relationship' with the necessary background of all other things and individuals becomes completely transcended and so unreal. But to one who has not reached this level of existence, his world with his experiences appears to have a phenomenal reality. This is the ordinary level of existence with the reality of distinction between the experiences and the content of experience the devotee (*bhakta*) and his God (*bhagavān*) and the whole host of things with the distinction between subjectivity and objectivity. Even Śaṁkara himself does readily admit the necessity of this standpoint with common theism. One cannot rise all on a sudden to the supreme standpoint. But the possibility of the standpoint which could legitimately be called existential as it is beyond all subjectivity and objectivity cannot be denied, either by pure rational arguments or by actual realization.

It is difficult to sum up such a position like this. It emerges that there is a dual concept of the individual. The individual (*jīva*) as the ordinary agent with the normal environment, social and natural and his experiences stands for the normal level. The other is that of the individual becoming identical with existence itself in the very experience of the depths of being. The onion-skinning of the individual as conditioned is got rid of and experience as pure being stands out as the individual. This is pure being, pure freedom—limitless as free from possibilities, and absolute. The 'I' that is asserted is non-subjective since there is complete absence of any context through which the subjectivity could be asserted. This is pure, non-relational consciousness, free from contents and intention—identical with pure being or pure freedom which is complete joy (*ānanda*).

This concept of the individual as pure being goes beyond theism. One may try to work out the nature of the individual within the theistic scheme and Rāmānuja as a Vaiṣṇava tries to develop his theistic philosophy on the background of *Advaita Vedānta* notion of 'I' as pure being. He tries to strike a balance between the extreme positions (viz., trivialization of the individual [in the ordinary sense] or trivialization of the absolute individual taken as supreme into either of the ways in which Śaṁkara's philosophy could paradoxically be understood). For any religion to be possible, the duality of God and his devotee is a logical prerequisite. In the theistic system the highest being one could philosophically talk about cannot be other than a personal God which is regarded as identical with the philosophic absolute. The other aspect of such a system is the genuine reality of the individual which experiences its authentic living in union with its God. There may, however, be an apparent paradox even for theism. God (*Paramātmā*) must be the supreme reality; but man (*jivātmā*) also cannot be denied its reality for in its absence theism crumbles. One could, of course, speak of the individual as a part (*aṁśa*) of the Supreme Being; but the part can never be completely identified with the whole.

Complete identity between the two must transcend and negate the level of religious experience. The identity between God and individual must be a qualified identity (*viśiṣṭādvaita*) and Rāmānuja develops this standpoint in distinction from Śaṁkara's complete identity (*advaita*).

Rāmānuja's theism follows the pattern of the theistic logic. God (*Paramātmā* or *Saguṇa Brahman* or *Īśvara*) is the highest being, the material and efficient cause of the universe. The two eternal principles of matter (*acit*) and sentience (*cit*) are constituent elements of God (*Īśvara*) or one could view *Īśvara* as having these two necessary attributes (*cit-acitviśiṣṭa*). God as the all-inclusive principle includes within His nature both the individual (*jīva*) and the insensate world (*prakṛti*). But they exist as distinct entities within the whole. The *jīva* is subject to suffering while *Īśvara* is not. The *jīva* is controlled (*niyanya*) while *Īśvara* is the controller (*niyāmaka*). The individual as a necessary part of God is never completely separated from Him.[35] Though the individual soul is variously spoken of either as a part or an attribute of *Brahman*, but the two are never identified in an unqualified way. The aphorism '*Tad tvam asi*' (That thou art) is not interpreted as the assertion of complete identity between 'that' and 'thou' (that is the Śaṁkarite way). Rāmānuja understands it as implying a qualified identity between the part and the whole. They differ in their essential nature. In the state of liberation, the individuality of the soul is not lost, but the sense of separateness from *Brahman* (*Īśvara*) disappears. The liberated soul becomes free from the operation of the law of karma as all its activities are of detached nature (*niṣkāma*) which yield no potencies.

Rāmānuja recommends devotion and adoration of God (*bhakti*) as the principal path for the attainment of liberation. No mere listening to the scriptures can do the trick; highest devotion to *Īśvara* can make one realize his self. Highest devotion is not unmixed with knowledge; it includes knowledge within it and the direct realization (*aparokṣa jñāna*) of *Īśvara* takes the form of devotion.[36] Devotion, however, is never exclusive of other elements of individual activity.

From Rāmānuja's account, it seems clear that the individual has an obvious and distinct existence, though as a finite being it is included within the infinite. *Mokṣa* or liberation, the highest value for the indiviual consists in its realizing the exact nature of itself as a part in the all-inclusive God. It does not lose its ego nor does it find itself completely identified with the unconditioned being. It is a concrete being though conditioned by the unconditioned being. Neither the individual nor the absolute is trivialized and a harmony between the two is sought to be attained. This presents the picture of reality as a unity containing genuine diversities. But the principal tune of unity can never be missed, though there are diverse tunes constituting the principal one.

The other principal exponents of different sects of Vaiṣṇavism like *Mādhva*, *Nimbārka*, *Vallabha* and *Caitanya* present similar philosophical views about the individual working within the same theistic framework. There are, how-

ever, important distinctions in details. These points of distinction generally centre round the problem of nature of God, his relation to nature and individual and the relative importance of *jñāna* and *karma* in the *bhakti-mārga*. Mādhva, known also as Ānandatīrtha, opposes both Śaṁkara's unqualified non-dualism (*advaitavāda*) and Rāmānuja's qualified non-dualism *Viśiṣṭ-ādvaitavāda*). He discards Rāmānuja's theory regarding the relation between the inanimate world and God. Rāmānuja takes *Prakṛti* as the body of God. In opposition to both the types of *Advaita* theory he sets forth five types of distinction between (a) God and the individual spirit, (b) God and the inanimate world, (c) the individual spirit and the inanimate world, (d) one individual and another, (e) one inanimate object and another. *Paramātmā* is the creator much in the sense of an efficient cause. *Prakṛti* is the primordial source with inherent equilibrium and God brings about the world of multiplicity out of Prakṛti by disturbing this equilibrium. Knowledge comes from God and knowledge might lead individuals either to cling to the worldly values or to aspire for *Mokṣa*. Mokṣa, however, requires more than mere knowledge. It is to be achieved through certain disciplines, performance of rituals and finally through devotion and love for God and prayer (*upāsanā*) to Him. The unmistakable implication of the theory is that individuals are real having genuine existence and mokṣa is the highest value in individual life; it can be obtained primarily through love and devotion for God.

Nimbāka, another Vaiṣṇava of the South (flourishing between them iddle of the eleventh century and the middle of the thirteenth century), presents yet another version of the religion with a peculiar combination of monism and pluralism. His philosophy has been presented by him in a summary way in a book of ten verses (*Daśa-śloka*). He maintains that the individual soul is knowledge and is dependent on God (*Hari* or *Kṛṣṇa*). Individual soul and the inanimate world are distinct from each other but they are also in a way identical. They have no existence completely independent of God and, in this way, they are identical with God. But still they exist either being separated from or being associated with God. The purpose of the individual is to realize union with God chiefly through self-surrender born of proper knowledge, devotion and love for God. *Nimbārka's* theory seems to have its basis on the philosophy of Rāmānuja. He has, however, made the reality of the individual more phenomenal in the spirit of the *Advaita Vedānta*. The other distinctions are more peripheral than real. While Rāmānuja's object of worship is Nārāyaṇa with his consort Lakṣhmī, Nimbārka's is Kṛṣṇa with his beloved Rādhā. Nimbārka seems to have placed more emphasis on self-surrender as a means of liberation through the grace of God. This *bhakti* in the form of surrender is never without the elements of knowledge.

Vallabha, flourishing in the South in the sixteenth century, recommends an exclusive cult of Kṛṣṇa or Gokula for *mukti* through divine grace (*pusti-mārga*). Vallabha thinks that the Supreme Soul feeling lonely has desired to be many and has become the inanimate world (*Prakṛti*) the individual souls

(*jīva*) and the controlling indwelling spirit (*antaryāmin*). This suggests that Vallabha might have taken the Vedic saying '*ekam syāt bahudhā bhavāmi*' literally and hence offered such an explanation of the world. The individual is regarded by him as identical with *Brahman* in so far as the soul is a part of it and it is atomic. The individual soul is not a product of *māyā*, but it is the same substance as the Supreme Soul with one attribute rendered imperceptible. The relation between the two may be compared to that existing between the sparks and fire, it is of identity of untransformed souls (*Śuddhādvaita*). The souls are originally endowed with existence, consciousness and joy but because of delusion, they fail to realize this joy. Through love and devotion for God, liberation can be attained. His grace (*pusti* or *anugraha*) has to be obtained for final deliverance. When this grace is received the inner and outer life of the devotee becomes filled with Kṛṣṇa. The purpose of the individual is to obtain *pusti* of God for his self-realization.

At about the same time with Vallabha, Śrī Caitanya, the leader of Bengal Vaiṣṇavism, was preaching in Bengal. His religious view is distinct from the South Vaiṣṇavism in its exclusive emphasis on *bhakti*, which could even dispense with any articulate knowledge. Caitanya lays stress on the emotional aspect of religion and disregards its ceremonial and ritualistic aspects. This might be a reaction to the intellectual formalism holding the philosophical stage in Bengal through the Naiyāyikas for sometime. The School of Bengal Vaiṣṇavism is famous for its devotional songs offered in the form of prayer. Śrī Caitanya, also known as Gaurāṅga or Kṛṣṇa Caitanya, presents a philosophy close to that of Nimbārka. According to Caitanya, the individual soul is both identical with and different from the Supreme Soul. The Supreme Soul is the shelter (*āśraya*) of the individual soul (*āśrita*). The sheltered soul appears with its distinction from the *Paramātmā* so long as it does not drink the divine honey. Once it drinks it, it becomes full of it and forgets its distinct identity. It becomes absorbed in God (Kṛṣṇa), the ecstatic state in which the individual becomes one with his God (*Kṛṣṇamay*) though the two are really distinct. Through *bhakti* alone, can the devotee obtain the grace of God. He cuts off the shackles of ignorance (*māyā*) and allows the *jīva* to realize his own nature and his proper relation to God (regarded as the highest beloved). And in this consists the *summum bonum* of a Vaiṣṇava.

The Vaiṣṇava view in general of the individual and its relation to God may be expressed through that famous though dubious relation of the Hegelian philosophy—identity-in-difference. Individual existence is real but it gains its significance in the union with God to be obtained through love and surrender to Him. This conception has its origin in the Upaniṣads and has somehow permeated the thought of contemporary Indian philosophers. Rabindranath Tagore, the famous poet, in many of his lyrics has exquisitely brought out the theme of the interplay of the individual and the Supreme. In this thinking there is a sustained attempt to place importance on the conception of harmony, unity in diversity, as the key-concept of the Vedic tradition.

Vaiṣṇava theism[37] represents a dominant aspect of the Vedic line of thinking.

The other two principal types of theism—*Śaivism* and *Śākta* faith — try to work out their theistic scheme in a slightly different way. But the status of the individual does not vary in any very significant manner. The origin of Śaivism[38] cannot be very clearly pointed out; but the idea of the Rudra-Śiva[39] is found in the Ṛg Veda itself. Rudra-Śiva is regarded more as an object of terror in the early conception. The God in some form might originally be an object of worship of the non-Aryan inhabitants of India; but quite early in the Vedic literature it finds its place in the Aryan worship. In the *Śvetāśvatara Upaniṣad* the Rudra-Śiva is elevated to the status of Supreme God and considered from the religio-philosophic point of view. Whatever the historical origin *Śaiva* sects are found in India from quite an early period and there are a few sub-sects within the sect itself. One of this is famous as Kāshmir Śaivism. The main tenets of this religious faith in general seems to be that Śiva (other names are Maheśvara, Mahādeva, Paśupati, etc.) is the supreme god of creation and destruction. He creates and destroys being impelled by the potencies of actions (*karma*). The individual soul is atomic, eternal and all-pervading. It is both the agent and the subject (knower). Because of its fetters (*pāśa*) born out of ignorance it is incapable of boundless knowledge which is in its original possession. When the fetters are removed, the individual becomes Śiva and possesses infinite knowledge and indomitable power of action. For this perfection, one has to follow the prescribed course of *Sādhanā* and ultimately secure the favour of Śiva. The individual attaining perfection (*mukta*) is identified with Śiva himself. But this identification does not seem to be of *advaitin* type. The *mukta* is dependent on Śiva who is eternally free and independent. The individual when free is free within limits of its finitude and is never completely identical with the Lord who is infinite. In this trend of thinking the *Śaiva* school (and its later variant known as *Liṅgāyata* school) appears to be close to Rāmānuja's philosophy. The Kāshmir Śaivism does not differ much in its theory of the individual and its relation to Śiva, the Supreme Being. But it suggests that the way of perception of identity between the individual and the Lord is one of recognition rather than a new cognition. The identity has always been there, but because of fetters it could not be perceived. So, the individual attains to what is already his own. This is the concept of getting what it already is (*prāptasya prāpti*) as found in the main philosophical tradition of the country.

This theme of identity of the individual with the Supreme Being as an identity between the part and the whole is more clearly brought out in the *Vīraśaiva* or *Liṅgāyata* sect of Śaivism. This sect regards Śiva as the *Satcidānanda* and the creator of the individuals and the inanimate world. Śiva has power (*śakti*) within Him and by the agitation of the innate power Śiva (*sthala*—the static) becomes divided into two: (a) *Liṅgasthala*, and (b) *Aṅgasthala*. Liṅgasthala is the Lord Himself, Śiva as the object of love and worship. Aṅgasthala

is the individual soul who is the worshipper (*bhakta*) of the Lord. *Bhakti* is the characteristic of the individual soul and through different (three) stages the individual soul attains perfection. The individual is never unconditionally identical with the absolute. It is the creation of the absolute but it is as eternal as the other inasmuch as it is in the supreme as a real existent. So, this presents a qualified non-dualism rather than an unqualified one. The reality of the individual is not denied, whether in fetters or free from them. The individual's highest goal consists in its realizing itself as eternal, free and sentient, in becoming Śiva. Thus only can it fulfil itself. It knows no rest until it attains the knowledge of its proper nature which is to be an *aṅga* of Śiva.

Along with the conception of the Supreme Being as a male god, there has always been an implied reference to some potency or power (*śakti*, sometimes called *prakṛti*) through which the highest god creates the universe or sustains it. Both *Viṣṇu* and *Śiva* have been conceived on having their consorts in *Lakṣmī* and *Umā* or *Durgā* or *Pārvatī*. In a school of thinking the Śakti is regarded as the highest deity and it is conceived as a female deity excelling in power and glory all the other gods. It has been called in different names each suggesting a distinct motif. Names commonly used are: *Kālī, Durgā, Śivā, Śivānī, Rudrānī, Ramā, Rāmā, Karālī, Candī, Cāmundā, Umā, Pārvatī*, etc. But though they might have been conceived as different the inherent Hindu logic of thinking has ultimately united all of them in the conception of Śakti or Durgā or Kālī. The religious sect that takes this deity as the highest object of adoration and worship is known as the *Śāktas*. The deity in this faith is conceived not always as benevolent. It has a dreadful aspect also and it is the destroyer of all evils. But the devotee has nothing to fear from it. He is considered to be a part (*aṁśa*) of Śakti and his goal is to realize his proper nature as Śakti. The devotee is to offer himself to the mother-goddess and realize his unity with Her. But it does not appear that complete identity between the individual and the deity is asserted. It is a relation of the part to the whole and not of unqualified identity.

VI

The brief discussion of the different types of religious belief bring out the same truth as indicated by the philosophical systems. Whether it is a belief in Viṣṇu or Śiva or Śakti or it is unqualified non-dualism or monism or pluralism, the existence of the individual is surcharged with a deep significance. One is surprised to notice the amount of zeal and zest with which human living is looked upon in the earliest of the Vedas (Ṛg Veda). The life there is taken quite often in a naturalistic sense to indicate the present life. A close study of the *Vedas* may lead one to conclude that there were all the rudiments of a clearly naturalistic-scientific explanation of the universe. But the prevalence of a belief in moral law can never be missed. This has conferred a special dignity on human existence. The conception of moral life and law has been taken to its philosophical culmination through the *Upaniṣads* and the philosophical systems.

Ātman or the individual soul has been in the centre of philosophical and religious discourses and its teleology has been the principal determinant of the course of philosophical development.

Man's existence with its diverse experience is multi-dimensional. Its being cannot be looked upon in a compartmentalized fashion. Man has a normal, ordinary existence with common experiences. But that does not mark the end of his possibilities. He can transcend himself every moment in diverse directions and take a plunge into the depths of his being. The ordinary 'ego' in such moments yields to an expanding, deeper, freer ego. Man's seeming loss of normal individuality is more than compensated in his realization of freedom and emergences of a concrete, enriched individuality. If multi-dimensionality of human existence is a fact, levels of individuality is a logical consequent. The practical existence points to an alienation from fullness, but this alienation is not a phenomenological constituent of man. The philosophy that springs out from such a background cannot logically be one of despair; it is of robust optimism. Man, complex and expansive as he is, can fulfil himself in many ways (*sarvabhāvena*). But fulfil himself he must, this is his purpose, this is the mission of philosophy to make him aware of the truth of his existence. Man cannot be negated, he can only awake to regain his full stature as *ānanda*. And to achieve this perfection, he has to move through harmony. Harmony of the different grades of meaning of life is a key-value in man's actual living. Man, fully realizing himself, is no other than God or Brahman. And in detailing out the means of such realization, one finds a unique unity in the Hindu *sādhanā*.

This notion of man either as reality or as in reality is the message of Indian tradition. And reality is bliss, *ānanda*, perfection. It is full[40] from which nothing can be subtracted or to which nothing can be added; it remains the same under all conditions. The whole of man's life is dedicated to the realization of one value-realization of himself, his proper nature. This nature extends beyond the physical, psychical and epistemic existence. It is concreteness, fullness, perfection and bliss. Every little action of man is meaningful but in a transitive way. It points at the deeper intrinsic meaning from which every other meaning is derived. This is the truth of the divinity of the soul, immortality and perfection of its being. Free from its alienation as in bondage, it is in some sense identical with reality. But the stage of existence in bondage is not insignificant or valueless. It is because of its freedom that the soul is in bondage and it is because of the greater urge for freedom that the soul transcends its bondage to realize itself as pure freedom which is blissful. In the sojourn to perfection the soul is in association with different bodies, but that does not destroy the continuity of individual.

This notion of an individual as either being without body or being embodied but differently is what appears intriguing to the modern way of thinking of an individual as a person. But the Indian tradition seems to have accepted this at ease and realized the diverse meanings of the different levels of

existence. Man can and does actually go beyond the fetters of his body and the physical existence and finds out the genuine meaning of his existence somewhere else. It is the realization of himself as pure being in and through all the levels of existence which seems to be the motto of human living. And this realization is realization of freedom itself which is blissful in its nature. This sense of human being as blissful harmonious existence constitutes the background of modern Indian thinking and is suitably expressed in Rabindranath, Aurobindo and Gandhi's thinking, however they might differ in developing the details of their thought. Realization of self through harmonious fulfilment by all means is conceived to be the purpose of man in traditional Indian thinking. The universe bears the message of divinity and man as divine is to work for regaining what is his by his very nature. He is *ānanda* and *amṛta*;[41] his alienation from it is real but not eternal. He has to work for that existence which transcends this ontological alienation. If the normal individual in alienation is the philosophical truth, the alienation-free existence is the metaphilosophical message, a practical urge and a programme for action.

Notes and References

1. The Indian tradition recognizes six systems as based on the Vedas and Upaniṣads. They are known as Sūtra philosophies or the Hindu *Ṣaḍ Darśana*. They are as follows: *Sāṃkhya, Yoga, Nyāya, Vaiśeṣika, Pūrva Mīmāṁsā*, (or simply Mīmāṁsā) and *Uttara Mīmāṁsā* (generally known as Vedānta).

   These systems are called āstika systems as distinguished from the nāstika systems (like Buddhism, Jainism and Cārvāka philosophy) which are either independent of, or opposed to, the Vedic tradition.
2. Reference may please be made to Śatapatha Brāhmaṇa where the conception of Brahman acquires great significance as the supreme principle. Also compare *Śvetāśvataropaniṣad*, canto III, śloka 13-15 and also 17.
3. *Ṛg Veda*, X, 81-4 and also Macdonald, *Vedic Mythology*, p. 11.
4. *Ṛg Veda*, X, 90, (Puruṣa-Sukta).
5. *Sāṃkhya-Kārikā* with the commentary of Vācaspati Miśra.
6. *Sāṃkhya* theory of pure consciousness seems very close to the Advaita Vedānta concept. But there are differences at least on two important points. Firstly, *Sāṃkhya* does not consider the soul to be of the nature of pure intelligence and bliss as maintained in *Advaita Vedānta*. Secondly, while according to the Advaita Vedānta the individual souls (*jīva*) are illusory manifestations of pure consciousness which is non-dual (*advaita*) Brahman, according to the Sāṁkhya system they are many and real.
7. Law of Karma is being referred to. Of this more later.
8. Of the three principal religious trends in Hinduism Vaiṣṇavism is one. A fuller discussion on them is given in this paper.
9. Cp. *Kathopaniṣad*, canto I, chapters III and IV and canto II, chapter II, I and also *Śvetāśvataropaniṣad*, canto III, śloka 18.
10. Kāma is regarded as a value. Fuller discussion later. For a somewhat different view Buddha's early thought regarding body may be considered.
11. Sri Aurobindo, *The Foundations of Indian Culture*, New York, 1953, p. 110.

