

## SCIENCE FACING THE CRISIS OF SENSE

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I do not know precisely what you want to hear from philosophy on the eve of the plenary session. Yet, I have been invited to join your working group from this point of view. Thank you for welcoming me, a philosopher, amongst you eminent scientists. Now, philosophy might be expected

- To provide a link between science and humanism. And then, what kind of mediation?
- To take part in the heuristic debate in a different way, with the goal of introducing some variety. Then, I might ask, what sort of variety?
- And to put crucial issues into the wider context of the crisis of significance (or 'sense').

This is the first insight in my present approach. It presupposes that *there is* a genuine loss of sense. The same point is made by other thinkers: 'The extraordinary success of the systematic investigation of the universe thanks to the procedures of the positive sciences is on a par with scepticism or indifference to sense.'<sup>1</sup> 'It is as if our society had renounced, even in its educational instances, to make propositions as to what regards the order of sense'.<sup>2</sup>

It could very well be denied by many scientists that there is *any* crisis at all within the domain of science. If there is a crisis of the meaningful, or rather a crisis of sense, this phrase does not belong to scientific terminology but rather to cultural notions. The Holy Father speaks of a 'culture of death'. We are indeed witnessing the end of what marked the European

<sup>1</sup> G. Cottier, 'Médiations philosophiques dans les rapports entre la science et la foi', *Science et foi* (Desclée, 1982), p. 112 (my translation).

<sup>2</sup> J. Doré, 'La foi chrétienne dans la société d'aujourd'hui', *Une Parole pour la vie*, (Cerf, 1998), p. 197 (my translation).

landscape throughout the nineteenth century: man was to be the end of man, he had to acquire the necessary means for this aim, even at the ultimate risk of using himself for that very means. A concomitant crisis of the educational system has affected the transmission of the finalities of our society which are increasingly denied by the young. It concerns the aims and purposes required of man by man. The heart of the crisis is reached when the very notion of crisis becomes problematic.

What changes in the topography of modern rationality could account for the breaking of coaptation between faith, reason and life? This is a typical question for philosophy. As the philosopher's mediation has been requested, I will drop some hints and make some suggestions.

Granted that truth finally releases a sense of sense, yet, today, one can hardly challenge priority being given to the question of sense. It should be explicitly raised in matters of discursive strategy. As a subordinate – though no less fundamental – issue, I will formulate the question of how to define the critical thinking which can ground the space of sense. Afterwards, in a rather provocative way, I will deal with some logical consequences of critical realism for the place of science in order to facilitate the debate.

The answer will be elaborated in three stages: the identification of the specific activity of science in the reality of questioning; recognition of the external and internal limits of scientific problematicity; and its reintegration and reorganisation in the field of sense.

## I. THE QUESTION OF SENSE

Roughly speaking, sense in the full-fledged connotations of the word has to be delineated from meaning from a logico-linguistic point of view. When we say: a sense of life and death, the question of sense, and when we analyse the different meanings to be ascribed to the word 'sense', we come across various denotations.

Sense or a *direction* from past to future. That of the proper way of life. To give sense to the scientific venture would be to assert that science knows where it is going, and this would be a utopia. *The* direction of life is something different: it concerns man in his integrality, in every dimension of his proper world.

Sense or an *aim*. If life has meaning, it progresses towards some good. If science has a sense, it must have one aim, at least the increase of objective knowledge. Now, the purposes of man no longer appear to him as being able to ensure his own human nature. High-technology achievements

demand such large concentrations of men and such a precise division of labour that this entails the under-development of whole parts of humankind. The avowed aim and object of the medical sciences is to fight for good health against illness. But it also happens that they also involve man in manipulations and dispose of his right to live or to die. In most cases, but not in every case, the ends prove to be in full contradiction with themselves, at the very moment at which they seem to have been achieved.

Sense also reads as *intelligibility* as far as man is concerned. Man cannot live in an absurd world. Once more, science is endowed with significance in so far it gives access to some sort of intelligibility through the modelization of reality.

Lastly, sense means *hope*. The religious sense of faith is a way to anticipate what we hope, to speak a meaningful truth, a realized sense.

Every scientist who gives a predominant place to significance in his thought 'must be confronted with the task of examining, directly or indirectly, in constantly renewed form, the process and aim of science in the light of the question of sense'. By itself, science is not on its own able to provide complete answers to this question.

As a first approximation, the space of sense can be defined as a place for an open dialogue, that is, where the scientist, the philosopher and the theologian could recover complementary functions and agree on the course of scientific investigation, the identity of man, the religious quest for salvation, and philosophical mediation.

### *The Interrogative Approach*

Now, if there is a quest for sense or significance, a second point can be made clear. Epistemologists and logicians, such as R. Gale, J. Hintikka, and more explicitly I. Lakatos,<sup>3</sup> have constructed an interrogative theory of scientific research with precise determinants and constraints on questions and answers. The questions must refer to observational and experimental data within the framework of a theoretical model; the answers must fit this theoretical form which is selected according to its capacity to solve 'problems' in the strict meaning of the word.

Science denies itself the right to come to conclusions in the matter of questions which, because of their own nature, are not 'objective' because

<sup>3</sup> I. Lakatos, *The Methodology of Scientific Research Programs* (Cambridge, 1978).

they relate to models of living. Science debars itself from the questions of sense and value, whereas life is led actually by sense and values. It informs our material and social environments, but has no power to tell us how we should handle our mastership over them. So far so good.

Scientific questioning – including the inventing and solving of problems – is *not* the only possibility (let us designate it as ‘problematicity’). It cannot be denied that there is also a philosophical questioning with its own types of questions: is there a difference between meaning and sense? Does sense exist at all? For whom does sense exist? And in addition, how should we characterize the different inquiries into sense: perhaps as informal, recurrent and radical questioning?