12. *Śvetāśvataropaniṣad*, canto IV, śloka 1-4, 10, and VI, II, 12, *Taittirīyopaniṣad*, canto II, Saying 1-5, and III, 10, 5., *Bṛhadāraṇyaka Upaniṣad*, 1.3.28.
13. *Bhagavadgītā*, Chap. I-VI.
14. Reference may be made to *Manusaṁhitā* and the *Bhagavadgītā*.
15. *Bhagavadgītā*.
16. Plato's *Republic*.
17. Brahman, indifferently mentioned in the early Vedas, is gradually developed as the concept standing for the Absolute, Ultimate Reality in the principal Upaniṣads. The notion reaches its fullest and most important development in the *Brahmasūtra* of Vyāsa which was commented upon by Śaṁkarācārya. A fuller discussion will be made in the next section.
18. *Mahābhārata*, Śāntiparvan, p. 186: 'Sarvam brahman idam jagat'.
19. Cp. *Manusaṁhitā*, IX, 14.48.
20. Vaśiṣṭha is said to have been born of a prostitute and Parāśara of a *Śūdra* girl.
21. *Manusaṁhitā*, iii., 34.
22. Parāśara Saṁhitā (Bombay Sanskrit Series, part II, p. 82.
23. Reference may be made to Gārgī as mentioned in the *Bṛhadāraṇyakopaniṣad* and Śabari referred to in the *Rāmāyaṇa*.
24. *Manusaṁhitā* in general is referred to for all the institution.
25. *Ṛg Veda*, 1, 20; 22, *RV*, 1, 154, 5.
26. *Atharva Veda*, 1.1.
27. *Sāma Veda*, XIV, 1.1.
28. Nārāyaṇa might have come from Nādyana—the lord of sounds. It might also have been from the root Nṛ. Anyway, Nārāyaṇa means the goal of men (*nara*).
29. Cp. *Śvetāśvataropaniṣad*, canto I, slokas 3 and 4.
Taittīriya Upaniṣad, 2, saying, 7, 8.
Muṇḍaka Upaniṣad, canto 2, śloka 1, 2, 5.
Praśna Upaniṣad, question 1, saying 4.
Iśopaniṣad, śloka 1, chapter 1,
Bṛhadāraṇyakopaniṣad, chapter 1, saying 1, 2, 3 and 4.
30. *Bhagavadgītā*, chapter XVIII.
31. Reference may be made to the *Svetāśvataropaniṣad* and the *Bṛhadāraṇyakopaniṣad*.
32. Śaṁkara tries to explain the apparent paradox involved in such seemingly contradictory statements like: 'Brahma satya, jagat mithyā; ekam syat, bahudhā bhavāmi, neha nānā asti cincana, etc.
33. For a fuller discussion of Advaita dialectics interested readers are referred to any good book on Advaita philosophy. Other than the *Śaṁkara Bhāṣya* on the Brahmasūtra, Citsukhī and Advaitasiddhi may be consulted.
34. Tejobindupaniṣad, V, i. 1-2; 20-31.
35. *Rāmānuja Bhāṣya* on the Brahmasūtra (*Śrī Bhāṣya*), II, iii, 45.
36. *Śrī Bhāṣya*, 1, ii., 23.
37. One could also refer to the later period with Nāmdev, Tukārām, Tulsīdās, etc. giving the same philosophy with some variations.
38. One may consult *Vaiṣṇavism and Śaivism* by Sir R.G. Bhandarkar (Varanasi, 1965) in this connection.
39. *Ṛg Veda*, VII, 46, 3 and 1, 114, 10.
40. Purṇamadah, etc. referred in quite a few *Upaniṣads* (Iśa, *Bṛahadāraṇyaka*, etc.).
41. *Bṛhadāraṇyakopaniṣad*, canto V, 15 Brahman.

Private ownership of property and Rawls's theory of justice

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In Rawls's theory of justice, wealth is one of the primary goods.[1] Primary goods are social background conditions and general all purpose means normally necessary for developing and exercising moral powers and for effectively pursuing a conception of the good.[2] Moral persons as free and equal citizens of a well-ordered society, who have an interest in developing and exercising their moral powers and also an interest in protecting and advancing their conception of the good within the framework of a well-ordered society, will have a desire for more wealth.[3] This desire they will have even when they are ignorant of all information which sets men at odds with each other. That is to say, persons will have desire for more primary goods, even in the original position which is fair and equal between them.[4] Wealth being '(legal) command over exchangeable means for satisfying human needs and interests,' argues Rawls, 'it is hard to see how wealth can fail to be a primary good, for if we have no command over such items, we cannot carry out our plans.'[5]

Rawls further claims that his notion of wealth is neutral between private and public ownership of it. In his view 'income and wealth can be held in many forms public and associational as well as private and individual.'[6] Hence according to Rawls the principles of justice unanimously chosen in the original position are neutral between capitalist regime allowing private ownership of means of production and socialist regimes admitting only public ownership of means of production. 'The theory of justice does not by itself favour either form of regime. The decision as to which system is best for a given people depends on their circumstances, institutions, and historical traditions.'[7]

Rawls further argues that private ownership of property and the unequal inheritance of wealth can be just, provided it leads to the greatest advantage of the least well off as required by his principles of justice.[8]

II

The summary of Rawls's views on private ownership of property as given above is the view which he came to hold after making certain revision of his earlier views on the private ownership of property. In his *A Theory of Justice* Rawls had included the right to hold (personal) property in his list of basic liberties which belong to the class of primary goods.[9] The distribution of basic liberties were to be governed by the principle that each person is to have an equal right to the most extensive total system of equal basic liberties compat-

ible with a similar system of liberty for all.[10] He also accepted that liberty cannot be restricted for economic and social benefits. 'Liberty can be restricted for the sake of liberty only.'[11] Hart argued in agreement with Sidgwick that the principle of greatest equal liberty forbids private ownership of property 'since to own anything privately is to have liberty to use it in ways denied to others.'[12] Rawls can get out of this difficulty by giving a new sense to the requirement that the right to hold property must be equal. This sense turns on Rawls's distinction between liberty and the value or worth of liberty. According to Rawls 'liberty and the worth of liberty are distinguished as follows: liberty is represented by the complete system of liberties of equal citizenship, while the worth of liberty to persons and groups is proportional to their capacity to advance their ends within the framework the system defines.'[13] Rawls does not require, except in the case of political liberties, that worth of basic liberties be equal. What Rawls requires is that rules governing the acquisition, disposition, and scope of property rights be same for all. By admitting the right to own (personal) property Rawls not only has to introduce this distinction to his position less vulnerable to the Marxian charge that in his (Rawls) system beggars and millionairs have equal property rights. Here he landed himself into inconsistency too. Though the right to hold (personal) property is for him a basic liberty, yet as it was pointed out above the choice between private capitalism and ownership of the means of production is left quite open by the principles of justice. But a decision to limit private ownership to consumer goods would result, according to Hart,[14] in a less extensive liberty than would obtain if private ownership could be exercised over all forms of property. Rawls's admission of this restriction as allowable, so far as justice is concerned, is a glaring inconsistency, since he extends his concept of equal right over, what he calls, 'the most extensive total system of basic liberties' and forbids limitation of the extent of liberty for the sake of economic benefits, or any other social goods, except for the sake of liberty itself. The only way out of this inconsistency is either to restrict by stipulation the scope of the basic liberty, viz., to hold (personal) property, to the consumer goods only (i.e., remove the parenthesis around the word 'personal' from the phrase 'the right to hold (personal) property') or to exclude the right to hold (personal) property from the list of basic liberties. Rawls chooses the latter alternative. In his reply to Alexander and Musgrave in 1974 he maintained that 'the right to own property and freedom of contract as understood in the doctrine of *laissez faire* are not basic, they are not protected by the primacy of the first principle.'[15] The effect of the modification of his views on right to own property is that right to own property, if at all it can be justified and of course Rawls believes it has to be justified only by appealing to his second principle of justice, i.e., the maximin principle of justice.

III

It was noted above that Rawls claims that ownership of property and the unequal inheritance of wealth can be just, provided it leads to the greatest advantage of the least well off as required by the difference principle part of his second principle of justice. But this claim seems to be untenable. The principle of justice invoked by Rawls which governs the basic structure of society is the famous maximin principle of justice which states: Social and economic inequalities are to be arranged so that they are both (a) to the greatest benefit of the least advantaged, and (b) attached to offices and positions open to all under conditions of *fair equality of opportunity*.[16] According to Rawls the second part of this principle, called the principle of *fair equality of opportunity* is lexically prior to the first part of this principle called the *difference principle*, i.e., the difference principle does not come into effect unless the principle of fair equality of opportunity is fully satisfied.[17] Rawls takes private property in the means of production as an institution. In fact, he takes it as part of the basic structure of society.[18] According to Rawls, an institution defines positions and offices with their rights and duties and privileges.[19] Private property, if we are not wrong, defines the position of ownership of the property. Ownership by definition is inheritable.[20] If institution of private property is admitted in society, then some persons whose ancestors had accumulated great wealth would have a greater chance of acquiring the position of ownership by inheritance than those unfortunate ones whose forefathers or fathers failed to do so. But this goes against the principle of fair equality of opportunity which requires offices and positions open to all under the condition of fair equality of opportunity which is lexically prior to the difference principle. That is to say, inheritance is hit even before the difference principle comes into operation. Probably, Rawls himself is aware of the difficulty of reconciling the principle of equality of fair opportunity with the private ownership of property but he puts the blame not on private ownership of property but the institution of family. 'The principle of fair opportunity can be only imperfectly carried out at least as long as the institution of family exists', says Rawls.[21] 'Even in a well-ordered society...the family may be a barrier to equal chances between individuals'.[22] In his view, 'It seems that even when fair opportunity...is satisfied, the family will lead to unequal chances between individuals. Is the family to be abolished then? Taken by itself and given a certain primacy, the idea of equal opportunity inclines in this direction.'[23]

What Rawls has failed to see is that inequality of opportunity arises among members of different families because of the difference in the wealth held by families. Inequality of wealth is the cumulative effect of inheritance, marriage patterns, and lifetime savings. Inequality of wealth, arising due to inheritance and marriage patterns, is due to the private ownership of wealth. But what is not so obvious is that inequality arising due to the lifetime savings are also because of private ownership of property (especially the private ownership in the means of production). Personal savings is not the only and the best way to ensure against future contingencies. Methods like various kinds of pensions, insurance and availability of easy loans are the available means to take care

of unforeseen contingencies. It is the economy based on private ownership of property (especially in the means of production) which logically requires savings for generating capital for investment as there is no other source of capital formation. The inequality of opportunity, between members of different families arising due to the difference in the amount of wealth held, is the outcome of private ownership of property and is not due to the institution of family as Rawls thinks. Rawls, of course, does not propose to give up the institution of family. He accepts the institution of family and chooses to face the consequent loss of equality of fair opportunity by arguing along the following line: 'we are more ready to dwell upon our good fortune, now that these differences are made to work to our advantage, rather than to be downcast by how much better of we might have been had we had an equal chance along with others if only all social barriers had been removed.'[24] Rawls has blatantly contradicted himself in this argument by giving up the priority of the principle of equality of fair opportunity over the difference principle.

IV

Why does Rawls think that private ownership of property and unequal inheritance can be justified by appealing to the difference principle in spite of the difficulty that he faces in reconciling this with the principle of equality of opportunity? The reason, it appears, is that the difference-principle is intended to govern social inequalities which includes inequality of wealth along with inequality of other primary goods like income, power, bases of self-respect, etc. and the definition of wealth given by Rawls makes wealth synonymous with private property. As mentioned above by wealth Rawls means '(legal) command over exchangeable means for satisfying human needs and interests.'[25] The requirement of exchangeability makes his definition of wealth synonymous with private property. For exchange cannot take place unless there is power to alienate and the claim to exclude all others from the use of things to be exchanged. In other words, exchange can occur only where there is an exclusive title to property which is to be exchanged. Hence, Rawlsian wealth is necessarily private property. It is not neutral between public and private ownership, as claimed by Rawls. Rawls's claim to the effect that right to use and control publicly and associationally owned things should also count as wealth, is perhaps untenable. His examples of wealth like 'rights of access to libraries, museums, and other public facilities'[26] which presumably include, street lights, roads, public parks, etc. faculty's control over resources of their universities viewed as the means for carrying out their aim of scholarship and research,[27] citizen's control over social resources used as public goods in a democratic state,[28] do not satisfy the requirement of exchangeability. Hence, Rawls's claim that right to use and control publicly or associationally owned things satisfy the requirement of his definition of wealth appears to be quite wrong and misleading. Nothing less than the exclusive title to property can satisfy the requirement of his definition of wealth.

Why does Rawls incorporate the requirement of 'exchange' in his definition of wealth? Rawls says, in agreement with Mill, that this notion of wealth is more suitable from the standpoint of economics.[29] And economics, according to thinkers like Mill, is the study of market forces. Hence, he needed wealth to be equated with the things having exchange value in the market. The list of primary goods in Rawls's theory is to be decided from the point of view of the persons in the original position. Why should they include wealth in economist's sense in their list of primary goods? Did they know that their society depends on markets for economic organization? There is reason to believe that Rawls is attributing this knowledge to parties in the original position. But Rawls has imposed a thick veil of ignorance on persons in the original position. 'They are deprived of all information that is not part of their representation as moral persons who are free and equal citizens of a well-ordered society unless this information is necessary for a rational agreement to be reached.'[30] How could the knowledge of the presence of markets in their society have escaped the veil of ignorence? Either because it is necessary for reaching agreement on principles of justice or it is included in the very definition of the well-ordered society. Rawls accepts both. The plausibility of Rawls's argument for acceptance of the difference principle in the original position depends on the knowledge that competitive market forces operate in their society in such a manner that parties can reasonably expect that, given an open class system, exccessive inequalities will not obtain.[31] Rawls, it appears, is also assuming at least implicitly, the markets in the very definition of well-ordered society. For the reason why the basic structure of society is the primary subject of justice, relies crucially on the idea that markets are part of the basic structure. One reason for chosing the basic structure of society as subject of justice is that 'the distribution resulting from voluntary market transactions are...not in general, fair....'[32] Hence 'we start with the basic structure and try to see how this system itself should make the corrections necessary to preserve background justice.'[33] Even the second reason for choosing the basic structure as the subject of justice is explicitly restricted to 'the situation of individuals engaged in market transactions'.[34] The belief that Rawls is all along assuming markets as part of the basic structure of a well-ordered society is further confirmed by the idea that he never entertains seriously the idea of an economic organization without markets. According to him 'All regimes will normally use the market to ration out the consumption goods actually produced.'[35] He even believes that in a socialist society the efficient allocation of resources have to be achieved through competitive markets even though the distribution of income and wealth is not allowed to be determined by them.[36]

It may be of interest to note that Rawls's belief that market institutions are consistent with socialist regimes is based not merely on the ground that socialist regimes allow markets in some goods (consumer goods) but also on the argument that the allocative and distributive function of prices are separate

and separable. He says, 'It is perfectly consistent for a socialist regime to establish on interest rate to allocate resources among investment projects and to compute rental charges for the use of capital and scarce natural assets such as land and forest.... It does not follow, however, that there need be private persons who as owners of these assets receive the monetary equivalents of these evaluations'.[37] Rawls believes that the use of prices for allocative function (even though prices are not used for distributive function) is sufficient for markets to obtain. For he writes 'A system of markets decentralizes the exercise of economic power whatever the internal nature of firms, whether they are privately or state owned ... they take the prices of outputs and inputs as given and draw up their plans accordingly. When markets are truly competitive, firms do not engage in price war:...'[38] Hence, concludes Rawls, competitive markets are consistent with socialist regimes. Admittedly an author is free to define his terms the way he likes. So Rawls may be right in defining markets in the way he does in order to highlight the fact that the use of accounting prices for capital goods in socialist regimes explain rational allocation of resources. And this is equivalent to saying that there are competitive markets in capital goods also in socialist regimes. But unfortunately markets in the traditional sense of the economist cannot obtain unless both allocative and distributive functions are allowed to be performed by prices. And Rawls requires to assume this kind of markets in the well-ordered society and needs to attribute the knowledge to the parties in the original position that this kind of markets are present in their society if he wants to attribute to the agents the desire for more 'wealth' which are 'exchangeable' means for satisfying human needs and desires. If Rawls does not want to include presence of markets in the very idea of well-ordered society and wants to maintain the neutrality of his definition of wealth with regard to private or public ownership of it, he has to drop the requirement of exchangeability from his definition of wealth so that wealth is merely (legal) command over means for satisfying human needs and interests and he will have to leave it to the parties either in the original position or in the constitutional convention to decide separately whether they want to have the institution of private property at all in the society and if they decide in favour of private property, over what goods they will recognize private ownership. But unfortunately, as it will be argued, private ownership over anything is irrational from the point of view of original position.

V

One might well say that my analysis of the idea of wealth in Rawls's theory of justice as given in the previous section is wrong. Rawls's idea of well-ordered society does not presuppose the idea of 'market' nor does Rawls attribute, to the parties in original position, the knowledge that markets are present in their society. Rawls's notion of wealth is, in fact, neutral between private and public ownership. It may further be argued that the question of ownership is decided at the legislative stage where the second principle of justice comes into play and 'at this point the full range of general economic and social facts are brought to bear.'[39] It is at this stage that Rawls allows the knowledge of presence of markets to come into operation. But legislative stage is too late a stage to introduce markets. As it was argued in section III the ownership of private property is inconsistent with the second principle of justice (especially equality of fair opportunity part of it). Since private ownership of goods is necessary for markets to exist, markets are also hit by the second principle. We have, of course, been assuming the correctness of the derivation of the second principle in the original position. So either the second principle, especially the principle of equality of opportunity, has to be given up or the private ownership of property has to be dispensed with. Rawls has not given any explicit argument for the principle of equality of opportunity from the point of view of the original position. Whatever justification for it are available are remarks outside the original position in the context of interpreting the meaning of this principle.[40] Since he explicitly says, 'we are more ready to dwell upon our good fortune now that these differences are made to work to our advantage, rather than to be downcast by how much better off we might have been had we had an equal change along with others if only all social barriers been removed,' he may like to give up the principle of equality of fair opportunity. If Rawls adopts this course, then of course at the legislative stage he will simply be assuming the presence of markets in society as a natural fact, only a little more amenable to human control, so that it cannot be given up but merely be regulated to work for the betterment of the worst off persons as required by the difference principle. Rawls almost comes close to saying this when he says, 'The unequal inheritance of wealth is no more inherently unjust than the unequal inheritance of intelligence. It is true that the former is presumably more easily subject to social control...but the essential thing is that as far as possible, inequalities founded on either should satisfy the difference principle.'[41] Rawls has failed to see that inheritance of wealth, which is a necessary condition of private property which in turn itself is a necessary condition of markets, is a social institution created and maintained by positive laws of society and they are not natural facts like people having intelligence. Hence, unlike intelligence, inheritance of wealth, private ownership of property, and market institutions need not be taken for granted. The maximization of the welfare of the worst off person need not be limited by these institutions. If the welfare of the worst off can still be furthered by giving up these institutions then there is a need to abolish them. We shall not examine whether the expectations of the worst off can be further increased by recognizing the institution of private property. It is an economist's problem to answer this question. For the sake of the argument let us assume that the difference principle can be satisfied in society with private ownership of property. Now we are interested in knowing whether private property is acceptable from a moral point of view at all. Since the ultimate moral point of

view for Rawls is the point of view of the parties in the original position, we might ask whether private ownership of property would be acceptable to them. The answer to this question appears to be in the negative.

Parties in the original position are non-envious.[42] Hence they can have no interest in accepting the institution which gives each of them a right to exclude others from the use of somethings. They have an interest in securing the right to use a thing to exercise their capacities and to satisfy their desires and needs, as required by each one's rational plan of life (whatever that may be) of which they are ignorant.

It may be argued that without ownership of a thing, especially without the right to exclude others from the use of a thing, a person's right to use it is insecure from the interference of others. But the argument lacks force. The right to use a thing may be protected from the interference of others even without a person's ownership of it. For example, no one can prevent a person from using a public park or road, yet the latter does not have the ownership of the road or park.

Parties in the original position will, as rational agents, exclude social goods from private ownership. Social goods are those goods whose use is non-rival. That is, the use of such goods by a person does not reduce the benefits that others may derive from these. The same benefits are available to all and without mutual interference. Hence it will be irrational for them to grant if exclusive right to use over such goods by individuals even if exclusion is possible.

There are goods where consumption is rival but exclusion is not feasible. For example, crowded street during the rush hours. Ownership of such goods is not possible as exclusion would be impossible or too costly. Rawls, it seems, would readily accept our suggestion since he maintains that 'arranging for and financing public goods must be taken over by the state and some binding rule requiring payment must be enforced.'[43]

The strangest case for granting right of ownership arises for goods whose consumption is rival and exclusion is possible. Since the consumption is rival my right to use such goods is insecure unless I am simultaneously granted the right to exclude others from the use of it. Hence, it may be argued, that unless a person is given the right of ownership his right to use such goods is insecure. But this reasoning is fallacious. A person's right to use such goods may be safeguarded by protecting the right to possess only just like the occupancy rights of a tenant. The right of ownership does not follow from the right to use and the right to exclude others from the use of a thing since ownership implies many more rights like right to alienate the thing to the person of one's choice and the right to bequeath the thing to one's heirs, etc.

Right to alienate possessions to the person of one's choice (especially the highest bidder) cannot be justified from the point of view of the original position. This right is generally justified on the ground of freedom. The freedom to own property is not included in the list of basic liberties hence it is not a primary good in the original position. Consequently, the appeal to this freedom is not open in the original position, since this very freedom is being questioned in these arguments. To appeal to this freedom will be begging the question. Can it be argued that the liberties included in the list of basic liberties which as primary goods cannot be protected without the right of ownership? That is, can it be argued that though freedom to own property is not a basic liberty yet it is a necessary condition of the basic liberties. The answer must be in the negative. As Rawls himself realizes, even the fair worth of the political liberties, let alone the political liberties themselves, does not depend on private ownership of property. Solution of fair worth of political liberties is neither the dependency of political parties for funds on private property nor the carrying on of public discussion through private press. Rather what is needed is that parties be allotted funds by the state, the public forums be free and open to all and money be provided by the State on a regular basis to encourage free public discussion.[44]

Personal liberty depends on the availability of redress for unlawful arrest or imprisonment by means of a prosecution or an action, and deliverance from unlawful imprisonment by means of the writ of habeas corpus and the rule of law depends on availability of remedies for enforcement or rights granted by law. Now, it is not clear how the availability of remedies for enforcement of rights, redress for arrest and the writ of habeas corpus depend on liberty to own private property unless one means that by virture of having a large private property, a battery of eminent lawyers can be hired to fight the case. But the legal realists will agree that it is not the power of arguments that decides the case but the fairness and independence of courts that matter most. Like the right to private property, all these liberties are secure to the extent that the courts are independent and public opinion is strong enough to make its pressure felt on the government. Hence, the right to alienate one's possession cannot be defended by claiming that freedom to own property of which the former right is a necessary condition is a requirement of basic liberties. Can the right to alienate one's possession to the person of one's choice be justified by appealing to any other sense of freedom? The agents in the original position themselves are characterized as free in the sense that they make claims on society on the name of their own interests without appealing to prior obligations, they can revise their conception of the good on rational grounds and that they are responsible for their ends.[45] It may be argued that the right to alienate one's possession to the person of one's own choice is a necessary condition of the freedom to revise one's rational plan of life. Since revision of a rational plan of life implies that the things which were good in respect of his plan of life, before the plan was revised, may not be good in respect of his plan of life after the revision has been made, i.e., things which a person possesses may not remain good for him after he changes his plan of life, rather other things, which he does not possess, may move up to the position of being considered good in respect of his revised plan of life. Hence, it seems to follow that the right to exchange and alienate possession must be

granted, so that the freedom to revise one's rational plan of life can be exercised. But what this argument strictly proves is that there must be right to dispose of one's possession and to acquire possession. But it does not follow from it that a person must have the right to alienate or exchange his possession with *the person of his own choice*. What this argument seems to have established is only that consumer's sovereignty or the freedom of consumption should be allowed. But it does not follow that this freedom of consumption has to be necessarily within the framework of the market. For, the consumer's sovereignty required by the above argument is possible only where the State is the sole agency responsible for maintaining exchange-relations with its citizens, buying their productive services on payment of money and selling to them the commodities which it produces. Not only the right to alienate one's possession to the person of one's choice is not a necessary condition of the freedom to revise one's conception of the good, rather it is irrational from the point of view of the original position, since the just distribution of primary goods, whatever that may be, will be constantly disturbed thereby. Rawls is aware of this and he advocates constant readjustment of the distribution by the distributive branch of the government to preserve an approximate justice in distributive shares by means of taxation and the necessary adjustment in the rights of property.[46] But this problem does not arise in a society which does not accept the right to alienate one's possession to the person of one's choice, i.e., where every kind of exchange-relation between citizens is forbidden and exchange takes place between the State and the citizen only.

As it has been mentioned before, ownership implies right to bequeath one's property to his heirs after his death. Can this right be justified in the original position? It may be argued that since parties in the original position are presumed to have concern for their descendants in the next generation,[47] they will like to have the right to bequeath their property to their descendants. But says Rawls, 'we must not choose for others as we have reason to believe they would choose for themselves if they were at the age of reason and deciding rationally.'[48] The next generation will object to the choice of this inheritable rights of ownership in the original position, as it unduely gives unequal opportunity of attaining position of ownership due to accidents of birth which are morally arbitrary. This is not all. Rawls goes to the extent of arguing that, 'if some places were not open on a basis fair to all, those kept out would be right in feeling unjustly treated even though they benefit from the greater efforts of those who were allowed to hold them. They would be justified in their complaint because they were debarred from experiencing the realization of self which comes from a skillful and devoted exercise of social duties. They would be deprived of one of the main forms of human good.'[49] This argument applies *mutatis mutandis* to the inheritable position of ownership.

The parties in the original position may find the inheritable right of ownership irrational and unacceptable because of the very nature of their society. The basic structure of society is 'a public system of rules defining a scheme of

activities that leads men to act together so as to produce a greater sum of benefits and assign to each certain recognized claims to a share in the proceeds.'[50] Society interpreted as a cooperative venture for mutual advantage leads to the idea that 'what a person does depends upon what the public rules say he will be entitled to, and what a person is entitled to depend on what he does.'[51] Acceptance of inheritable right of ownership entitles some persons to become owner of property on the basis of birth. But birth is not something a person does. Hence, there can be no place of institution of private property in Rawlsian ideal society.

So we conclude that contrary to what Rawls believes and argues for the parties in the original position cannot recognize wealth, interpreted as private property, as a primary good except by lapsing into inconsistency.

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Remarks on historiography of science: historism and structuralism[1]

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The basic issue I have addressed myself to in this paper may be indicated from the following cluster of questions. Can we understand an institution, e.g., science or language, purely as a historical process without pre-supposing a permanent or fixed conceptual framework or a set of theoretical presuppositions? Is it logically possible to capture and communicate the sense of history without committing ourselves to some ontological or cognitive structure which itself is not subject to the process of historical mutation? Once we agree that there is a set of inviolable, universal, and inter-subjective set of ontological or cognitive structures, can we escape the conclusion that the *historical change of science* is only an appearance, a mere walking shadow, as distinguished from an abiding deep structure or substance? If, on the other hand, we ascribe rationality or sense of history to a fixed and deep structure or abiding substance, how do we explain the intelligibility or sense, if any, of that structure or substance itself? If the sense of history is said to be *un*available to us without a permanent structural pre-supposition, can we take history of science as a genuine history of knowledge or of our cognitive acquisition? In that case how do we draw a line of demarcation between a superior (modern) scientific culture and an inferior (tribal) scientific culture? Are we logically obliged to believe that the *ancient* people's science, tribal science, [Primitive Science at Time 1: PS(T1)] is said to be scientific, merely by courtesy and that in fact it is pure and simple *magic*, that the medieval people's science [Medieval Science at Time 2: MS(T2)] is nothing but *speculative metaphysics* with some empirical trappings in and around it, and that science in the true sense [Contemporary Science at Time 3: CS(T3)] is peculiar to our *modern* age? Are the lines of demarcation between the proclaimed cognitive domains, magic, metaphysics, and science partisan of the historically privileged modern man? On the other hand, if the lines of demarcation are substantially denied, does it not cut at the very roots of such concepts as *development* and *progress*? Must we speak in terms of *diversity* of scientific culture and avoid the idiom of *development* of scientific culture? In other words, one might ask: Is the articulation of the cognitive domains of so-called magic, metaphysics, and science due to some *freely frameable* conceptual system of the model modern historian of science or is it due to his capacity to recapture *the then obtained* presuppositions of the said domains?

The philosophical foundation of structuralism is traceable to Pythagoras,

Plato, Śaṁkara, Kant, Chomsky, and Lévi-Strauss and that of historism to the Buddhists like Dharmakīrti, Aristotle, Hegel, Marx, Sri Aurobindo, and Sartre. Needless to add that in between themselves these thinkers differ widely and on crucial issues. But the point remains while the former group emphasises the permanent character of what they call genuine knowledge, the latter one does recognize the genuine historical character of the same. Our question with specific reference to science as we understand it today is: How can we possibly capture truly the intuitive sense of what we call history of science? Is it primarily in terms of the structuralist theory or in terms of the historist theory? Or: should we try to develop a more comprehensive and composite theory to capture and communicate the historical character and sense of science? I am inclined to the latter alternative and its indication would be provided in between the lines of the present paper.

The classical rationalists of Europe, barring few like Hegel, did not take time seriously. Descartes's and Malebranche's distrust towards the historical mode of knowledge is well-known. But to all of them *freedom* was very dear. If time is believed to be real enough to leave its distinctive imprint on the human actions and events, then man as historian cannot be taken as really free to reconstruct the past apriori, relying only on the structural capabilities of his mind and ignoring the diverse and particular details of the past. This point seems to me very relevant to our discussion of the theoretical issues concerning the history of science. Sartre is often credited with the view that history in the form of dialectical reason is the discipline which alone provides us the sound method to understand other societies and their intellectual achievements like science. This privileged access-claim of history to other times and places, i.e., societies, has been vigorously challenged by Lévi-Strauss, whose theory although primarily rests on his *structural* anthropological studies but, like Sartre, he is also a professional philosopher. Besides Descartes's, the other dominant influence on both of them is Marx's. But both of them have drawn upon the widely diverse Cartesian and Marxist ideas in their own different ways. My reference to the Sartre-Lévi-Strauss controversy is only a part of my project on the theoretical problems of the history of science.

Cartesian *Cogito*, the knowing mind, is said to be equipped with some innate ideas of immense comprehension and consequence and in terms of which it could gather not only what happens in other minds but also what happens in other places. To make the passage from mind to matter, from psychology to physics possible, Cartesian system needed God as the super-ordinating substance and mediating functionary. Without a God and without innate ideas enabling him to move from the self to the *other*, Sartre apparently does not know how to exercise his freedom to understand the acquisitions, including the achievements of science and technology, of other societies. The historian of science as a human being affiliated to a definite society, when called upon to write history of other societies, has to understand the latter dialectically, 'initially through human relations'. And, according to Sartre, dialectical reason,

unlike positivist reason, carries its own intelligibility, i.e., self-supporting, and is 'independent of any empirical discovery'. Historical process becomes truly intelligible only when it is viewed and critically reviewed from the standpoint of dialectical reason and as a developing process of 'totalization' which includes within itself its reflexive re-totalization essentially through the reflexive experience of the individuals. Individual *praxis* seems to be the model and origin of all *praxis*. It also sustains the critical character of the 'scattered totalization' of the separate societies. If history of science continues to be a living and growing history and does not relapse into uncritical cultural borrowing from other societies or, to use Sartre's own phrase, collectives, that is mainly due to the individual *praxis*, its underlying freedom, responsible and forward-looking character, 'project'.

Sartre's attempt to graft dialectical history of Marx on his ontology of 'for-itself', the 'project' and 'freedom' is beset with numerous difficulties. How to be assured of the ultimate realisability of the Sartrean project of a totalizing unification of 'scattered totalization'? For dialectical reason is said to be operative at the levels both of totalizing historical development and of the freedom of the historical agents. Certainly there is no guarantee that the freedom of the agents will be exercised towards a pre-fixed convergent goal. On the contrary, if we closely look into other related concepts of Sartre, it is difficult to escape an opposite conclusion. In a class-ridden society the praxis of the historical agents, both individually and collectively, is primarily marked by *alterity*, a relation of separation, or a lack of reciprocity, resulting in conflict of goals, whether chosen or imitated or imposed. Deepening of consciousness down below the 'inert-practico' level and touching the true dialectical depth, a suggested Sartrean way out of the difficulty, does not appear to be promising at all. For even at that depth one cannot be assured of a harmony of goals, whether pre-established or praxis-achieved. To resort to the concept of 'totalization without a totalizer', another possible Sartrean way out, does not appear very promising either. I do not see how a process of history which is neither guided by God nor conscious of its goal, if any, can be rendered intelligible on the basis of Sartre's ontology which simultaneously highlights the freedom of and conflict between and within the historical agents, individuals, and groups. His answer to this 'real problem of History', though questionable on several grounds, is undoubtedly very audacious and ingenious.

> If History really is to be the totalization of all practical multiplicities and of all their struggles, the complex products of the conflicts and collaborations of these very diverse multiplicities must themselves be intelligible in their synthetic reality, that is to say, they must be comprehensible as the synthetic products of a totalitarian *praxis*. This means that History is intelligible if the different practices which can be found and located at given moment of the historical temporalisation finally appear as partially totalizing and as connected and merged in their very oppositions and diver-

> sities by an intelligible totalization from which there is no appeal... (T)he regressive moment of the critical investigation has demonstrated the intelligibility of practical structures and the dialectical realization which interconnects the various forms and active multiplicities. But...we are still at the level of synchronic totalization and we have not yet considered the diachronic depth of practical temporalization, and...the regressive moment has ended with a question: ...it has to be completed by a synthetic progression whose aim will be to rise up to the double synchronic and diachronic movement by which History constantly totalises itself. So far, we have been trying to put back to the elementary formal structures, and, at the same time, we have located the dialectical foundations of a structural anthropology.[2]

Sartre's jargon, as we all know, is the nightmare of the analytic philosopher. And he reminds one of Kant, Hegel, Marx, Dilthey, Max Weber and, of course, Lévi-Strauss. In his own way he unifies and totalizes their ideas in his thought, which itself, if we are to accept Sartre's view of history, is undergoing dialectical change. While Kant's *First Critique* is addressed to the question 'how synthetic *apriori* judgment is possible?', Sartre's *Critique* seems to be concerned with a more fundamental question 'whether synthetic *apriori* judgment, uncritically accepted by Kant, is possible?' For Kant, as we know, the paradigm of knowledge was Newtonian science. Having accepted the paradigm his *Critique* concerns itself to the limited question of identifying the structural conditions of synthetic activities of the human mind (as a representative or part of a universal mind or consciousness). To Sartre the paradigm of intelligibility is individual *praxis* which itself needs no foundation and, what seems to be more interesting, to which the structural conditions (making science possible) themselves are answerable. Unlike Kant's, his theory appears to have dispensed with all transcendental justifications. At every point of time there is an individual or a group consciousness which so clearly and distinctly represents or totalises all different views, scientific or otherwise, living or dead, 'from which there is no appeal.' In a very fundamental sense science is required to derive its basic intelligibility from history and not from the structural or transcendental conditions. Sartre denies the existence of the universal structure of understanding purported to account for the inter-subjectivity of scientific knowledge. By its very nature the dialectic of individual praxis, continuously future-looking character of being-for-itself, rules out the possibility of a truly universal structure. Rightly understood, structures themselves are historical. Products of history, unless recognised in this way, can hardly be expected to make the puzzling myraid of history intelligible. It is primarily to remove this deficiency in the method for the pursuit of cognitive and other human perfections that Sartre proposes to investigate *simultaneously* into the synchronic and the diachronic movements of history. In other words, he offers to give us a phenomenological description of the dialectical fusion of structural anthropology and freedom-ensuring history.

It is to Descartes, the first among the French philosophers, that Heidegger attributes the credit of transforming metaphysics into anthropology *via* the philosophy of the *cogito* in a dualistic world. Sartre takes Cartesian Cogito very seriously freeing it from the universal innate capacities supposedly necessary for laying the foundation of physics. Influenced by Marxism, he rejects Descartes's anti-historical prejudices and his *Critique* uncritically assumes the absolute validity of historical action. Lévi-Strauss is strongly critical of the Sartrean way of deriving his dialectical anthroplology from the Cartesian Cogito. To quote him on the point:

> He who begins by stepping himself in the allegedly self-evident truths of introspection never emerges from them... Sartre in fact becomes the prisoner of his Cogito: Descartes made it possible to attain universality, but conditionally on remaining psychological and individual; by sociologising the Cogito, Sartre merely exchanges one prison for another. Each subject's group and period now take the place of timeless consciousness. Moreover, Sartre's view of the world and men has the narrowness which has been traditionally credited to closed societies. His insistence on tracing a distinction between the primitive and the civilised with the aid of gratuitous contrasts reflects, in a scarcely more subtle form, the fundamental opposition he postulates between myself and others.[3]

Sartre's central thesis which is being criticised by Lévi-Strauss seems to rest on four pairs of contrasting concepts: (1) the self and the other; (ii) the civilized and the primitive; (iii) dialectical reason and analytical reason; and (iv) history and anthropology.

Let us start with the first pair first, Lévi-Strauss thinks that Sartre's failure to realise properly the significance of history, of science and also, therefore, of history of science is mainly because of the sharp contrast that the latter draws between self and other, whether that other is a being or a thing, an object of psycho-sociological or that of physical inquiry. Cartesian dualism between man and history was intended to liberate physics from the ambiguity of body-affected consciousness. Descartes thinks that all physical matters are modes of extension which are both geometrically and durationally measurable. Time is said to be only a mode of thinking. Except God's veracity there is no inherent guarantee in man's mind that the confused beliefs caused by the physical world can, on analysis, be rendered intelligible. History is not amenable to any sort of quantitative treatment. Its propositions are purely conjectural or fanciful. Man's knowledge of the physical world is intelligible to the extent it can be expressed in the language of mathematics or geometry and thus is free from historical fancies. Sartre is neither *for* quantitative science nor *against* history. On the contrary, he accords primacy to the historical mode of knowledge. But, somewhat like Descartes, he thinks that the model

of history is provided by self's history—its consciousness of itself, its lived past and immediate environment,—and *not* by other's history or by other society's historical past in which *truths* and fancies lie inextricably mingled up and unrecognisedly so.

But, in order to be fair to Sartre in the context of Lévi-Strauss's criticism, one should recall that while for Descartes time is a mode of thinking and its unity due to its material content, for Sartre time is the very nihilating principle giving life to the individual *praxis* its individuality and enabling the self (for-itself) to have its own measure for the duration and self-identity of things. He endorses Leibnitz's reaction against Descartes and Bergson's against Kant characterizing temporality as 'a pure relation of immanence and cohesion' but Sartre differs from Bergson and supports Kant in holding that duration is an active and *not* a given synthesis. Descartes encounters the problem of passage from one instant to another because he fails to recognise the active and synthetic nature of the self. To him instants appear juxtaposed and separated. Sartre, by contrast, affirms that 'temporality is not solely nor even primarily separation.' Time, which in a very limited sense *separates* the self from its being-in-world, *reunites* it with the latter as its other. Separation and reunion are two moments of time as the structure of the self.

In *Being and Nothingness* Sartre's primary concern was to vindicate the freedom of the self, although he did not fail even at that time to mention the inseparability of the self from the other, of the Being-for-itself from Being-in-itself. In his later works like *Critique*, *Search for a Method*, and *Situations* he has shifted his emphasis from *freedom* to *need*. While the primary forms of freedom are of the self, keeping others in the penumbra, need brings both self and others under the focus of freedom. Needs both unite self with others and separate it from the latter. Freedom acts more as a separative force than as a unifying one. But one must remember that both in his earlier and later writings Sartre, in spite of his avowed Marxist persuasion, never ceases to attach great importance to human freedom. Needs bring peoples, especially the poor ones, together and provide objective conditions for struggling together to be free from needs. Now whether Lévi-Strauss is justified in characterising the enterprise of collective freedom also as a prison house for the Sartrean *Cogito* is certainly a debatable question. The Cartesian Cogito, even if divinised, is open to Sartre's criticism. The Sartrean *Cogito*, even if sociologised, is under attack from Lévi-Strauss: for the latter himself is primarily interested in *explaining* freedom in terms of an appropriately constructed model or structure and *not* in drawing up practical project for *broadening* the horizon of human freedom. Models are abstract or skeletal representations of reality regardless of their continuity or lack thereof. In other words, his approach, unlike Sartre's, is essentially scientific, mathematically structurable and intended to account for the *totality* of observed ethnographic particulars across the *continents* and not to trace the process of historical continuity of individual and group activities developing or

totalizing over the centuries towards a goal not consciously entertained by any one.

Lévi-Strauss's second criticism is based on the second pair of contrasting concepts, the contrast between the civilised and the primitive, attributed to Sartre. It has been said against Sartre that he could never get over the basic theoretical handicap of the circumscribing effect of his ontological individualism, although his historical method and account of dialectical reason are apparently directed to undo that effect—the effect of ethnocentricity, an improved version of ego-centricity. Lévi Strauss's another complaint against Sartre is that in order to do away with the unfortunate consequence of ontological individualism he moves to the other extreme and over-emphasizes the role of history and thereby highlights the *difference* between one society and another, say, between the primitive society and the contemporary one,—a variation of the theme of the *separateness* between the self and the other. Sartrean historism has its serious implications on the history of science and technology of *this* (contemporary) society CS(T3), and that of *other* (primitive) society, PS (T1). And those implications are clearly unacceptable to Lévi-Strauss as evident from his own words:

> Prevalent attempts to explain alleged differences between the so-called primitive mind and scientific thought have resorted to qualitative difference, between the working process of the mind in both cases, while assuming that the entities of which they were studying remained very much the same. If our (structural) interpretation is correct, we are led toward a completely different view—namely, that the kind of logic in mythical thought is as rigorous as that of modern science, and the difference lies, not in the quality of the intellectual process, but in the nature of things to which it is applied. This is well in agreement with the situation known to prevail in the field of technology: what makes a steel axe superior to a stone axe is not that the first one is better made than the second. They are equally well made, but steel is quite different from stone. In the same way we may be able to show that the same logical processes operate in myth as in science, and that man had always been thinking equally well; the improvement lies, not in an alleged progress of man's mind, but in the discovery of new areas to which it may apply its unchanged and unchanging powers.

If Lévi-Strauss is right, the supposed difference between the primitive thought, PS(T1), and the scientific one, CS(T3), and also the collateral difference between the underlying mental processes and logical methods are untenable and rest on a positivist mistake, i.e., telescoping our ways of thought into theirs, disregarding the difference in the nature of the objects of thought. For a correct cultural understanding of the nature of objects what we need is an adequate theory of signs. The rudiments of this view are found in the writings of C.S. Peirce.[4] According to Lévi-Strauss, *anthropology is a branch of semiology*. The relation between a sign and what it signifies, the object in question, is

determined *conventionally* or culturally. For example, there is no natural and necessary relation between the expression 'stone axe' and the object, stone axe. It is only within a particular cultural context that the relation between the two, sign and significatum, can be determined and that too as a part of a whole system of signs and significata. One comes across similar ideas in the writings of the later Wittgenstein.[5] But his language game-bound contextualism is not consistent in several respects with the structuralist's search for formal tools. A particular sign-significatum relation cannot be correctly extrapolated beyond the concerned cultural context. And, therefore, any inter-cultural or inter-systematic comparison of the cultural objects like axe, cultural achievements like science and technology belonging to different societies, is deemed to be misplaced and seriously misleading, completely ruling out the possibility of *qualitative comparison* between them, characterising one as superior and another as inferior. The anthropologist's main task is to discover structural tools or formal devices enabling us primarily to explain the cultural objects and achievements of different societies across the continents and not pass value-judgments on them, committing himself unilaterally to a particular scale or standard peculiar to a society and that too valid for a particular period only. Speaking from within the concerned society, having used a stone axe one should not say that one's axe is inferior or superior to a steel axe used by others in another society. But the fact that the social anthropologist can *intelligibly* speak about the meaning of a stone axe in a primitive society and also that of a steel axe in a modern society is due to his nature, i.e., native capacity to make use of certain 'cultural universals', and, one might rightly claim, it is *this* nature that the social anthropologist has in common with all other human beings; while the latter may or may not exercise it, depending on their understanding and objective, the former must do it in order to get out of the prison of the Cogito and explain cultural objects of *different* societies. These 'cultural universals' are, or are due to, 'unchanged and unchanging powers' of man's mind. The talk of continuous progress of the human mind is an unfortunate expression of an ethnocentric prejudice, namely, that who comes last on the stage of history is the wisest because he is credited to have at his disposal 'the cumulative wisdom' of all the previous generations. According to Lévi-Straus, there is no *intrinsic* difference between mythologic of PS(T1) and science-logic of CS(T3). The very transition from nature to culture, the structuralist claims, has been made possible by the human nature using its own natural logical powers and drawing on what the natural environment provides. The basic nature-transforming 'powers' are there 'unchanged and unchanging' in the very structure of the human mind. Apparently the stream of history cannot erode or even touch those powers. Needless to add here that these talks in terms of 'cultural universals' and 'unchanged and unchanging structure of mind' are alien to the philosophical taste of Wittgenstein. The structuralist's contextualism, unlike his, is relativism without tears.

The debate on the issue of superiority/inferiority of culture, mainly due to the positivist orientation of the anthropologists like Tylor, Frazer and Lévy-Bruhl, seems to be a consequence of a misconception about the diversity of cultures. That cultural diversity is a natural phenomenon and that it is not inconsistent with the unity of the mankind are rarely realised. 'Diversity is less a function of the isolation of groups than the relationship which unite them,' observes Lévi-Strauss. Communication and interaction in between the societies consisting of individuals and groups are always going on at different affective levels. In between the societies there is no (what I call) cultural protective belt. What is there at the borders of a society to protect it against the possible influence or invasion of other societies always influences its neighbouring societies silently (at normal times) or loudly (at abnormal times, e.g., at times of war and revolution). Cultural units are always observationally ill-defined. In a comparable context Wittgenstein observes that 'indefinite boundary' is no boundary at all. Once we carefully follow the implications of the admitted—admitted by Lévi-Strauss himself—inter-societal dialectics or what I term inter-cultural cooperation-conflict situation, anti-historical criticism of the structuralist loses much of its proclaimed thrust. In this connection it is interesting to study Lévi-Strauss's reference to structural linguistics of Jakobson[6] and game-theoretic economics of Von Neumann.[7] Jakobson and Neumann are undisputed structuralists in the Lévi-Straussian sense but neither of them is dealing with abstractions as such. Positively speaking, they are quite aware of the fact that not only *what* they study, cultural objects, but also *how* they study, i.e., the structures themselves, are basically subject to the process of historical mutation. In other words, structures, whether viewed ontologically or methodologically, are in a non-trivial sense caught up in the dialectic of history. I have argued the point at length elsewhere.[8] This brings me to the third pair of the contrasting concepts, dialectical reason and analytical reason.

Straussian structuralism is a sort of holism, reminds one of the Durkheimean way of studying ethnographic particulars in terms of strictly 'objective' rules and without referring to specific individuals and groups (viewed from within). Straussian holism is basically methodological, but his persistent attack on Sartrean ontological individualism might give one an impression that he himself subscribes to a sort of ontological holism. I would say that both Sartre and Lévi-Strauss are methodological holist, but while the former because of his accent on the role of dialectical reason and individual *praxis* succeeds in projecting his system as a sustained defence of *freedom*; the latter's stress on the role of analytic reason and basic unity of the structures of all cultural objects, e.g., myths, totems and kinship systems, spread over all the continents, leads one to think that he is referring (in a non-conventional and realistic sense) to a hidden reality—humanity—which alone can account for the striking structural similarity between the sets of baffling ethnographic data (of widely separate societies) discovered and organised by positivist analytic reason, and also that he believes in determinism. The structuralist takes for

his paradigm *analytic reason*, which defines, precisifies, classifies and organises his materials much in the fashion of a positivist scientist. And, according to him, what the existentialist calls dialectical reason is only a super-structural product, product of an ideological-historical consciousness, of analytic reason. In this respect, Lévi Strauss complains, Sartre forgets the basic aspect of Marx's and Freud's combined lesson, 'man must view himself as meaningful', viz., the super-structural or historical meaning of man because of its admitted (or alleged?) derivative character is fated to be faulty and abstract. In contrast, the cultural objects studied by analytic reason are infra-structural and closer to nature (but not natural). Analytic reason by its cultural universals is claimed to be better equipped to take a pro-naturalist or positivist scientific view and, thus, to give a relatively stable (but not exactly a-historical) and structural picture of sub-ideological characteristics of the social man. 'I do not at all mean to suggest', asserts Lévi-Strauss, 'that ideological transformations give rise to social ones. Only the reverse is in fact true.'

Sartre's distrust towards analytic reason and what may be regarded as perhaps its best achievement, a scientific study of man, structural anthropology, are collateral to his distrust towards stability of whatever is a-historical, and fall beyond the ken and enlivening touch of time. He would support analytic reason only as an inert moment of dialectical reason. Ultimate intelligibility both of natural and cultural objects is said to be due basically to synthetic activities of dialectical reason. Sartre says, 'the science of Nature are analytical with respect to their content, whereas scientific thought is both analytical in its particular procedure and synthetic by virtue of its ultimate aims.' Nature in its 'raw' form is not the content of science unless it is subjected to some such analytic procedures as definition, classification and subsumption under laws, i.e. unless it is cooked at least partially. Synthetic functioning of reason can not be purposefully employed to do its job, i.e., to impart intelligibility to the objects of nature by revealing their structures, relations, meanings, and above all, changing affiliation to a totalising temporalisation marked by its entertained aims. Nature, according to Sartre, thus is not only culturalised in the limited Straussian sense but also humanised in the Marxian sense. Even an element of ideology is admissible, almost welcome, in the Sartrean-Marxian concept of science.[9] In a sense Sartre's assimilation of analytic reason under dialectic reason reminds one of Marx's emphasis on the dialectical unity of positivism *and* the scientific presupposition of humanism. However, Sartre's ontological individualism, highlighting the *validating* or *authenticating* role of the individual *praxis*, though tempered by the necessity grounded in materiality, practico-inert and group praxis, is not likely to be endorsed by Marx, not even by the young Marx. Notwithstanding his ontological individualism, Sartre ascribes primary intellibigility of science as an institution to its own history as a part of a totalizing temporalisation comprehended by dialectical reason. Within a totalizing temporalization there are particular moments which can provide only secondary intelligibility to what is achieved

by the analytic reason of science. But this secondary intelligibility of scientific theories viewed within the confines of a particular period is grounded in the synthetic activities of the dialectical reason which, on the one hand, sets it against its inert or dead past and, on the other, projects it into the future (possible tests to be undertaken by the individuals and groups in their *praxis*). The past may come back to life in and through human *thought* (Croce-Collingwood) or *interpretation* (Heidegger-Gadamer).[10] Thought and interpretation are both subsidiary to and validated by *praxis*. This point has been differently shown by Marx, Wittgenstein and Sartre.

Another consideration Sartre persuasively offers in favour of the superiority claim of dialectical reason is that it critically observes and oversees how and whether the abstract scheme of scientific laws and theories devised by analytical reason is corroborated by the experience(s) of the professional man as well as of the ordinary one. Even within the analytical reason engaged in scientific research activities like framing hypothesis and devising experiments there is a distinct synthetic role of dialectical reason. Experimental techniques and mathematical proofs may also be said to have their dialectical orientation: for these are the methods of establishing or dis-establishing certain truths which are not otherwise evident to and acceptable by the concerned human beings. Even machine has an inbuilt human orientation. It is to map nature that man's mind frames hypothetical pictures or structures of its phenomena and processes; and then to ascertain whether these are true (for him or them) it turns itself on what it assembles and organises for the purpose of ascertainment. Man's ways of mapping and even of transforming nature, Lévi-Strauss says, are in a sense supported by and grounded in nature itself. On this point Sartre differs from him. Lévi-Strauss takes Durkheim-Mauss theses of 'collective representations' very seriously and these 'representations' are believed to be so naturally grounded in the collective consciousness that the individual's mind is hardly left with any freedom but to receive and record it passively in some 'encoded' form or other.[11] Nature in 'codes', e.g., kinship system, is no doubt primarily cultural representation; but being very close to nature it seems to defy temporal change. Influenced by Freud, Lévi-Strauss gives a collectivist interpretation to the former's concept of the unconscious and accords primacy to it. He suggests as though nature and culture meet in the collective unconscious. While according to Freud sexual instincts determine the contents of the unconscious which are expressed through symbols in dreams and other forms of consciousness, Lévi-Strauss speaks of delibidinized *structures* of the unconscious which find their way up in the collective consciousness in articulate forms and are thereafter reflectively used by man's mind to understand cultural objects, including the scientific truths about nature.

This suggested account (and its methodological extensions) of discovering and establishing the laws and theories of science are totally unacceptable to Sartre. For, first, it clearly clashes with his notion of the historical or totalizing

character of scientific knowledge which through detotalization and retotalization progresses dialectically and, secondly, it is also inconsistent with the proclaimed primacy of the individual *praxis*. Nature-knowing capacity is there all along *in* man (but not in an identical or static way) and used *consciously* by him and the results of the used capacity, i.e., scientific truths, are valid primarily for him. 'Interiority exteriorises itself in order to interiorise exteriority.' Objectivity or the institutional character of science, i.e., knowledge which is not answerable and responsive to the individual *praxis*, though not altogether rejected by Sartre, is always a suspect in his eyes. Every historian of science, therefore, is entitled in principle to re-open the question of truth of the past views which are his subject-matter. In that case, Lévi-Strauss argues, he arrogates to himself the final right, at least for the time being, to determine what the scientists of other societies at other times, e.g., PS(T1) and MS(T2), *really* meant. In the name of re-living the past, can the historian of science rationally deny the interiority or lived truth of the past views of the scientist of other societies and thus reducing him to exteriority? Sartre may answer the question in the negative, pointing out that his theory of dialectical reason always keeps open the possibility of every scientific truth being partially negated, reviewed and re-opened otherwise. The critic might respond by pointing out that it only ensures the growing character of science in future, and, in addition, raise the question, 'what about science *of* the past societies where our main concern is *their* views,—views as *they* understood, and not how those views may or may not grow?' At one stage the questions may be or perhaps are *related*; but their separation at another stage is not only possible but also desirable from the standpoint of anthropology or that of sociological history.

Rationality of the past science, as I have tried to show elsewhere,[12] can be approached by the historian at two different levels or in two different ways, either simultaneously or separately. One: how the people or historians of science of PS(T1) understood 'science as magic' from within their own society and time; and two: how the people or historians of science of CS(T3) understand 'science as magic' of PS (T1). If the questions are sought to be answered *separately*, separating altogether past conceptual framework from the present one, as the structuralist proposes to do, then Sartre points out, the former commits himself exclusively to analytical reason in the vain expectation that he would be thus able to give a true historical account of 'science as magic' as entertained or believed by the people of PS(T1), and that this true account is to be taken as anthropological and meant to be *true for ever* (viewed from outside). In other words, the existentialist's complaint against the structuralist is that he wants to freeze the flow of time to catch the uncatchable, to capture 'science as magic', or 'science-modelled account of "magic" ' and that too 'as entertained or believed by the people of PS(T1)', and 'meant to be true for ever'. Yes, in a sense, time can be spatialised, i.e., captured and preserved, but not as time. An organism, a human body (e.g., of a Pharao or a

Mao, of a Bentham or a Lenin) can be preserved in a museum or mausoleum for the posterity (not for eternity), but not as an organism or human body, only as an embalmed 'human' body or mummy. In its bid to capture the past as such in the concealed or pre-reflective image/model of the present and to preserve it as such (i.e., for all time to come) analytical reason "kills" history and get 'structural anthropology' and reduces culture almost (but not exactly) to nature; for the technique of mummification or of preserving embalmed organism is a significant cultural achievement enabling man to 'save' a human body from its being reduced to (the elements) of nature.

It is the existentialist's claim that dialectical reason alone can consciously and successfully approach the problem of rationality of the past science because it takes up both the questions *simultaneously* and without conflating the two, i.e., without reducing the one into the other. In fact Sartre's notion of asymmetry between analytical rationality and dialectical rationality seems to be very relevant to the problem of the working historian. 'Analytical rationality can be transcended and integrated by synthetic rationality, but it is also clear that the opposite is not true: a dialectical proposition would lose its meaning and dissolve into relations of exteriority if it were "projected" into the millieu of logical or mathematical calculation.' An important distinction is recognised by Sartre between formula or inert abstract schema and thought or practical knowledge which is 'expressed' in it. Analytic reason may almost mechanically follow a formula without comprehending the thought it 'expresses'; but practical knowledge can only be partially 'suppressed' by abstract formulas. Conscious of the signifying tension of this 'suppression' dialectical reason succeeds in discovering the underlying practical knowledge. If Sartre is right, i.e., if the superiority claim of dialectical reason is right, even formula-following mental acts cannot be completely mechanical; thought sustains and stimulates them more or less all the time. The two distinct structural levels of thought 'does not constitute an unintelligibility or a split in thought, since dialectical reason sustains, controls, and justifies all other forms of thought, because it explains them, puts them in their proper place and integrate them as non-dialectical (i.e., analytical) moments which, in it, regain a dialectical value.' In other words, level-distinction is more structural (viewed from without) than functional: in its analytical function reason assumes and projects an autonomous appearance; and this appearance of autonomy is due to its 'deliberate' unconcern with its formative, if not originative, and sustaining stimulus. The analyticity of logico-mathematical propositions is only apparent and alloyed. Semantics and philosophy of formal language, existentially-dialectically interpreted, makes the point abundantly clear. At least that is what Sartre claims. This argument of asymmetry between dialectical reason and analytical reason and the superiority of the former over the latter is further pressed by Sartre to reaffirm his two favourite points. One: the structures of Straussian anthropology are in fact mere analytical constructs of dialectical reason in its non-dialectical plane of functioning and to which the structural-

ist attributes an autonomy and universality which are not borne out by the relevant facts of their proposed fields of application. Two: in and through application these analytical constructs are found to be inadequate, inappropriate, or incongruent, makes one conscious of the necessity of changing them over time, and thus reveals their dialectical character in a round about way. Related to this point is my argument used before that PS(T1) and MS(T2), though ideal types of analytical constructs, to use Weberian terms, are meant to be applied to, and indirectly questioned and corrected by, the facts of a particular sort of *social* space-time regions scattered over different *natural* space-time regions. Modifications of analytical constructs necessitated by the facts of the fields of application and at intervals replacement of one construct by another and the partial overlapping characters of the two are all pointers to their hidden historical nature and trend.

The suggested ways of showing the historical nature of structure themselves are seriously objected to by Lévi-Strauss: and attempts have been made to justify the objection by a *reductio* argument to the effect that if in the matters both of construction and selection of historical facts the historian is free in the Sartrean (individual *praxis*) sense, any analytical construct could be indefinitely and unilaterally confirmed and retained: history in that case could not be regarded as either critical or dialectical. Given primacy to the individual *praxis* or even to the group *praxis*, the aim of totalization, universal history, is doomed to remain unrealizable. One Sartrean way out of this problem might be to enlarge the historian's 'I' to 'We' of his society, hoping to ensure, at least partially, the objectivity in the matters of selection of historical facts or ethnographic data. Lévi-Strauss critically reminds Sartre that 'mere exchange of one prison (i.e., psychological Cogito) for another (i.e. sociological Cogito)' will not do. Another Sartrean solution, supplementary to the one just mentioned, is to point out that all 'constituent dialectics' influenced by the 'constituted dialectics' and determined by practico-inert, is bound to converge on the end of totalization. Here again, Lévi-Strauss suspects, analytical reason is being smuggled in to do this odd job of drawing a neat picture—too neat to be true—of convergent totalization without any totalizing mind or agency. His own approach to construct genuine 'universal history' is analytical and structural. To make history meaningful—with or without a totalizer—the historian is bound to be historian *for* a period or *for* a group and so on. 'History is therefore never (universal) history, but (only) history-for', i.e., partial or incomplete. Extending this argument, Lévi-Strauss says, all histories—partial totalizations or different societies—are equally (not identically) meaningful within their frontiers: their *continuity* is a myth invented by dialectical reason: but their unity as evident in structural anthropology is achieved by analytical reason through what he calls 'cultural universals'.

Now over to the fourth and final pair of contrasting concepts, history and anthropology. If the last argument of Lévi-Strauss is accepted, there remains no asymmetry between history and anthropology, between dialectical reason and analytical reason. He respects history but hardly finds any reason for according it a special value. To him it is a study complementary to his own. For *comprehension* he relies on anthropology and for *information* on history. To quote Lévi-Strauss on the point:

> (T)he historian strives to reconstruct the picture of vanished societies as they were at the point which for them corresponded to the present, while the ethnographer doet his best to reconstruct the historical stages which temporally preceded their existing form. This symmetry between history and anthropology seems to be rejected by philosophers who implicitly or explicitly deny that distribution in space and succession in time afford equivalent perspectives. In their eyes special prestige seems to attach to the temporal dimension, as if diachrony were to establish a kind of intelligibility not merely superior to that provided by synchrony, but above all more specifically human.[13]

Structural approach in the Straussian sense is not peculiar to anthropology. In a less articulate form it is resorted to by the historian as well. For historical reconstruction one or several previous constructions (Sartrean practico-inert) have to be taken into account or presupposed. Both construction and reconstruction involve selection and, therefore, elimination. If this point is conceded, Lévi-Strauss presses further his symmetry thesis and argues that the superiority claim of history, which hinges on the questionable assumption that the historian does comprehend time as a continuum, falls through. The historian too has to resort to abstractionist strategy, select and eliminate facts from among a (metaphysically) assumed plenum of facts. While the anthropologist uses higher level 'cultural universals', the historian uses the relatively lower-level ones. The difference is one of degree only. History too has to tolerate gaps in it, a result of its unavoidable methodological abstractionist strategy. Whether he takes, spatially speaking, the world itself, or a country in it, or even a tiny village, as his unit of study the historian cannot help using what Lévi-Strauss calls code. Temporally speaking, an epoch, a year, and even a date are 'codes', structural units, standing for but not expressing countless details or 'messages'. Epoch, year, date etc. are codes not individually but as classes of other homologous units. To make historical 'messages' intelligible these are to be represented in and through 'codes'. Lévi-Strauss reminds one of Walsh's notion of historical 'colligation', organisation of historical details under appropriate concepts for the purpose of making the details intelligible.[14] 'History does not...escape the common details...obligation of all knowledge, to employ a code to analyse its objects.' Analytical reason constructs objects using codes. The only peculiarity of history is that its code consists in chronology, forms a sequence (but *not* a continuum). The facts colligated or aggregated under appropriate cultural universals are said to 'have approximately the same significance for a contingent of individuals who have not necessarily experienced the events and may even consider them at an interval of several

centuries.' Consequently, the Sartrean idea of history as *a* totalization of the set of partial totalizations has to be given up. And, according to the structuralist, the partial totalizations have to be recognized as such and not as constituents of an all-comprehensive totalization. Only at a later stage, on a different abstract plane, the partial totalizations recognized as constituent-*informations* are analytically restructured for the purpose of clearer comprehension. Informations themselves are structured. But at the primary plane, i.e., the historical plane, the information-structures are marked by lower-level discontinuities. History is more informative and less comprehensive; anthropology more comprehensive and less informative. Information-comprehension relation is inverse, says Lévi-Strauss. However, there is symmetry between the two: information means lower-level comprehension and comprehension higher-level, i.e., re-structured, information.

Relying as he does on the primacy of dialectical reason, Sartre finds the foundation of structural anthropology in the partial totalization of history. If the Sartrean notion of history which is ideology-loaded is admitted as the foundation of anthropology, then it cannot be a positive science, a product of analytical reason. Lévi-Strauss doubts if Sartre is clear about the right way of invoking facts for having historical knowledge and anthropological knowledge, and to it the former attributes the latter's alleged failure to draw sufficiently clear distinction between (i) history made by men unconsciously, (ii) history of men made by historians consciously, (iii) the philosopher's interpretation of the history of men, and (iv) the philosopher's interpretation of the history of historians. History is certainly made by men but all that they make cannot be made in full consciousness: elements of unconsciousness are bound to be there. Not only the facts of history which the historian uses in analytical constructs to make these intelligible but also the historian's acts of making history are more or less unconsciously shaped. Besides, the end product of intended acts has in it some unintended effects and to that extent the actors are not conscious of the same. Even the historian himself both in his history-making and history-interpreting acts is, to an extent, unconscious: for he cannot possibly know all the factors shaping his standpoint and aim. To a lesser extent this point is valid also in respect of the philosopher's interpretation of the history of historians. I do not think that Sartre is unaware of the distinctions referred to by Lévi-Strauss. Sartre's accent on totalization with an ideological *elan* underlying it is perhaps mainly responsible for the structural positivist's complaint against him. If the symmetry thesis of the latter is to be taken seriously, his notion of the *science* of man, structural anthropology, in spite of its pro-naturalist leaning, can hardly deny the existence of a humanist core in it.

While scientific research in the field of 'hard' (i.e., natural) sciences postulates a dualism between the researcher and his object, contemporary physics and biology appear to have shown that this dualism is not very sharp. Attempts to further sharpen it indirectly demands of the researcher that he must

forget what he is engaged in studying the objects of hard sciences. In the field of social and human sciences the said dualism is shifted within man himself: 'the cut-off line passes between the man who observes and the man or men who are observed.' Lévi-Strauss is aware of the difficulty of this internal dualism: the attending 'awareness appears as the secret enemy of the sciences of man in the double form of a spontaneous awareness (inherent to the subject of the observation) of a reflective awareness—an awareness of awareness—in the scientist.' The method of structural positivism appears to him a very promising way out, bringing social sciences closer to the natural ones. The structuralist does not deny the genuineness of the problem posed by phenomenological layers of consciousness: but he rejects the existentialist's dubious solution and proposes to follow the method of hard or natural sciences to the extent it is fruitful for the purpose of tackling the peculiarities of social and human sciences. The suggested methodological unity rests on an implicit denial of the proclaimed asymmetry between the human sciences and the natural sciences.

> Even the biologist and the physicist are becoming more and more aware of the social implications of their discoveries, or, better still, of their anthropological meaning. Man is no longer satisfied with knowing; as he knows more, he sees himself knowing; and the true object of his research becomes more and more, everyday this, indivisable coupling of humanity transforming the world and transforming itself in the process.

Lévi-Strauss draws a further distinction between the human sciences, e.g., ethnography and history, on the one hand, and the social sciences, e.g., anthropology and sociology, on the other. While the former are primarily concerned with gathering facts, the latter with constructing models or structures for the purpose of making the organization of facts intelligible. Ethnography resorts to complex (but lower-level) mechanical model-constructions; social anthropology to simple ones (with larger comprehension-contents). History uses statistical models of larger information-content or lower comprehension-content; and social anthropology's statistical models are of lower information-content and higher comprehension-content. The relations between these four disciplines have been reduced by Lévi-Strauss to two oppositions, one between empirical observation and model-construction, characterizing the initial

	History	*Sociology*	*Ethnography*	*Social Anthropology*
Empirical Observation/ Model Construction	+	—	+	—
Mechanical Models/ Statistical Models	+	—	+	—

stage of research, and the other between the statistical and mechanical nature of models, constituting the end-products of research. Assigning the sign +(plus) to the first term of each proposition and the sign –(minus) to the second, the given chart is obtained.

One gathers from this chart why the social sciences deal with what Lévi-Strauss terms 'two categories of time'. Time used by the anthropologist is 'mechanical', reversible and non-cumulative. A model of a partilineal kinship structure, for instance, shows only its *static* time-frames; and from it as such one cannot gather whether it has been preceded by a matrilineal structure, or any number of shifts from partilineal to matrilineal or the converse. Historical time, on the contrary, is 'statistical', marked by discontinuity and irreversibility. Lévi-Strauss endorses the anti-evolutionist approach of Franz Boas and his followers: for, concerned as they are with mechanical models, from their point of view evolution in a historical sense has no operational value. Like Durkheim, the structuralist is in favour of treating cultural *types* or mechanical models *as if* these are lifted above and untouched by historical time, and, therefore, also uninfluenced by the individuals and the groups who are very much in time. True, for analytical and methodological purposes one is entitled, almost obliged, to draw a cut-off line between *models* or ideal types, on the one hand, and what are there underlying the same or for studying which the same are called for, on the other. It seems to me that, ontologically speaking, the relation between models and the facts which are studied, organized and compared in terms of models is more or less *dialectical*, depending on the level of abstraction at which a particular study, anthropological or historical, is planned and carried on; and it is not of the *unilateral application*, i.e., models to facts. One is advised to bear in mind that the plausibility of the methodological cut-off line between models of anthropology and facts or details of (even statistical) history is contingent upon the adequacy or otherwise of Lévi-Strauss's notion of analytical reason which is itself under fire from Sartre.

I for one am not opposed in the least to the introduction of the abstractionist and in a sense *apriori* method of model construction in the social sciences like anthropology and even in the human sciences like history. That abstraction is unavoidable is evident from the structuralist's reference to statistical history rather than time-continuum. In order to use historical informations for supporting the analytically constructed models the structuralist may certainly ignore the physical time-continuum and should rely on what I call times as *micro-structured* or coded (time-unit-wise big, small or medium-sized) events. Broadly speaking, there are two different uses of models—*justificatory* and *critical*. The very construction of models is a legitimate recognition of the problem of 'understanding social relations', or ordering and colligating many in terms of few or one. But the question is: are informations meant only for comprehension or also for critical ascertainment of the correct ness and adequacy of comprehension? Is history there only to provid *supporting* evidence for anthropological models or also to provide a test for the latter? *Can't statistical history be used for the purpose of criticism, for statistical testing of mechanical models?*

In fact Lévi-Strauss's use of the word 'model' is somewhat confusing and ambiguous. First, sometimes, one gets the impression that he is resurrecting Weber-Pareto typologies for general theorizing purpose without being lost into the specifics of this society or that. But, then, often he highlights the *mechanical* character of model. For example, an engineer may make a model aircraft *before* an actual one is produced and tested in flight, and also another model *after* it is produced and tested and for the purpose of display and sale promotion. Fourthly, some thinkers like Runciman are reminded in this connection of Wittgenstein's (Tractatarian) isomorphism of thought and the world. 'The role of logic in the epistemology of the early Wittgenstein is not unlike the role of myth in the epistemology of Lévi-Strauss.' Finally, he speaks also of game-theoretic or mathematical models and rightly laments over the social scientists' general lack of interest in rigorous quantitative approach made possible by recent developments in such fields as mathematical logic, set theory, group theory, and topology. His reference to *Theory of Games and Economic Behaviour* by J. von Neumann and O. Morgenstern, *Cybernetics* by N. Wiener and *The Mathematical Theory of Communication* by C. Shannon and W. Weaver is interesting and suggestive in this connection. Further investigation and analysis reveal that there are other variations of the above meanings comprising some such concepts as analogy, metaphor and heuristic mechanism.

For the specific purpose of clarifying the disputed relation between history and anthropology, I think, the fundamental question to be borne in mind, first, is whether the relation between mechanical and ethnographic materials is to be approached only from the standpoint of intelligibility or both from the standpoint of intelligibility *and* also that of truth/falsity. Consistently with his pro-naturalist methodological attitudes, Lévi-Strauss is strongly in favour of treating ethnographic materials as natural facts, without (or with the least of) distortion and mutilation because of the 'preservative chemicals and conditions' of the anthropological museum. In other words, being a neo-Cartesian of a sort, he refuses to accept any material as raw. I think Lévi-Strauss is right on this score. The uses of models are not only explanatory, comparative, combinatorial, ordering, classificatory and systematising. One of their very important uses is pledged to be *critical*. Otherwise Lévi-Strauss's symmetry thesis, symmetry between history and anthropology, as opposed to the asymmetry thesis ascribed to Sartre, becomes very trivial and indefensible. I accept his arguments for taking anthropology as 'order of orders', considering 'the whole social fabric as a network of different types of orders'. I am also in sympathy with his characterisation of it as 'code of codes', sub-structures nested in structures, taking idealised (discontinuous) segments of times and (separated) slices of space as lower-order materials for meaningful or intelligible organization in terms of models. I appreciate this formalistic 'bias' of Lévi-Strauss's method.

But my uneasiness remains because from his arguments, examples and reference I get a distinct feeling that he is being almost carried away by the elegance and simplicity of the formalist method, often perhaps forgetting that marshalling of ethnographic materials by itself does not prove the *critical* character of models,—a character which is expected of all the models of human and social sciences irrespective of the concerned scientists' chosen level of abstract-formal operation. It is in this context that one has to understand the criticism levelled against Lévi-Strauss that in a way he is carrying on the Tylor-Frazer tradition of using only (hypothesis/model) supporting (ethnographic/historical) facts. This criticism is perhaps partly unfair because he is clearly conscious of the futility of trying 'to reach a valid definition of social structure on an inductive basis.' The very notion of structure is said to have a non-inductive structure of its own. 'Social structure' says Lévi-Strauss, 'has nothing to do with reality but with models which are built up after it.' To clarify the difference between these two concepts he refers to the difference between *social structure* and *social relations* which often proves confusing. 'Social relations consist of the raw materials out of which the models making up the social structure are built, while social structure can, by no means, be reduced to the ensemble of the social relations to be described in a given society.' In spite of his preference for mechanical models, Lévi-Strauss admits that there is no necessary connection between *measure* and *structure*. Structures are models of a sort having a dual character. From one end structures appear autonomous; from another end one finds that the formal properties of the constructed models of one level can be compared with, and explained by, the same properties as in models corresponding to other 'strategic' levels. If this proclaimed insomorphism of the models of natural, social and human sciences can be plausibly demonstrated, then not only interdisciplinary studies are promoted but also the research programme of unity between the hard sciences and the cultural sciences gets a much needed booster.

I wish this methodological programmatic unity envisaged by the structuralist could be worked out critically to a successful end. But having followed his arguments, especially the ones in his response to the existentialist's pre-dialectical criticism, my doubt persists. Is Lévi-Strauss's statistical history only a *dummy* partner of his structural anthropology, or is it a critical collaborator of the latter in the quest for truth? Dismissing Sartre's 'progressive-regressive' method somewhat lightly as 'the very (one) anthropologists have been practizing for many years' and that too at its 'preliminary step', when he confidently claims 'our method is progressive-regressive not once but twice over', frankly speaking, I feel disturbed and askant. To quote Lévi-Strauss:

> In the first stage, we observe the datum of experience, analyse it in the present, try to grasp its historical antecedents as far as we can delve into the past, and bring all these facts back to the light of the day to incorporate them into a meaningful totality. The second stage, which repeats the first on a different plane and at a different level, then begins.

The first stage is historical and the second one anthropological. One might say, the former is sub-structural, the latter structural, and, to extend the analogy horizontally, the possibility and use of super-structural studies cannot be ruled out at all. Comparable level-distinct studies are well-known also in such other disciplines as economics (micro-economics and macro-economics), linguistics (surface-structural and deep-structural), psychology, biology and physics. Logical and methodological investigations of the last ninety years or so have opened up the vast possibilities of numerous level-distinct studies and, at the same, discovered the hidden dangers involved in negotiating these fertile and highly uneven terrains. Lévi-Strauss's claim, in plain language, seems to be this: (a) to incorporate the historical details in lower-level substructures and (b) to discover the other details already *conjectured* to be *incorporable* within those models, are *in fact* already incorporated. Like the concept of 'semantic ascent' used by Carnap and Hintikka in the context of inductive generalization, this structural ascent, if I may use the expression, may be extended further upward, making the models of 'super-structures' and of 'super-super-structures' extensionally more and more comprehensive.[15] From the standpoint of cultural universals, strictly speaking, *historical discoveries* can never be genuine or surprising. Every historical discovery then turns out to be an intra-monadic articulation or, to put it otherwise, a sort of knowing the world already known.

In the current literature on induction and probability, especially centering round the Popper-Carnap controversy on confirmation, one comes across a very similar problem. For inductive generalization Wittgenstein suggested (and Keynes accepted) confirmation function giving an equal *a priori* probability to each *state-description* describing completely a domain of possible *individual* cases or states-of-affairs each of which is atomic and independent. Carnap goes a step upwards and speaks of the confirmation function C, giving an equal *a priori* probability to each structure-description without mentioning anything about the independent individuals of the concerned domain or universe except that (statistically) *how many* of them come under the different predications. Mainly because of Popper's anti-inductive criticism, Carnap finds difficulties in the general principle, i.e., what are these symmetrical 'possible cases'—state-description or structure-description? The state-descriptive method does not appear promising to Carnap 'because with it' he admits in a Popperian vein 'we could not learn from experience'. Hintikka proposes under the name of *constituent description* broader, more abstract and generalised description. To use his own words 'A constituent does not tell us how many individuals belong to the different predicates...only tells us of each predicate whether it is exemplified in the world or not.' This combined enumeration-elimination method of a description is carried a step further by Carnap himself in his concept of *constituent-structure description* in which one does not say of each predicate whether it is exemplified or not but only says *how many* of them are instantiated in the world and how many are empty.

Carnap comments: 'This is, so to speak, cleaner still in that it is still further from particular individuals.' Unless it is theoretically shown that the individuals, structured or structurable, are of such nature that the human generalizations about the world are somehow corrigible or precisifiable in terms of them, we cannot learn from experience.

Lévi-Strauss's attempts to construct abstract, general and comprehensive models are unexceptionable in principle. His theoretical motivation to draw a cut-off line between sub-structural history and structural anthropology is also methodologically called for and, therefore, well taken. But the question is: how Lévi-Strauss ensures the *critical* character of the abstract and general models purported to be very comprehensive? On his own admission comprehension and information are inversely related. One suspects that the Straussian structural models designed to organise, classify, compare and explain historical or ethnographical details from different and widely separated (idealized) times and places of the world are twice removed from the reality of down-to-earth details. Their 'elegant' and 'clean' look is due to their informational poverty or at least inexactitude. To be fair to Lévi-Strauss one has to admit that materials or informational details of anthropology are of necessity once removed from the reality in itself or the given as such, whatever way one puts it. The very name of the discipline, *structural* anthropology, gives a clear indication of the level at which its author proposes to operate and also of the level from which he intends to draw his materials,—discontinuous and statistical times and places, ensembles of social relations found there and so on. Lévi-Strauss seems to have clearly anticipated this criticism and accordingly mentions the necessary methodological caution. Analytical reason, a very potent ability of the human mind, is obliged to define its objects (or materials) of study at an abstract level because it cannot directly encounter and retain the same in memory in an unassorted form. Even at this lower level dialectical reason is pressed into operation to ascertain if the objects in the process of definition has been unnecessarily distorted or mutilated, or distorted for the purpose of confirmation of the concerned model-requirements. Having formed the models by analytical reason to explain the same, the mind refers the models back to the already defined materials. In this second return journey analytical reason of the mind is again, i.e., for the second time, used dialectically for the purpose of 'verification'. Lévi-Strauss writes:

> the procedure would go astray if it were not, at every stage and, above all, when it seemed to have run its course, ready to retrace its steps and to double back on itself to preserve the contact with that experienced totality which serves both as its end and means. This return on itself in is my view a *verification*, rather than, as Sartre regards it, a *demonstration*, for, as I see it, a conscious being aware of itself as such poses a problem to which it provided no solution. (my emphasis).

Lévi-Strauss's *verification* is conformity of historical details as sub-structured at the lower level to models of social structures at the higher level and *confirmation* of the former by the latter. This two-way or dialectical functioning of analytical reason, according to him, is to be understood in terms of some cultural universals on near-natural features of the human mind which are objective and not circumscribed by particular times and places, nor conditioned by super-structural ideological considerations. Sartre's *demonstration*, on the contrary, is primarily an achievement of the individual *praxis* which, no doubt, is dialectically influenced by the group praxis and ideological considerations. And yet it retains its critical character both by trying to determine the validity and limits of dialectical reason and also by trying to determine its own developing analytical role and the limits of its contribution to the dialectical totalization of the totalities.

A careful perusal of Sartre's arguments to establish the superiority of history over anthropology and Lévi-Strauss's ones to prove the fundamental *and* scientific character of anthropology are not, to my mind, incompatible. Often their difference has been dramatised not so much for scientific methodological as for ideological reasons.[16] True to his structural approach i.e., double movement of the progressive-regressive method, Lévi-Strauss does recognize the "symmetry" between and the 'complementary' character of history and anthropology. Because of his relative neglect of the philosophical issues underlying the formalist tools and techniques, which are otherwise indispensable for higher level theory-construction, he has *not* paid sufficient attention to the problem of *critical* use, assessment and improvement of the models. Structurable details or data are said to be *critical* only when we can *learn* from their experience the inadequacy or partial falsity of the concerned theory or model. One is justified in thinking that this is largely due to his acknowledged—acknowledged by Lévi-Strauss himself—Kantian orientation by which I mean *justificatory* use of the cognitive structure or the categories of understanding. This also partly accounts for his relative indifference to the problem of social dynamics, despite his expressed sympathy towards Marxism. From his side Sartre rightly claims that his historico-ideological approach and primacy use of dialectical reason, recognizing analytical reason as a moment of it, have successfully enabled him 'to get back to the elementary formal structures' (Lévi-Strauss's historical sub-structures) and also 'to locate the dialectical foundations of a structural anthropology.' I am sure that these Sartrean 'foundations' of 'structural anthropology' will not be acceptable to Lévi-Strauss: for, firstly, these are not foundational but super-structural, and, secondly, these are formulated not for pro-naturalist scientific inquiry but primarily to provide ideological tools to overthrow 'the oppression of analytical reason' and its material and cultural products. The structuralist's apprehension is that by over-ideologising history we prevent ourselves from grasping the past societies, e.g., PS(T1) and MS(T2).

To minimize this apprehension the critic might pertinently raise the ques-

tion: to what extent the structuralist can de-ideologize anthropology (or for that matter sociology) without seriously diluting, if not giving up altogether, his symmetry thesis. Having recognized that structural anthropology does need the support of history not once but twice at two different but related levels, a consistent Straussian cannot deny the presence at least of a mild dose of ideology in anthropology or for that matter in any synchronic social or human science. The Marxist thesis that history is a super-structural science, to which both the existentialist and the structuralist extend their support, is not of much help to the latter in the matter of purging anthropology off all influences of history: for it is well-known that the Marxist is never tired of stressing dialectical relation between the two, i.e., history as a human science is not only influenced by but also does influence the social sciences like anthropology and the hard sciences like physics. Strictly speaking, nature-culture dialectic cannot be denied either by Sartre or Lévi-Strauss. If the latter's pro-Marxist profession is seriously intended, I fail to understand how can he logically meet such criticism of his theory as made, e.g., by Sanche de Gramount, viz., 'With Lévi-Strauss, the whole humanist tradition goes down the drain. History goes down the drain, too, because it is seen as merely a form of our own society's mythology, a collective delusion irrelevant to the scientific study of man.'[17] We know that not only the earlier Marx but also the later Marx always spoke of dialectical unity of naturalism and humanism. Maybe for some limited theoretical reasons Lévi-Strauss, like many other French intellectuals, thinks himself a Marxist. But his positivist leanings are unmistakable. He optimistically looks forward to the super-science or Future Science at time 4 or in brief, FS(T4) in which the gap between the social and the human sciences, on the one hand, and the hard sciences like physics and chemistry, on the other, will be narrowed down to the minimum, if not removed altogether. Marx's accent is on *dialectical unity* of the two giving a *social* place to history; Lévi-Strauss's emphasis is on *naturalist programmatic unity*, assuming a graded *structural-ontological unity* and giving a role to history to investigate into it. Ideological implications of the dialectical-historical method did not discourage Marx in the least from applying it to the study of cultural products, including science, of other past societies in sequence, typological or otherwise. True, ideological insemination of history partially affects its *natural* health and subjects it to the falsity of super-structural consciousness.[18] But the malady is sought to be treated and cured by the Marxist retaining the materialist, i.e., natural foundational, character of the historical method mainly through carefully *planned* group *praxis* and thus keeping theory-practice dialectic functionally alive. Unduly worried over the aspect of ideological insemination and the falsity-consciousness of history, Lévi-Strauss somewhat berates the role of the historical method, although he occasionally recognizes its value-neutral positivist role to account for the diachronic change of social structures over the periods of time. In this respect Sartre, except for his accent on the individual *praxis* rather than on the group one, stands closer to Marx:

both of them are committed to the primacy of dialectical history and the necessity of preserving the creative unity of theory and practice in the pursuit of truth. It is again by highlighting the other aspects of historical materialism, i.e., truth-consciousness embodied in the foundational sciences like productive technology and physics, and the 'collective representations', as distinguished from the individual *praxis*, that Lévi-Strauss gives a pro-Marxist character to the naturalist's dream of unity of all cognitive sciences,—natural, social and human.

The Sartre-Lévi-Strauss controversy is not one which can be so easily settled either in favour of the existentialist upholding the superiority claim of dialectical reason and historical method or in favour of the structuralist upholding the superiority claim of analytical reason and anthropological method. The terms of settlement themselves are to be defined with reference to our primary aim in view. If one wants to reconstruct the recorded accounts of science with a definite practical end in view, say, to construct a theory for emancipation of the proletariat from the bourgeois oppression perpetrated, among other means, by the dominance of analytical reason, one can certainly highlight how science and technology have been shaped by the productive forces over the ages and how the ruling class has used the same to its advantage and for the purpose of exploitation of the poor. One may also marshall facts and arguments to show how the proletariat can understand and use the existing institutions, including those of science and technology, to win its struggle against the bourgeoisie for its emancipation. Undoubtedly to construct such a theory the theorist is obliged, partly consciously and partly perhaps unconsciously, to select facts. This shows that aim-oriented *interpretation* has always an important role to play not only in practice of a theory but also in the construction of the theory itself. This interpretative and selective approach to facts has often been criticised as *uncritical*. For the sake of imparting a practical character to a theory however noble might be its aim, should we follow an *unscientific* (or what Collingwood calls scissor-and-paste) method? The pro-practical theorist does again invoke at this stage the inherent dialectical relation between theory and practice to defend the practical and hermeneutic orientation of his theory. Sartre's method defends the practical aim-oriented interpretation of his theory. Sartre's method presents the sciences of different periods of history as a connected sequence developing to a definite aim and which is not fixed *a priori* from without but worked out dialectically from within. And this history has to be understood in its intimate relation to what people do in response to the needs of challenge posed by the material and social circumstances. In other words, the existentialist is opposed to treating history of science as a secular discipline. He brings it close to the human life and formulates it in terms of group *praxis* and even individual *praxis*. His totalizing—all-inclusive totalizing—perspective does not leave the primitive science or the medieval science, whatever name one gives to it,—magic or natural philosophy, in its own context, i.e., partial totality. When a partial

totality, e.g., PS(T1), is reviewed from another partial totality, e.g., CS(T3), to the reviewer is available only the secondary identity and intelligibility of the former. It is only as a sort of ideal of practical reason that the reviewer, himself situated in a partial totality, *thinks* of and *wills* an all-inclusive totality in which oppositions and multiplicity of all partial totalities are connected and merged and in terms of which alone the whole process of history becomes intelligible. Intelligible to whom? If the reviewer and his situation in a given (maybe developing) partial totality change, I do not know who can vouchsafe for the intelligibility of the said holistic totality except a totaliser who is not himself subject to the temporalising process of that totality. But that is a notion Sartre rightly rejects. Why then he holds out an unattainable hope for a 'totalitarian' historical intelligibility in which all practices, individual and group, in spite of their conflict and divergence, will be connected and merged? I only hope that this ideal of totality is not intended to be a conceptual proxy for an absent ontological Totalizer.

From this end I find myself somewhat in sympathy with the structuralist's approach to the matter, allowing every society to speak *for* its own science and without allowing *other* (e.g., the reviewer's) society to have the 'final' say in the matter. Primarily it is for the 'scientists' of PS(T1) to tell us what is their 'science' and it is our rational responsibility to try to understand it as faithfully and objectively as possible without trying to impose our theories on his, disregarding the problems and needs in response to which he had developed his views. We must hear *his* 'story' first, however mythical or bizzare it might appear to our 'contemporary' mind, working with a different conceptual framework and using an alien language, and, then, we will rationally reconstruct 'history'. I know that exact point-to-point correspondence rules between their 'story' of PS(T1) and our 'history' of CS(T3) are not available, but understanding does not totally founder on that account. Interpretation intervenes. We have also other coherent means of rationally reconstructing the 'sciences' of the past societies. We need not invoke the concept of innate idea for the purpose. The shortcomings of the so-called incommensurability thesis have been overstated by pro-Platonists and proto-Platonists. But the incommensurabilists like Feyerabend and Kuhn themselves are partly responsible for this development. We would be well-advised to remember that the criterion or standard necessary for *perfect* commensuration is *practically* just *not* available. But that is no counsel of despair. Suitably redefined 'cultural universals' or (what I propose to call) corrigible hypotheses will do. It appears somewhat puzzling that Popper, who at one stage was very critical of such notions as criterion and standard and without which a plausible defense of the commensurability or objective rationality cannot be constructed, is now strongly opposed to the even weaker forms of the incommensurability thesis. Opposed to the very idea of qualitative comparability of different cultures and their objects, Lévi-Strauss is committed to a relatively strong form of incommensurabilism. However, I look at the problem differently. Popper's notion of

situational logic, which I have explicated elsewhere, could be of immense value in this context.[19] The situationalist endorses the structuralist's basic intention to keep the ideological issues separate, as separate as possible, from the methodological ones. Though he is not opposed to diachronic study as such of macro historical phenomena, the situationalist thinks that science, whether one takes it as an institution or a set of activities or a corpus of beliefs, should be studied against its appropriate societal background. This implies, among other things, that the historian of the primitive science, for instance, cannot do justice to his job if he does not constantly bear in mind the problems and the societal facts of the concerned time and place, especially those related to his job. The very problematic character of 'problems' are societally embedded, i.e. owe their origin to some definite level and scope of culture-bound understanding. Thus in a very important sense the situationalist's approach may work as a corrective of the over-generalizing tendency of the structuralist ignoring the human peculiarities of the issue to be explained or compared with similar other issues belonging to other and spatio-temporally (or, at least, testably) unrelated social situations.

As against the situationalist the structuralist may argue that if *all* human peculiarities of a problem-situation have to be specifically attended to, then the whole model-making effort will not only be practically tedious but also theoretically unrewarding, for its scope will be very restrictive and its use as methodological means of comparative study of similar problem-situations negligible or, at best, metaphorical. As a methodological individualist, and even clearly recognizing the merits of methodological individualism, I have always felt an intellectual uneasiness in my mind over this controversial issue. If to make a past even historically intelligible one has to *narrate* all its details in a connected and *continuous* manner as demanded by such advocates of the continuous series model as Croce, Collingwood, Oakeshott, and Geyl, one is saddled with, strictly speaking, a *logically impossible* task; and if, on the contrary, to bring the endless human details to manageable proportions or usable sizes one has to resort to sub-structural clustering or statistical sampling or typifying the same, then the *specific* individuals, their intentions and *praxis* are bound to be ignored for the sake of higher-order model-making. The structuralist-existentialist controversy has some obvious theoretical and methodological parallelism with the holist-individualist one. While I do recognise the structuralist's theoretical motivation for accepting and using the Durkheim-Mauss concept of collective representation, disregarding the individuals and their *praxis*, I am afraid this craze for achieving the elegance and simplicity of structural picturing of extremely complex human situation is borne out of an orthodox positivist desire to put sociology on the high and 'respectable' pedestal of natural sciences. As we know Comte's ideal of sociology was social physics. My uneasiness with the structuralist's lack of concern with the individual human beings is not ideological: it is both substantive and methodological. One cannot ignore historical details merely for preserving the ele-

gance and the simplicity of structural models. In this connection I recall Norbert Weinner's words of balanced caution.

> in the social sciences we have to deal with short statistical runs, nor can we be sure that a considerable part of what we observe is not an artifact of our own creation.... whether our investigations in the social sciences be statistical or dynamic and they should participate in the nature of both—they can never be good to more than a very few decimal places, and, significant information which brings to compare with that which we have learned to expect in the natural sciences. We cannot afford to neglect them; neither should we build exaggerated expectations of their possibilities. There is much which we must leave, whether we like it or not, to the un-'scientific' narrative method of the professional historian.

Our dilemma, in brief, is this: 'historical continuum' is *not* available; but then its nearest conceptual approximation, continuous narrative of closely-knit series of occurrences (statistical slices), though necessary for correcting the possible abstract gaps of model-making method, is not a fool-proof strategy.

The structuralist must recognise the point that constructs of analytical reason or explanatory structures are not free from historical influence, critical or otherwise. Whatever is produced by man is also consumed in a way by man. Structural models, with whatever ingenuity these are produced, cannot defy time or history for ever and everywhere. These too are subject to what may be called the laws of social entropy, of deliberately devised criticism. Though primarily made to serve methodological purpose, structural models, in the process of serving the same, are made to confront by design some very relevant and yet intractable historical facts or ethnographic data and which bring to light the necessity of changing, correcting and improving those models. We should remember that models are not like perpetual motion machines which can (at least notionally) defy time and by statistics erase the aggregative effects of individual *praxis*, the basic dynamic of structural transformations. These words of mine, however, should not be construed as an argument for reduction of social structures into individual personality structures to account for the transformations of the former. The cut-off line drawn between macro-structures and micro-structures is, no doubt, methodologically called for; and we know from such diverse disciplines as physics, biology, linguistics, economics and psychology that structural studies may be autonomously and successfully carried out at different levels without raising (for some specific purposes) the ontological, emergent or evolutionary, relation between the levels, aggregatively or segregatively, i.e., individual component-wise. Having expressed my sympathy, admittedly limited, for the structuralist position in relation to the history of science of the past societies and reservation towards the tendency to ideologise history in the name of practico-dialectical necessity, the reason that I am qualifying my position with so many ifs and buts is this. If to maintain the purity or the autonomous character of methodology we keep

the ontological issues altogether separate, we land ourselves in serious but avoidable difficulties: we get a sort of calculus without the necessary rules of interpretation,—necessary both for its application and exactitude. Absolutely ontology-neutral methodology is hardly of any practical use. If, on the contrary, the thesis of methodological unity is unilaterally, uncritically and relentlessly pressed forward and accepted by us on the basis of an (implicitly believed-in) ontological monism, e.g., physicalism, we deny ourselves qualitatively rich pictures of the level-distinct worlds of complex phenomena.

I would like to add a word here to which one need not attach unnecessary ideological significance. That is about the nature of *needs* as experienced or understood by people of different societies at different periods, e.g., PS(T1), MS(T2) and CS(T3). Human needs are expressive of our socio-biological aspect comprising, among other things, the needs of adjustment with environment.[20] It is true that in a sense the primitive people who live in the inaccessible forest of the Andaman Islands, e.g., *Jarawas*, left to themselves, do not need any motor-boat or telescope: for, one might say, these things and their uses are unknown to them. But when they find motor-boat is a very useful and very fast water-transport, faster even than their canoes, in course of time or through the process of acculturation they may feel the need for it. The case with the 'need' for telescope is somewhat different: unless they are *shown* that it would help them to see from a distance the approaching motor-boat or other vessels of alien intruders and thus take such appropriate defensive measures as running away and hiding in the deep forests they *do not* need it. In a way needs are time-place-bound, circumscribed by and grounded in 'social structure'. At the same time, as I have said before, human 'needs' are in a sense *prospective, forward-looking, despite their being otherwise socially circumscribed or time-place-bound.* The body-mind complex of man, unlike other organisms, is simultaneously tied up with the needs of *an* environment *and* also capable of being conscious of or at least capable of vaguely anticipating similar needs in other or future possible environments or worlds. These biologically inset needs of man may (but should not necessarily) be given an *ideological-historical interpretation.* Would it not sound very odd if, for instance, Radcliffe-Brown tells us about the *Jarawas* (say, in the year 1922) that 'they need a motor-boat but unfortunately they do not know what they are meant for.' Similarly, how correct would it be for a Radcliffe-Brown to tell a *Jarawa* that 'motor-boat' is a 'canoe fitted with motor engine?' Externally speaking, 'motor-boat' and 'canoe fitted with motor engine' are certainly similar objects, i.e., water transports: but are they semantically or, to be more precise, sociolinguistically equivalent signs? Translation of words designating cultural objects raise so many difficult and interesting problems.

Before I conclude I would just like to reiterate my view about the nature of human being which I have argued elsewhere[21] at length and which appears to me very relevant to the issues under discussion: viz., man by his very nature wants to be fair both to his own experiences, influenced primarily by his own

time and place and, at the same time, to others' experiences influenced primarily by the concerned people's times and places. Historical past, however, is dialectically retained in man's memory, marked partly by its diaphanousness and partly by its opacity, depending on his interest, attention, frequency of remembrance etc. This dialectic of histority and futurity is contemporaneously operative within him. Complementary to it is the point that the concept of authenticity defined in terms of being fair to one's own *and* others' experience is as central to the problem under discussion as the concept of truth itself.

Notes and References

1. Materials used in this paper were presented at Friday Seminar, Calcutta, and as Premnath Memorial Lectures at Punjab University, Chandigarh. I am grateful to those who criticized and commented on the paper. Special thanks are due to Arthur Danto, Columbia, who read an early draft of this paper and Erwin Hiebert, Harvard, who discussed with me some of the issues raised here.
2. Jean-Paul Sartre, *Critique of Dialectical Reason*, translated by Alan Sheridan-Smith and edited by Jonathan Ree, London, New Left Books, 1976, pp. 817-18. For the purpose of exposition and interpretation of Sartre's thought I have relied, in this paper, almost exclusively on the *Critique*. The other well-known works of Sartre which I have occasionally consulted in this connection are: *Being and Nothingness*, translated by Hazel E. Barnes and introduced by Mary Warnock, Methuen & Co., London, 1974; *Search for a Method*, translated and introduced by Hazel E. Barnes, New York, Vintage Books, 1968; and *The Psychology of Imagination*, introduced by Mary Warnock, London, Methuen & Co., 1972.
3. Claude Lévi-Strauss, *The Savage Mind*, Weidenfeld & Nicolson, London, 1974, p. 249. For the purpose of exposition and interpretation of Lévi-Strauss's thought I have relied, in this paper, mainly on *The Savage Mind* and occasionally on *Structural Anthropology*, translated by Claire Jacobson and Brooke Grundfest Schoepf, Allen Lane The Penguin Press, London, 1969 and *Structural Anthropology* 2, translated by Monique Layton, Middlesex, Penguin Books, 1978.
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6. R. Jakobson and M. Halle, *Fundamentals of Language*, The Hague, Mouton, 1956.
7. John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behaviour*, New York, John Wiley & Sons, 1964.
8. D.P. Chattopadhyaya, *Individuals and Societies: A Methodological Inquiry*, 2nd edn, Calcutta, Scientific Book Agency, 1975, pp. 12-17, 29-35; see also pp. 184-8 on the structure of kinship.
9. Cf. Gerard Radnitzky and Gunnar Anderson (eds.), *The Structure and Development of Science*, Dordrecht & Boston, D. Reidel, 1979; Paul Feyerabend, *Science in a Free Society*, London, Verso/New Left Books, 1978.
10. Hans-Georg Gadamer, *Truth and Method*, New York, Crossroad, 1982, pp. 235-74.
11. See, for example, Emile Durkheim, *The Elementary Forms of the Religious Life*, translated by J.W. Swain and introduced by Robert Nisbet, London, George Allen & Unwin, 1976, pp. 370ff., 377ff., and Emile Durkheim and Marcel Mauss, *Primitive Classification*, translated and introduced by Rodney Needham, London, Ghen & West, 1970.

12. D.P. Chattopadhyaya, *Environment Evolution and Values*, New Delhi, South Asian Publishers, 1982, pp. 108-22.
13. Claude Lévi-Strauss, *The Savage Mind* (1974), p. 256.
14. W.H. Walsh, *Philosophy of History*, New York, Harper & Row, 1960, pp. 59-64.
15. See, for example, in Imre Lakatos (ed.), *Inductive Logic*, Amsterdam, North-Holland Publishing Co., 1968. J. Hintikka's 'Induction by Enumeration and Induction by Elimination', pp. 191-216, and R. Carnap's response, pp. 218-20.
16. See, in this connection, H. Stuart Hughes's paper, 'Structure and Society' in *Claude Lévi-Strauss: The Anthropologist as Hero*, edited by E. Nelson and Tanya Hayes, Camb., Mass., MIT Press, 1970, pp. 22-46. The main complaint of Hughes, himself a professional historian with considerable philosophical competence to his credit, is quite like that of Sartre: viz., Lévi-Strauss is basically anti-historical, opposed to the ideal of progress as ordinarily understood, and a Rousseauite naturalist.
17. Ibid., pp. 7-8.
18. John Plamanetz, *Karl Marx's Philosophy of Man*, Clarendon Press, Oxford, 1975, pp. 219-26. See also Karl Marx, *Grundisse*, translated by D. Mclellan, London Macmillan, 1971, pp. 120-21 and 134-35.
19. D.P. Chattopadhyaya, (8) supra, Ch. 4.
20. (12) supra, Part II.
21. *Individuals and Worlds: Essays in Anthropological Rationalism*, New Delhi, Oxford University Press, 1976, ch. 9.

Notes and discussions

PROFESSOR DAYA KRISHNA ON THE UPANISHADS: A DISCUSSION

The *Upanishads* are the most popular of the sacred texts of India and their authority and infallibility have generally been accepted without question. They are held to form integral parts of the *Vedas* and have been the source of one of the most dominant orthodox systems of Indian philosophy. The tradition regarding these *Upanishads* which has largely been accepted uncritically, however, is not free from inconsistencies and incongruities. Professor Daya Krishna in his very informative paper has raised some fundamental issues directly related to the status of the *Upanishads* and their authority in the context of the Indian tradition.

At the outset what strikes one as intriguing is the fact that the very status of even some of the *Vedas*, whose integral parts the *Upanishads* are believed to be, is debated. For the *Atharva Veda* is generally not regarded as equal to those of the other *Vedas* and even in respect of the other three there is an order of priority. Further, there is a dispute as to whether or not the *Brāhmaṇas* and the *Āraṇyakas*, besides the *Upanishads*, are to be regarded as integral parts of the *Vedas*. Unlike the *Upanishads*, however, the *Brāhmaṇas* and the *Āraṇyakas* 'reached a finality within the Vedic corpus' much earliar in the tradition so that 'nothing more could be added to them'. Not so with the *Upanishads* which, because of their appeal to both the initiated and the uninitiated, were continued to be written (as late as the first half of the sixteenth century) which is evident from their style of writing. Religious or philosophical tracts were christened as *Upanishads* by their authors in order to ensure their popularity and acceptability. To provide a dubious continuity with the Vedic tradition, these later writings were ascribed to the *Atharva Veda*. In the process the 'original' *Upanishads* received numerous conflicting interpretations even as new *Upanishads* were being written.

In his critical analysis, Professor Daya Krishna has also drawn attention to the fact that scholars generally distinguish between the 'major' and the 'minor' *Upanishads*. Such distinction is itself incongruous if all the *Upanishads* are to be accepted as part of the *Śruti*. Further, the basis on which such distinction has been made is not clear. The composition of the 'sectarian' *Upanishads* and the *Allohpanishad* (the latter at the instance of Emperor Akbar) bears witness to the fact that 'no one thought of the *Upanishads* in the same way as they thought of the Vedas' and the former were not treated *at par* with the Vedic *Saṁhitās*, *Brāhmaṇas* and *Āraṇyakas*.

The exact number of the 'principal' *Upanishads* lies buried deep in contro-

versy and some claim that there were as many as 112 of these. Despite this, eleven *Upanishads* have generally enjoyed the reputation of having originally formed part of the *Vedas* 'from almost the very beginning of the tradition'. It is not known why these particular books were accepted as such. Many of these 'principal' *Upanishads* are largely selections from earlier texts. It is also not understood why such a selection was made or who made the selection or why nobody thought of an alternative selection.

Again, the *Upanishads* are generally considered to be the last part of the *Vedas*. But Professor Daya Krishna has established that this is definitely not always the case. Citing numerous instances, he has shown that some of them are embedded in the *Saṁhitās* (e.g., *Īśopanishad* is the fortieth chapter of the *Vājasaneyī Saṁhitā*), some in the *Brāhmaṇas* (e.g., *Kaṭhopanishad* is a part of the *Taittirīya Brāhmaṇa*) and some are in the *Āraṇyakas* (e.g., *Aitareya Upanishads* are parts of the *Aitareya Āraṇyaka*). The term '*Upanishad*' has also been used in profane context to signify 'secret instructions'. Such divergent connotations of the term '*Upanishad*' lead one to think that the criteria for what was considered to be an *Upanishad* were not fixed and sacrosanct.

In deciding which of the *Upanishads* are important and antecedent to the Buddhist movement at the least, it is a general practice to take a clue from the commentator Śaṁkara who has commented only on eleven 'principal' *Upanishads*, although he has cited extracts from some more. But, some of the commentaries attributed to Śaṁkara may be safely dismissed on textual, stylistic and linguistic evidence as not being his. Following Karl Potter, Professor Daya Krishna suggests that only those of the commentaries on *Bṛhadāraṇyaka*, *Taittirīya*, *Aitareya*, *Chāndogya*, *Muṇḍaka* and *Praśna* pass the crucial test of Paul Hacker's authenticity criteria with application by Sengaku Mayeda. But Potter thinks that Hacker's criteria are not fool-proof either and one may be sure about Śaṁkara's authorship of the commentaries only on the *Bṛhadāraṇyaka* and the *Taittirīya Upanishads*.

Attempts have been made to determine the authenticity of the *Upanishads* by the application of the content criterion in that they are generally taken to be concerned with the *Ātman* or the *Brahman* as the ultimate reality. But application of this criterion would rule out large portions of the *Bṛhadāraṇyaka* and the *Chāndogya*, which resemble the *Brāhmaṇas* and the *Āraṇyakas*. Thus, determination of the exact number of 'principal' or authentic *Upanishads* becomes almost an insoluable puzzle. But the question may be raised from a more basic level as to whether any *Upanishad* or *Āraṇyaka* could be considered as an integral part of the *Vedas*. Some have raised this question even in respect of *Brāhmaṇas*. Whether the *Upanishads* form part of the *Vedas* constitute the apple of discord between the *Vedāntins* who emphasize the *Jñānapakṣa* of the *Vedas* and the *Pūrva Mīmāṁsakas* who opt for the *Karma Pakṣa*.

If raising questions about the nature and the number of the *Upanishads* is not considered sacrilegious then, as Professor Daya Krishna rightly maintains, these are sure to come to the forefront of any systematic and analytical study of these sacred texts and if the accidental arbitrariness of the traditional selection of the *Upanishads* is accepted, then the way is open for a new selection based on different criteria which are also philosophically relevant from a contemporary point of view. If it is held that all the *Upanishads*, especially those belonging to the *Atharva Veda*, are not selections from pre-existent texts but are independently composed at a later date, then they loose their authoritative character. Moreover, it is difficult to link up the *Upanishads* said to form part of the *Atharva Veda* with any *Saṁhitā*, *Brāhmaṇa* or *Āraṇyaka*. This is probably due to the fact that most of the *Śākhās* of the *Atharva Veda* have become extinct. Some scholars hold that the *Atharva Veda* itself is of doubtful authenticity, so are its *Upanishads* excepting the *Praśna*, the *Muṇḍaka* and the *Māṇḍukya*, the venerability of which has been traditionally accepted for some other reasons. For instance, the contents of the *Praśnopanishad* is the same as that of *Śatapatha Brāhmaṇa* of the *Yajur Veda*. *Māṇḍukya* bears the name of a school of the *Ṛk Veda* and has been commented upon by *Gauḍapāda*.

All scholars, however, would not agree with some of the author's contentions. It is well known that the *Muktikopanishad*, ascribed to the *Yajur Veda*, mentions a list of 108 *Upanishads* which contain a widely divergent view regarding the nature of reality ranging from non-dualism to pluralism. The scholars belonging to the *Aupanishadic* traditions still living in South India may provide a clue for determining their authenticity. Some orthodox scholars hold that even the *Upanishads* which eulogize some sectarian deity are contemporaneous with the 'principal' *Upanishads* and the former only received a coat of new matter at places at a later date.

As regards the selection of the 'major' *Upanishads*, it may be pointed out that *Śaṁkara* commented only on those *Upanishads*, which supported his non-dualistic philosophy. *Rāmānuja* on the other hand has quoted from ten *Upanishads* but his selection does not coincide with the list of the eleven Upanishads commented upon by Śaṁkara. It is, therefore, evident that different sects of religion and different schools of philosophy regarded different *Upanishads* as 'principal'—those that suited their purpose. But none belonging to the orthodox tradition include *Allohpanishad* as Vedic and hence as authentic.

As regards Professor Daya Krishna's views about the doubtful authenticity of the *Atharva Veda*, we must concede that this book is not that important in the sacrificial context. It contains *inter alia* different type of rituals like spells and incantations widely used in witchcraft and magic. A.A. McDonell in his *History of Sanskrit Literature* points out that the *Atharva Veda* 'is not only entirely different from the *Rig Veda* but represents a much more primitive stage of thought.... These two, thus complementary to each other in contents, are obviously the most important of the four *Vedas*'.

Professor Daya Krishna seems to favour the view of those who dismiss

the authority of the *Atharva Veda* on the basis that the *Vedas* have sometimes been referred to as *Trayī*. But it has been established that this nomenclature was not introduced to exclude the fourth *Veda* but is relevant for the classification of the *Mantras* relating to the sacrifices. In fact, *Ṛk* is a metre and the whole of the *Ṛk Veda* is composed in metrical verses. The *Sāma Veda* contains verses which are based on the *mantras* of the *Ṛk Veda* itself and are meant for chanting during sacrifices. The *Yajur Veda* on the other hand contains *mantras* most of which are in prose. Since both the *Kṛṣṇa Yajur Veda* and the *Śukla Yajur Veda* are written in prose they are both said to constitute the *Yajur Veda* though there is not much contentual correspondence between the two. Moreover, it has been specifically mentioned that the *Atharva Veda* is the fourth *Veda* in the *Chāndogya* (3/4/1-2) and the *Bṛhadāraṇyaka* (2/4/10, 4/1/2, 4/5/11, etc.), the authority of both of which are almost universally accepted.

The aforesaid problems mainly stem from the fact that unlike the sacred text of certain other religions, the Hindu scriptures were handed down from generation to generation orally over a considerable period before they finally came to be set in writing some thousands of years ago. It has, therefore, become difficult to sift the grain from the chaff or make an unquestionable objective selection from the extant texts. Use of scientific methods to determine the authenticity of the various texts based on their textual, etymological, stylistic and linguistic characteristics may not be infallible. Such studies even of relatively modern texts like the works of Shakespeare and Lewis Carroll have yielded largely unaccepted solutions.

Although no simple way out of the dilemma is apparent at this stage, Professor Daya Krishna's illuminating investigation will definitely lead to a serious and critical examination and a rethinking of what has been traditionally accepted without question.

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Book reviews

HAN BONARIUS, RAY HOLLAND and SEYMOUR ROSENBERG (eds.), *Personal Construct Psychology: Recent Advances in Theory and Practice*, Macmillan Publishers Ltd, London and Basingstoke, 1981, 286pp (Hard cover), price not stated.

This book is a compilation of papers presented at the third international seminar on 'Personal Construct Psychology' held at Breukelen, Holland, in the summer of 1979. The contents are arranged into four groups, each group being introduced by an invited keynote paper. The groups are respectively concerned with *metatheory*, *theory*, *methodology* and *applications*. In addition, there are nineteen full-length papers which were also presented at the week-long seminar. 'Personal Construct Psychology' is a recently coined label with a background of about thirty years of research history. The entire area of research can be traced to George Kelly's seminal work, *The Psychology of Personal Constructs* (1955). Each essay in this collection is addressed to a unique aspect of *Personal Construct Psychology* (P.C.P.) and, therefore, the anthology serves the purpose of an encyclopaedia of P.C.P. with a detailed bibliography at the end of each article. One may even label the anthology as an inventory of work being done in this rapidly developing area, an area which is still comparatively unnoticed. A reader from the background of philosophy cannot fail to see the fertile areas for possible dialogue with the P.C.P. researcher. An imaginative philosopher may even create his/her own 'spin-offs' as a result of this dialogue. Areas with such special potential are psycholinguistics, philosophical anthropology and the philosophy of science.

About one-third of the book is filled with charts, diagrams and technical details relevant for the practical psychologist. Though these portions may look forbidding to the philosopher, one can by-pass these portions and read on till the end, an exercise surely to be rewarded by the articles in the concluding section on women's liberation and the experience of death.

What will clearly emerge out of a careful reading of the various articles is a clear schema of Kelly's philosophy of psychology *vis-à-vis* P.C.P. The approach of P.C.P. to data-collection, data-processing and therapy is different from that of psychoanalysis and Roger's method (see this volume p. 204). The difference may very briefly be put in the following manner: a psychoanalyst will operate in accordance with certain rules which will generate a characteristic type of situation and relationship between patient and analyst, in which, e.g., the development of TRANSFERENCE is a key-feature and the therapy of Carl Roger's gives minimal importance to transference, because,

for him, it is the development of spontaneity in the verbal expression of feeling becomes important. P.C.P. discards transference, it emphasizes co-operation between the therapist and his client. It holds that we all work within constructs. Thus the absolute spontaneity of Roger's method is discarded. The underdeveloped and/or less adjusted individuals generally work with undifferentiated (monolithic) constructs. Constructs may be verbal or pre-verbal. 'Kelly devoted considerable theoretical attention to "non-verbal", "non-language" and "pre-verbal" aspects of construct systems.' (p. 105). 'Emphasising the central role of such inarticulate constructions in our total functioning need not imply a distrust of our ability to order our experience linguistically; rather it defines more broadly our symbolic capacities beyond that of the formal language system we indwell.' (p. 112). Though the P.C.P. theorist feels that every individual has his/her own individual way of looking at the world, because it is uniquely experienced, yet truly developed individuals are interdependent and there is a natural progression of education towards this direction. For this interdependence a better understanding of oneself and others is needed. The therapist and client must both be self-critical through a *reflexive* analysis and be prepared to consider new constructs as well as reconstruct the already existing constructs. However, '... one is never "obligated to disconfirm one explanation before he dares entertain seriously the possibilities of any other." This applies to all levels—from individual construct systems, through radically different stances within psychology...' (p. 40). It is important to remember that when two individuals are interdependent this does not imply commonalty of purpose or identity of constructs (p. 253).

P.C.P. theory seeks to make room for dynamism within constructs without adopting Skinnerian behaviourism where the individual is seen in a *tabula rasa* model nor does P.C.P. adopt the Rousseau/Chomsky/Piaget position where the individual is seen as possessing an essence (seed/innate model). Man builds his constructs at a pre-verbal level and is able to continue this constructing. P.C.P. asserts that a person does not have just one self but many (p. 73). The P.C.P. researcher looks for, 'what Man can do that he has never done before, rather than conclusive explanations of what Man has been doing all this time.' (p. 40).

These, in brief, are some of the basic tenets of P.C.P. as represented through the articles in this collection. Perhaps a closer look at Kelly's work will give a better idea of what P.C.P. is all about or it may even turn out, as Epting puts it, that 'After taking this brief look at the description of personal construct psychotherapy and after reviewing a sample of the research literature, it is not difficult to see that more effort has been expended in elaborating the existing theory into new minitherapies or subsystem therapies than has been expended in investigating central characteristics of the main theory of therapy.' (p. 204).

So far, a misimpression may have been created that P.C.P. is a phenomenological approach to individual constructs without any rigorous standardization or scientific method. P.C.P. strongly depends on two standardized methods namely the 'rep grid method' and 'fixed role therapy' (both of these are explained in details in this anthology). The uniqueness of the standards are their engineering as a safeguard against the extremes of methodological over-determination and methodological non-determination. This aim of P.C.P. is fully endorsed through the following quotation: 'The aim of science is conventionally stated to be prediction and control. The aim of psychology of personal constructs, put at its most pious, is liberation through understanding. A construct theorist sees prediction not as an aim, but as a means of putting our understanding to the text. Control, in any complete sense, is not an aim but a dangerous myth.' (p. 5).

To end with, a few words on the printing of the book. The print is designed in a typeset reproduction which is jarring to the unaccustomed eye. One is given the feeling of a cautious proofreader rather than a relaxed reader. This feeling is further aggravated by the number of printing mistakes. After sometime one starts looking for words that may have been dropped or inserted specially at the end of the printed line. The good old uniform margin on all four sides of the page seems to have many visual and functional advantages over this trendy typeset reproduction.

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JOHN A TABER: *Transformative Philosophy: A Study of Sankara, Fichte and Heidegger*, University of Hawaii Press, Honolulu, 1983, 191 pp, $ 20.

The author while referring to P.F. Strawson's book *Individuals* and the distinction made in it between 'descriptive metaphysics' and revisionary metaphysics has introduced a new type of metaphysics/philosophy which he calls 'transformative philosophy'. In discussing the 'logic' of transformative philosophy, he maintains that transformative philosophy is different from both descriptive and prescriptive metaphysics. He thinks that the assertions of transformative philosophy cannot be descriptions as the possibility of misdescription is precluded in transformative philosophy. On the other hand, the

main theses of transformative philosophy are not prescriptions either (p. 98). He thinks that none of the philosophers chosen by him—Śaṅkara, Fichte and Heidegger—qua transformative philosophers, intends to represent the world as it should be or as one hopes it would be. 'They do not attempt to depict the world wishfully as something it actually is not. Rather, they represent matters of fact' (p. 98). For lack of a better term, he thinks that in the case of Śaṅkara, the word 'definition' can be used in the sense of a definition that originally delineates an object. 'They are definitions for the one for whom they are intended, because he does not know their object to exist until it is defined for him. They are properly definitions, not descriptions, for the one who propounds them, because they merely indicate an object (as Śaṅkara himself says) without providing any detail beyond what is necessary for it to be identified.' (p. 98). He thinks that transformative philosophy shows us new things with language. Transformative philosophers teach us language for areas of experience that our parents neglected to teach us about when we were young.

The language which the transformative philosopher uses may be a language he devised himself or it may be handed down to him through a tradition. The philosopher's thinking within an established tradition is primarily communicated in transmitting knowledge from one generation to the next. The transformative philosopher does not simply indicate that experience potentially exists beyond what is known in daily life but also asserts that there are other modes of experience—completely different from sensory consciousness. In short, it may be maintained that 'transformative philosophy does not represent a view of reality but a view which *transforms* reality' (p. 98). The author has selected three philosophers whom he has attempted to show as transformative philosophers in the way he has explained the expression.

So far as Śaṅkara's philosophy is concerned, the author maintains that Śaṅkara's philosophy is definitely transformative. Basing on the present structure of experience/consciousness, Śaṅkara tries in his philosophy to reach a higher stage of consciousness. The author has carefully studied the relevant texts and has made relevant references in delineating Śaṅkara's methodology for this transformation. He has taken Śaṅkara, to my mind rightly, as a jñānamārgī and has tried to show the pre-requisites of Śaṅkara for the spiritual practice. The pre-requisites, as we know, are three, i.e., *nityānityavastuviveka, ihamutrarthabhogavirāga* and *mumukṣutvam.*

I may also mention in this connection the stages suggested by Śaṅkara for ultimate self-realization. They are: *śravaṇa, manana* and *nididhyāsana.* These stages mean that the person aspiring for liberation first listens to the tattva or the final truth (*śravaṇa*) and then starts thinking on it with a view to removing all doubts, unclearness and confusion about the tattva (manana) and finally enters into deep meditation on the truth (which has been spoken to him) for becoming the truth itself and not for merely knowing it (nididhyāsana).

In discussing Śaṅkara's theory of consciousness, the author raises a number of objections. He thinks that Śaṅkara's theory of consciousness is not

easily intelligible. He also thinks that this theory of consciousness in its usual meaning is not only unintelligible but it is also inadequate (p. 37). He finally goes on to say that Śaṅkara's idea of consciousness appears to be completely absurd (p. 40) and is self-contradictory (p. 41). He has quoted a number of authorities like Deussen, Hacker, etc. In analysing the notion of consciousness he has referred to G.E. Moore, John Wisdom, Gilbert Ryle, etc. I would like to join the issue with the author precisely here.

The analysis of consciousness as is given by the philosophers, referred to by the author, is not the only way of analysing the concept. Here one can see the distinctive framework of the Western model of analysis and that of India. The author refers to Rāmānuja in this context which is not of much help. It is true that Rāmānuja's consciousness is not devoid of all distinctions. It has *svagatbheda* but this does not necessarily mean that the concept of consciousness as pure consciousness is totally unintelligible and absurd. One may try to understand Descartes' way of explaining consciousness. Descartes certainly abstracted from the object of consciousness. It was one way of abstraction. In that mood of abstraction, one can also abstract consciousness from the subject. If consciousness is possible without object, there is no impelling argument to maintain that it must have a subject. We can easily think of consciousness being abstracted both from the subject and the object. What I intend to bring to light is that the concept of consciousness itself is very complex and there is no one way of analysing it. The best example is Śaṅkara's own philosophy. One can identify in its philosophy consciousness in three levels—in the level of jīva, in the level of Sākṣī and finally in the level of brahma. It is incorrect to talk of levels; rather we should speak of consciousness as in jīva, as in Sākṣī and foundational consciousness—adhiṣṭhāna—which is fully transcendent. As for consciousness in jīva, we may refer to two theories—(a) *pratibimbavāda* and (b) *avachhedakavāda.* The theory (a) implies that consciousness is *reflected* in the jīva while (b) maintains that it is somehow *restricted* in the context of jīva. The jīva is kartā, jñātā and bhoktā of objects. It comes from vṛtti of Antahkaraṇa while in the case of illusion, it is the *vṛtti of avidyā.* Thus we see that in jīva we can find consciousness either through reflection or through restriction. The second concept of consciousness, as it is found in Śaṅkara's philosophy, is that of *sākṣīcaitanya* which is awareness without vṛtti. *Sarvam sadā sākṣīvhāsyam*—that everything is in the awareness of sākṣī. Finally, we come to the notion of foundational consciousness or *adhiṣṭhāna* which is the locus (*albeit* unreal) that props up the manifestations of all phenomena or world of appearance. It is fully transcendent.

The fact I want to lay stress upon is that there is no transformation of consciousness in Śaṅkara's philosophy. We do not really go from one level of consciousness to another level of consciousnes and as such Śaṅkara's philosophy cannot and should not be regarded as transformative philosophy in the author's sense. Within the framework of Śaṅkara's philosophy consciousness, in whatever sense we may take it, as reflected or restricted in jīva or conscious-

ness as in sākṣī or consciousness as brahma—there is no question of transformation anywhere. If there is any transformation, it is applicable in the case of jīva and that also to the antaḥkaraṇa of the jīva and not of its consciousness. Transformation or transformative philosophy ends with manana; in the level of nididhyāsana there is no question of transformation and that level is not the level of philosophy, it involves transcendence of philosophy in the ordinary sense. Philosophical deliberations end with manana. So all these will lead to the conclusion that as there is no question of transformation of consciousness in Śaṅkara's philosophy, it is wrong to describe this philosophy as a transformative philosophy.

The term may, however, be applied both to the philosophy of Fichte and Heidegger. Fichte's notion of consciousness is certainly intentional and he speaks of two levels of humanity—two levels of consciousness and freedom. In one level, there is full consciousness and so full freedom and absolute inpendence while in the other, there is not. Philosophy attempts to take man from one level of consciousness to the other. In Heidegger's philosophy also, we can legitimately talk of real transformation of consciousness, while this is not possible in the philosophy of Śaṅkara. So I think, the author's understanding of Śaṅkara's philosophy is inadequate and his description of Śaṅkara's philosophy as transformative philosophy in the same sense in which it is of Fichte and Heidegger is misconceived.

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JANAKI VALLABHA BHATTACHARYA: *Jayanta Bhaṭṭa's Nyāya-Mañjarī* (The Compendium of Indian Speculative Logic), Vol. I, Motilal Banarsidass, Delhi, 1978, xxxiii+917pp., Rs. 150

The book under review is a reprint of an English translation of the first six Āhnikas of *Nyāya-mañjarī* that appeared serially in *Calcutta Review* during 1930s. At that time, Dr Bhattacharya earned the gratitude of students of Indian Philosophy by making this abstruse text accessible to them, and the publishers deserve our thanks for making it available to us in the form of a book. An Introduction and a detailed table of contents has enhanced the value of this volume.

In *Nyāya-Mañjarī*, Jayanta Bhaṭṭa (nineth century A.D.) of Kashmir has commented on selected *Nyāya-sūtras* that define the sixteen *padārthas* and their subdivisions admitted in the Nyāya School. In the sequel, Jayanta Bhaṭṭa has discussed a large number of problems pertaining to epistemology, metaphysics, theology, semantics and the art of dispute. His treatment of

these problems is exhaustive and scholarly and, on a number of occasions, he has put forward some novel theories that deserve serious consideration. He has also tried to refute the views upheld by the Buddhists and the Mīmāṁsakas, and the tone of his work is often polemical. The style adopted by him is ornate and witty, and it is enlivened by proper use of idioms and figures of speech. He is equally at home in prose and versification, and the literary quality of his work makes it highly readable. But the features that make this book so attractive may also make the task of a translator rather difficult. Dr Bhattacharya is aware of some shortcomings in the present translation, and he has promised to take care of them when the second volume of this work is published. We look forward to the proposed second volume and venture to offer some suggestions and criticisms with the hope that they will be considered by Dr Bhattacharya. We know that it is easier to criticize a work than to accomplish it, and our criticisms do not detract from the value of the translation.

(1) In the Introduction, which is otherwise informative and interesting, Dr Bhattacharya has not taken any note of some works that have been discovered and printed in recent times. These are: (a) *Āgamaḍambara*, a drama written by Jayanta Bhaṭṭa, (Darbhanga, 1964), (b) *Nyāyamañjarīgranthibhaṅga* of Cakradhara (Baroda, 1972), which is a commentary on *Nyāya-mañjarī*, and (c) *Vivaraṇapañjikā* of Aniruddha (Darbhanga, 1969), which explains some knotty points in *Nyāya-bhāṣya*, *Nyāya-vārttika* and *Tātparyaṭīkā*. In the Introduction, Dr Bhattacharya has devoted a few pages for determining the date of Jayanta, his relationship to King Śaṅkaravarman of Kashmir, and the relative chronology of Jayanta Bhaṭṭa and Vācaspati Miśra I. He argues at great length to show that Jayanta was imprisoned by King Śaṅkaravarman for opposing royal policies. He maintains that Vācaspati Miśra I was a senior contemporary of Jayanta Bhaṭṭa. He further maintains that Jayanta Bhaṭṭa 'did not know much of his senior contemporary philosophers of distant lands.' Jayanta explicitly states in his *Āgamaḍambara* that he served as a minister to King Śaṅkaravarman, and that he wielded considerable influence in the royal court. This settles the date of Jayanta Bhaṭṭa beyond any doubt, and at the same time, makes us wonder whether Jayanta Bhaṭṭa was really imprisoned by King Śaṅkaravarman. Dr Bhattacharya bases his theory on a verse in *Nyāya-mañjarī* which runs as

> 'rajñā tu gahvare'sminnaśabdake bandhane vinihito'ham |
> grantha-racanā-vinodādiha hi mayā vatsarā gamitāḥ ||
> (p. 363, C.S.S. edn.)

The *Nyāyamañjarīgranthibhaṅga* of Cakradhara, while explaining this verse, states that under a royal command, Jayanta Bhaṭṭa had to spend a long time in the Khasa province. From the history of Kashmir we know that the Khasa province was of strategic importance, and it may be possible that Śaṅkaravarman, who had started a number of wars with his neighbours, entrusted

the administration of this desolate place to Jayanta, one of his trusted ministers.

While discussing the relative chronology of Jayanta Bhaṭṭa and Vācaspati Miśra I, Dr Bhattacharya has quoted a verse from *Vidhi-Viveka* of Vācaspati Miśra I, which runs as follows:

> 'ajñāna-timira-śamanīṃ paradamanīṁ nyāyamañjarīṁ rucirām |
> prasavitre prabhavitre vidyā-tarave namo gurave ||

Some scholars have maintained that the *Nyāya-mañjarī* mentioned in this verse is the work of Jayanta Bhaṭṭa. Dr Bhattacharya has rejected this view, and maintained instead that this is a *Mīmāṁsā* work of Trilocana, the teacher of Vācaspati Miśra I. He also comments that 'the term "Nyāya" is very popular in the Mīmāṁsā literature. Nyāyamañjarī signifies that it explains all the Nyāyas given in the Mīmāṁsā-sūtra' (p. xxvii), the *Vivaraṇapañjikā* of Aniruddha, however, identifies *Nyāya-mañjarī* as a Nyāya work of Trilocana, and this is put beyond all doubts by some quotations from this work in *Jñānaśrīmitranibandhāvalī* (Patna, 1957).

We may also wonder whether Jayanta was really unaware of the works by his senior contemporaries. The *Nyāyamañjarīgranthibhaṅga* points out a number of occasions where Jayanta has criticized the views of Jitāri and Akalaṅka without identifying them. Moreover, the relative chronology of Jayanta and Vācaspati Miśra I is difficult to decide, because Udayana maintains that while commenting on *Nyāya-vārttika* 1.1.6, Vācaspati Miśra I has rejected the view of Jayanta, the old Naiyāyika (jarannaiyāyika-Jayantādināṁ matam).

(2) While the Introduction deals at length with the lineage, personality and scholarly attainments of Jayanta Bhaṭṭa, it does not draw our attention to some novel theories put forward by him. As examples, we may only mention here Sāmagrīkaraṇatāvāda and Sarvāgamaprāmāṇyavāda.

(3) The Introduction does not give any bibliographical details of the edition(s) of *Nyāya-mañjarī* utilized by Dr Bhattacharya. Till date, there have been two complete editions of *Nyāya-mañjarī*: the Vizianagram Sanskrit Series edition (1895) by Mm Gaṅgādhara Śāstrī, and the Chowkhamba Sanskrit Series edition (1936, reprint 1971) by Pandit Sūryanārāyaṇa Śukla. Both these editions contain numerous misprints, and the text seems to be corrupt at certain places. The edition(s) utilized by Dr Bhattacharya should have been mentioned, and the emendations made by him should have been pointed out. The corresponding pagination of the edition(s) should also have been given in the margins, as this would have helped the readers in comparing any original passage with its translation. All these would have added considerably to the value of the present work.

(4) We have already stated that parts of *Nyāya-mañjarī* are in verse. Jayanta has also quoted many verses in course of defending his own view or criticizing his opponents. It would be nice if such portions were marked off

in a uniform manner, so that the reader could understand that they were originally written in verse, Dr Bhattacharya has numbered the opening verses of *Nyāya-mañjarī*, but thereafter, the portions written in prose and those written in verse are mingled together. One way of marking off the portions in verse is to print them in indented passages, and this could have easily been done by Dr Bhattacharya.

(5) The translation does not trace the quotations in *Nyāya-mañjarī* to their sources. This is somewhat surprising, because part of this job was accomplished in the Chowkhamba Sanskrit Series edition, and how that *Ālambana-parīkṣā*, *Pramāṇa-vārttika*, *Hetu-bindu* and *Vāda-nyāya* are available in print, the quotations from the works of Diṅnāga and Dharmakīrti could easily have been traced to their sources.

(6) It is said that faithful translations are not attractive, and attractive translations are not faithful. This often poses a dilemma for a conscientious translator. Dr Bhattacharya has chosen to be faithful to the text, and consequently, he often gives us literal translation of some expressions. While a faithful translation is to be preferred to a fanciful one, there are occasions where a literal translation defeats the very purpose of translation. This usually happens when one gives a literal translation of idioms. This may also happen if the original language employs figures of speech that are not prevalent in the language into which it is translated. Jayanta Bhaṭṭa excels in the use of apt idioms, and he has also liberally employed figures of speech—*śabdālaṅkāras* as well as *arthālaṅkāras*. In translating such passages, one should give a free translation, or at least add explanatory notes to the literal translation. Dr Bhattacharya has not adopted such procedures in all cases. Consequently, some of the passages have become awkward and quaint, and the original charm of Jayanta's writing has been lost on the reader. There are also cases where the translation is neither literal nor elegant. We cite here a few passages as examples.

In the first Āhnika of *Nyāya-mañjarī*, we come across the following passage:

> 'ṣaḍarthāpattīḥ pratijñāya imām abhāvapūrvikām arthāpattim utkopanaiyāyikakaṭākṣapātabhītām iha gahane hariṇīm iva yadupekṣya gamyate tad atyantam atrabhavatām anāryajanocitaṁ ceṣṭitam
>
> Tvadekaśaraṇāṁ bālām
> imām utsṛjya gacchataḥ |
> Kathaṁ te tarkayiṣyanti
> mukham anyā api striyaḥ ||'

Dr Bhattacharya translates this as follows:

> 'The initial proposition of the Mīmāṁsakas is that there are six kinds of presumption. But they, cowed down with fear at the angry look of the Naiyāyikas, have taken to heels, deserting presumption based upon

non-perception like a doe in a forest, such an act, on their part, is extremely mean and unworthy of a noble man.

If you desert this young lady (in the shape of the former illustration of presumption) who absolutely depends upon you for her protection, then how will the other ladies (the other illustrations of presumption) count upon your protection with confidence?' (p. 89)

The translation is almost literal, and quite faithful except for the fact that for Jayanta, it is Arthāpatti, and not the Mīmāṁsaka, who is afraid of Naiyāyikas. But it fails to convey as to how Jayanta could adopt such expressions in his criticism. The word *arthāpatti* (i.e., presumption) is in feminine gender, and this enables Jayanta to compare it with a doe or a maiden in distress. Unless this is pointed out, a reader ignorant of Sanskrit will fail to appreciate the sarcasm of the original passage.

We now turn to another sentence in the same Āhnika. It runs as:

'Yā ceyam ekādaśānupalabdhibadhūśuddhāntamadhye viruddhavyāptopalabdhir udahṛtā nādhruvabhāvi bhūtasyapi bhāvasya vināśo hetvantarānapekṣaṇād iti, seyam idānīm eva sādhvi dūṣitā.'

Dr Bhattacharya translates it as:

'There are eleven ladies in the shape of all kinds of non-perception in the harem of a section of the Buddhist Logic. One of them is negative proposition of an object which is generated by the perception of another object that is pervaded by the contradictory negation of the object itself in question. The destruction of a positive object which is an effect is not uncertain because it does not depend upon a factor other than its condition for its destruction. The destruction of an object which is dependent upon such a factor is uncertain. The state of being is more expensive than its mark, viz., non-dependence upon some other factors. Hence the knowledge of the non-dependence of an object upon some other factors leads to the negative proposition that is not uncertain. This illustration has been subjected to partial criticism'. (p. 130)

Here, however, the translation is not quite faithful. The compact sentence of Jayanta has been split up into seven sentences, some of them being quite clumsy, and many of them cannot be traced back to the original. If they serve as explanatory comments, they should have been put within square brackets. Moreover, they are not of much help in understanding Jayanta's argument. Besides, one may also question the propriety of expressions like 'contradictory negation'. One may point out some other passages like this, but we do not want to be accused of *makṣikāvṛtti*. We only hope that Dr Bhattacharya will revise such passages when a second edition of this work is called for.

(7) Dr Bhattacharya has sometimes used expressions for translating technical terms that may not be acceptable to readers trained in the Anglo-American tradition of philosophy. He translates *pratyakṣa* as 'sense-perception' (p. 193) where 'perception' would have sufficed. He also speaks of 'true knowledge' (p. 22) whereas knowledge is by definition veridical, and the adjective 'true' is redundant. He uses the expression '...transcendental objects like virtue...' (p. 81), where he could have very well used 'imperceptible' instead of 'transcendental'. One also comes across passages dealing with '...object which is either true or false...' (p. 309), where 'real or unreal' would have served the purpose. 'Sambhava' has been translated 'probability' (p. 133), whereas 'inclusion' probably would have been less controversial.

(8) Dr Bhattacharya's identification of some of the authors referred to by Jayanta needs correction. While explaining the purpose served by the term *avyapadeśya* in *Nyāya-sūtra* 1.1.4., Jayanta has referred to the views of *Ācāryas*, *Vyākhyāṭrs* and *Prāvaras*. Dr Bhattacharya has translated these expressions as 'A great teacher of the Nyāya school' (p. 139)' 'some interpreters of *Nyāyabhāṣya*' (p. 141) and 'the band of great logicians' (p. 190) respectively. The second identification is substantially correct, but the other two (especially the second one) may be considered as misleading. The *Nyāyamañjarīgranthibhaṅga* of Cakradhara informs us that 'Ācārya' stands for the commentators of *Nyāya-vārttika*, e.g., the author of the Ruci commentary, and 'Prāvara' stands for the followers of Pravara, a commentator of *Nyāya-bhāṣya*.

There are a number of printing mistakes in the book which also need to be corrected. It is sincerely hoped that the author would take care of these in preparing the second edition.

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Obituary notes

T. M. P. MAHADEVAN

Professor T.M.P. Mahadevan (1911-1983) was born on 24 August 1911 in Madras. Mahadevan's life from the beginning was such that he was in quest after spiritual freedom by leading a simple and austere life which necessitated control of the body, the senses and the mind. As a young boy he came under the influence of Swami Rajeswarananda. As a student of Sri Ramakrishna Mission Residential High School, Dr Mahadevan had the benefit of the spiritual atmosphere provided by the *sannyāsins* of Sri Ramakrishna Math. Later he came under the influence of Ramana Maharshi and His Holiness Jagadguru Śri Chandraśekharendra Sarasvatī of Kāncī Kāmakoṭi Pīṭha. Nothing was so dear to him as the life and teachings of these two great Advaita Masters—the sage of Tiruvaṇṇāmalai and sage of Kāncī.

After securing First Class and First rank in the B.A. (Honours) in Philosophy of the University of Madras in 1933, Dr T.M.P. Mahadevan did his Ph.D. on Advaita Vedānta with special reference to Bhāratītīrtha-Vidyāraṇya in the Department of Philosophy, University of Madras in 1935 under the guidance of Professor S.S. Suryanarayana Sastri, an astute metaphysician and a first-rate Advaita scholar. He worked as a lecturer in Raja's College, Pudukkottai (1935-37) and later as Professor and Head of the P.G. Department of Philosophy, Pachaiyappa's College, Madras (1937-43). He succeeded his own teacher, Professor Suryanarayana Sastri, as Head of the Philosophy Department in the University of Madras in 1943. When the Department of Philosophy was upgraded into a Centre of Advanced Study in Philosophy in 1964, he became its first Director and continued in that capacity until his retirement in 1976.

In recognition of his scholarship and academic contributions Professor Mahadevan was awarded 'Padmabhushan' in 1967.

During 1948-49 Dr Mahadevan was a Visiting Professor at Cornell University. During his stay in the U.S.A., he participated in the Goethe Bicentennial Convocation at Aspen, Colorado and the Second East-West Philosophers' Conference in Hawaii in 1949. He participated in the Unesco Round Table Discussion held in New Delhi in 1951, and in the European Forum at Alpbach in Austria in 1962. Under the exchange programme for University Professors, he had been to West Germany in August, 1963. He

attended the International Conference on Central Asia organized by the Indian Council for Cultural Relations and the Indian National Commission for Co-operation with Unesco held in New Delhi in 1969. He was elected member of the *Institute International de Philosophie* in 1971. He was invited to participate in the meeting of the IIP held at Mashad, Iran, in September, 1975. At the invitation of Unesco he participated in the Symposium on 'Education and Development of Man' held in Paris (1970). He attended the First World Conference for Religion and Peace held at Kyoto in 1970. He went to Louvain, Belgium, twice, once for the Preparatory Committee Meeting and the second time to participate in the World Conference in 1974. He participated in the Colloquium on 'Traditional Modes of Contemplation and Action' at the Rothko Chapel, Houston, U.S.A. in July, 1973.

Dr Mahadevan was greatly attracted by the teachings of Socrates and Plato and Greece was his favourite country in Europe. At the invitation of the Royal National Foundation Dr Mahadevan attended the Second Athens Meeting in 1966 and lectured on the 'Heritage of India'.

At the suggestion of His Holiness Jagadguru Śrī Jayendra Sarasvatī, Śaṅkarācārya of the Kāncī Kāmakoṭi Pīṭha, Dr Mahadevan organized a World Hindu Conference in Madras in 1976 and a World Conference on Religion, Philosophy and Culture in Madurai in 1977.

The philosophy of Advaita is the main theme of Dr Mahadevan's lectures in academic forums and public platforms, in religious gatherings and social service groups. He spoke and wrote on Advaita with conviction and clarity. He explained the doctrines of Advaita with marvellous analytical skill. In the 'postscript' to his autobiography, *A Philosopher Looks Back* (Bharatiya Vidya Bhavan, Bombay, 1982), Dr Mahadevan says: 'Advaita, to the exposition of which I have dedicated my entire life, is not a school of philosophy, nor can it be limited by what we now-a-days call "philosophy". Advaita is a symbolic name for the principle of non-duality . . . To the understanding and exposition of this experience which is the culmination of all enquiry and research, I have offered all my attention, be it academic, human or spiritual. It is that which sustains me.'

In this life, Dr Mahadevan exemplified the Indian view that philosophy is not only theory but also practice. Not only did he preach the philosophy of Advaita but also practised it. The 'Śaṅkara Vihār' which he founded in North Madras for the purpose of propagating the message of Advaita—the non-duality of Brahman-Ātman, the non-difference between Jīva and Brahman and the non-reality of the world—is a standing monument to the greatness of Dr Mahadevan as a *sādhaka*. One has the feeling that Ādi Śaṅkara himself is visibly present when one sees the beautiful portrait of Ādi Śaṅkara—the like of which cannot be seen elsewhere—which adorns the lecture hall in the Śaṅkara Vihār. And in this Śaṅkara Vihār, Dr Mahadevan conducted classes and discourses on Advaita and the five-day Śaṅkara Jayanti celebrations for several years for the benefit of the devotees of Śaṅkara.

Professor Mahadevan authored many books which are useful for scholars and laymen. A number of them, e.g., *The Philosophy of Advaita*, *Gauḍapāda*, *Sambandha-Vārtika of Sureśvara*, *Pañcadaśī*, etc, have gone through several editions.

He was made a National Professor in 1982. Dr Mahadevan had the unique honour of being the first and so far the only Professor of the University of Madras who was invited to deliver the annual Convocation Address of the University of Madras. Professor Mahadevan died on November 5, 1983 after an illustrious and eventful career of more than seventy years.

'Human birth, longing for liberation, and association with great persons'—these three which are rare, declares Śri Śaṅkara, are vouchsafed to one through the grace of God. Professor T.M.P. Mahadevan was fortunate enough to be blessed with all these three.

R. BALASUBRAMANIAN

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K.K. BANERJEE

With the passing away of Professor Kali Krishna Banerjee (1919-1983) the professional circle of philosophy in India has become much poorer. His end, though not surprising, proved to be very tragic indeed. Afflicted with a painful terminal disease he decided, perhaps rightly, to die with dignity.

Professor Banerjee was born on 12 August 1919. He was educated at Serampore College, Hooghly, and Calcutta University, graduating with Philosophy (Honours) in 1939. He obtained his Master's Degree in Philosophy in 1942 and was placed in the first class. For a while he worked in the office of the Accountant-General of Bengal. His teaching career started as a Lecturer in Logic and Philosophy at Bangabasi College, Calutta (1945-1958). In 1951 he was appointed, concurrently, part-time lecturer in the Post-Graduate Department of Philosophy, Calcutta University, where he worked for the next seven years. He was appointed Reader at Jadavpur University in 1958. When Professor Gopinath Bhattacharya moved to Calcutta University, Banerjee succeeded him and was substantively appointed Professor at Jadavpur in 1964. Professor Banerjee was Dean of the Faculty of Arts for two consecutive terms and occasionally acted as the Vice-Chancellor of Jadavpur University.

Numerous honours have been bestowed on Professor Banerjee through the years. These include membership of several learned societies, editorship of several learned journals, and invitations to deliver many endowment lec-

tures at different universities in India. For a long period he was associated with the activities of the Indian Philosophical Congress. In 1977 Professor Banerjee was elected the General President of the Indian Philosophical Congress held at Gauhati University. In recognition of his philosophical work and academic leadership he was appointed Senior Professor of Philosophy at Jadavpur.

Professor Banerjee was a very popular and successful teacher. But essentially he was a philosopher's philosopher. His was a very imaginative and creative mind. In him one finds a rare combination of classical scholarship and thorough familiarity with the contemporary philosophical trends in the Euro-American world. Though he specialized in *Navya-Nyāya*, his approach was critical and constructive and not unnecessarily exegetical. What strikes one most is his unorthodox and insightful receptivity to new and many ideas, perhaps too many at a time. Indian Logic and Metaphysics, Logical Atomism and Positivism, Ordinary Language Analysis, Western Metaphysics, Philosophical Logic, and the Problems of Being, Non-Being, Existence, Essence, Subject and Predicate are mentioned by Banerjee himself as special fields of his study. His students and friends felt deeply impressed by the range and constructive touch of his scholarship.

Professor Banerjee's was a very interesting and unusual personality. One could not but be struck by his ready wit, endless stock of funny stories, and disarming candour. He was one of those very rare persons of distinction who could easily crack a joke at his own expense. The serious thinker in him never stifled his lovable personality. Several personal tragedies and serious ailments certainly affected the sensitive texture of his mind, but he bore all these with an unfailing smile.

Banerjee was a prolific writer. The total number of his publications adds up to 92. He produced two monographs, *Nyāya-tattva-parikramā* (1956) and *Philosophy and History of Philosophy* (1961). He also co-authored (with Professor R.P. Das) a text-book of logic in Bengali for undergraduate students which never proved very popular because of its high standard. The true quality of his scholarship is to be found mainly in his papers published in various journals which unfortunately are not easily accessible.

D.P. CHATTOPADHYAYA

KALIDAS BHATTACHARYYA

Kalidas Bhattacharyya (1911-1984), the third son of Krishnachandra Bhattacharyya, was born on 16 August 1911 in Barisal (now in Bangladesh) where his mother's father, Ganganarayan Roy, was then posted as Deputy Magistrate. Kalidas, who had a uniformly brilliant academic career, had his school eduction in Union Institution, Serampore, from where he matriculated in 1927. He joined Presidency College, Calcutta, for his I.A., but as Calcutta was in turmoil because of the non-co-operation movement his father, K.C. Bhattacharyya, got him transferred to Hooghly College where he was then the Principal. Kalidas completed his I.A. and did his B.A. (Honours) in Philosophy in Hooghly, and studied M.A. in Philosophy in Calcutta University (1933). He got married in 1935. He was a lecturer at Vidyasagar College, Calcutta at that time. After obtaining his Ph.D. and winning the Premchand Raychand Scholarship, he joined Calcutta University as a lecturer in Philosophy in 1945. In 1951 he joined the Postgraduate Research Department in the Government Sanskrit College, Calcutta, as Associate Professor of Indian Philosophy. The first book (his PRS thesis) *Object, Content and Relation* published in 1957, was really his second book based on his earlier Ph.D. thesis, *Alternative Standpoints in Philosophy* published in 1953. In 1957 Kalidas moved to Santiniketan and joined Visva-Bharati University where he worked, till his retirement in 1971, in various capacities—first as Professor and Head of the Department of Philosophy and Comparative Religion, then as the Director of the Centre of Advanced Study in Philosophy, and finally as Vice-Chancellor. After retirement from Visva-Bharati he worked for some time as Professor of Philosophy in the Ramkrishna Mission Institute of Culture, Calcutta, was associated with Banaras Hindu University for some time, and was in charge of the Philosophy Department of North Bengal University in 1976. He was the first National Fellow of the Indian Council of Philosophical Research (1983-1986) and worked in that capacity till his death (15 March 1984).

Kalidas, an illustrious son of an illustrious father, wrote forcefully, yet with a rare grace, both in English and in Bengali, has moulded, influenced and inspired generations of students all over India through his teaching, lectures and his books and innumrable papers in all areas of philosophy. He was a noble, large-hearted man, without a trace of vanity or arrogance, always eager to help younger scholars in their difficulties—academic and also non-academic. It is a matter of deep regret and sorrow that he was taken away from our midst so suddenly when he was at the peak of academic activities—he was preparing three books on three different topics—leaving a void in Indian scholarship which is not likely to be filled in the near future.*

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SIBAJIBAN BHATTACHARYYA

*The biographical details are due to Professors Gopinath Bhattacharyya and Debi Kumar Goswami.

First International Conference on

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Each paper must be accompanied by an abstract (approx. 200 words) by the author.

All line-drawings and diagrams should be done in Indian ink and should be properly numbered, e.g., Fig. 1, Fig. 2, Fig. 2 (a), etc.

The length of the article should not ordinarily exceed 10,000 words and that of a discussion-note may be restricted to 1,500 words.

Regarding the publication/non-publication of any material in the journal, the decision of the editorial board will be final and binding and this applies to invited articles too.

All contributions to the journal should be sent to the following address:

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An article will be considered for publication on the assumption that it has not been published or submitted for publication in any other journal. Each author will get 25 offprints free of charge. Extra copies may be had on payment as may be fixed. A contributor who wants to have extra offprints should send his/her request to the Executive Editor within one month of receiving the official intimation that his/her contribution has been accepted for publication in the Journal. The prescribed forms for this purpose will be sent to each contributor along with the intimation of acceptance.

In case a manuscript is sent back to the author with suggestions for necessary additions/alterations/clarifications/deletion/change of style, etc., and is not returned by the author within a stipulated date with all the suggested modifications/corrections, etc. duly made the editor will have the option either not to publish the paper at all, or to publish it after due editing in the way he deems fit. In such cases no objection raised by the author, after the paper has been published, will be entertained.

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All notes, references and bibliographies should strictly conform to the manual of style as illustrated below:

(a) All illustrations, line diagrams, graphs and charts should be submitted in duplicate. The amount of lettering on a drawing should be minimized as far as possible by transferring it to the legend. Each illustration must be numbered on the reverse side using Arabic numerals corresponding to those in the text.

(b) References to published works are to be made in the body of the paper and *not* in footnotes. The references, written in parentheses, should include the name of the author and the year of publication, e.g., (Thinès 1977); where necessary the page(s) referred to can be made part of the reference as follows: (Thinès 1977: 50-51). When a citation refers to two or more works written by an author in the same year, letters 'a', 'b', etc. are to be added, e.g. (Thinès 1977a, 1977b). The first reference to a work written by two or more authors should include all names, e.g., (Whyte, Wilson, Wilson 1969) in the subsequent citations to the same work 'et al.' should be added to the first name, e.g., (Whyte et al. 1969). If a citation at a particular point in the text alludes to separate works the latter should be put in a single pair of parentheses; works by the same author are to be put together separated by commas and are to be separated from others by semicolons, e.g., (Elsasser 1958, 1966; Eccles 1970; Centore 1966).

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Thinès, G. 1977.
Phenomenology and the science of behaviour. London: George Allen & Unwin.

Whyte, L. L., Wilson, D. 1969 (eds.)
Hierarchical structures. New York: American Elsevier Press.

Whyte, J., Krippner, S. (eds.) 1977
Future science. New York: Doubleday & Co.

Russell, E. W. *The fields of life*. In Whyte, Krippner (eds.) 1977.

(d) For Book Reviews, the title page should contain the title of the book underre view with the sub-title, if any, and the name of the publisher along with the year of publication, number of pages, price, e.g.,

George Thinès.
Phenomenology and the science of behaviour: an historical and epistemological approach. London: George Allen & Unwin, 1977, 174 pp., £ 8.95.

The name of the reviewer with his affiliation is to appear at the end of the review article.