Theological questioning shows another structure. It does not exactly run from question to answer but from the appeal of God to the response of man. In the *Confessions* of Augustine we discover this shift from a philosophical to a theological questioning – mourning the death of a friend, he writes: *ego mihi factus eram magna quaestio*. New demands arise within new dynamics for posing questions – numbering among them not only the essence of the *ego* but also the status of time, the category of events in theological history and others...This new possibility can no longer be defined as ‘problematicity’ in the scientific manner nor as radical questioning in the philosophical style, but as the ‘elucidation of mystery’ (*mysterium fidei*). Faith should not be reducible to a system of beliefs in the private area.

Possibly we should add the literary or poetic questioning: take for instance Kafka’s inquest into guilt in totaliterian countries or the search for the sense of death by R.M. Rilke. Poets, scientists, theologians and philosophers have as many different ways of asking questions about one and the same abyss, and they have as many diverse relations to the unknown.

Let us sketch along these lines a philosophically minded research program. Systematic inquiry should be carried out in relation to the following questions:

- a) What are the main features of these modes of questioning and correspondingly what are the characteristics of the types of texts that give expression to them? Asking what happens in the universe when we suppose that its radius is tending towards zero, is not to be confused with an inquiry about the metaphysical outbreak of being or the supernatural creation of the world.<sup>4</sup>

<sup>4</sup> J. Earman, *Bangs, Crunches, Whimpers and Shrieks. Singularities and Acausalities in Relativistic Spacetimes* (Oxford University Press, 1995), p. 210.

The constraints of physics cannot bind the Creator. But precisely to the extent that a supernatural cause of the beginning of the universe does not have to answer to the constraints of nature, scientists *qua* scientists do not have the right to ignore it.

b) How to define the main categories numbering as orientations for these questionings. Theological categories like Creation, Revelation, Justification, Incarnation, Redemption...are not scientific categories like beginning, causality or evolution, even if they present an apparent synonymy.

c) As far as thinking is interrogating goes, what is the transcendental status of the competential modalities of thinking? We remember the famous questions of Kant: what can I know? What should I do? What may we hope (*was dürfen wir hoffen?*). They provide three autonomous fields of transcendental inquiry, not without cross-connections which have to be defined.

### *About Anthropology*

Let us see some of the consequences of the very conception of anthropology. Part of the question of sense depends on man's identity. What is it to be a man? We should not give too ready an answer, still less an answer on a single mode of interrogation. One should so to say let the question formulate itself in accordance with the wide-ranging operating modes of human interrogativity in a harmonious culture.

The search for man is multidimensional. Of course it is not equivalent to determining man as an object: this is the *problem* of man. Scientific anthropology describes the objective characteristics of man as seen from his objective qualities, an animal able to stand up, to make and use tools, to bury the dead of his community. The result of evolutive hominisation.

– On the other hand man may be seen as a poetical enigma, with the typical variations and oscillations of meaning you can discover in the humanities, since Greek tragediis. For instance, Goethe's statement in *Faustus: ich bin der Geist der stets verneint...* So goes the *enigma* of man.

– Furthermore, man may be seen as a *radical question* for himself, as the ultimate foundation of the cultural signs of humanisation. How is man to understand his world as an object, and how is he to understand himself as a being able to engage in multiple questioning?

Confronted with an anxiety-inducing obligation to have to define, from the evolutive theory of the world, the vision he has of himself. – Finally, man could be seen as a *mystery* to which Revelation alone can introduce us. Man cannot keep his self at a distance. He has to face things which are altogether disproportionate to himself. For him, living is being related to God, to others, to the created universe. These relations are constitutive of his being. In so far as mystery is a source of inspiration, it is illuminating intelligence striving to understand. Thus man's nature transcends consciousness, as well as the objective knowledge he can have of it. Something of what is at stake will manifest itself: the mystery of man, the very impossibility of man defining himself, since for an essential part he shares in God's want of definition. The most impregnable and inexpugnable depth of man's identity would be alienated if deprived of its relationship with God.

In short, there would exist philosophical and theological anthropologies together with a scientific anthropology. We should dare to say so in our days and keep on reminding ourselves of this fact.<sup>5</sup>

We are aware that latter-day scientific anthropology was born of the parting from the philosophical questioning of man's essential being 'considered as' a universalising totalitarian myth issuing from man's reason. It even came to identify man as a natural objet. Thus, it appears that 'dissolving' man – not constructing man – is the aim of scientific research in the social sciences.<sup>6</sup> Several reductionist statements seem to point to the will to have done with man, reducing the mental to the brain, the ego to a series of disincarnate events and so on. In fact, it should be possible again to formulate a number of features brought to light by humanistic studies in accordance with philosophical anthropology (such as personal status, creative power, absolute desire, jubilation due to knowledge), or in accordance with Christian anthropology (such as the status of created being, the disposition to search for salvation or an incarnated being's estate). Is this to be wished for? It all depends upon the quality of the reformulation, which can never be incompatible with a shift in categorisation.

The very first shift actually appears in Gn 3, 7. In the narration of the Fall, the Seducer sounds a warning note: the fruit of the Tree of Life will

<sup>5</sup> F. Jacques, 'Apologétique et théologie fondamentale après Maurice Blondel. De la controverse au dialogue', *Philosophie et apologétique* (P. Capelle ed., Cerf, 1999), pp. 287 ss.

<sup>6</sup> C. Levi-Strauss, *La Pensée sauvage* (Plon, 1962).

turn to poison should man lay hands on it. Incertitude shatters the primeval world of trust; nature appears cruel and inhuman. In taking hold of the religious categorial competence and usurping the knowledge God had reserved to himself (not omniscience, the ability of telling right from wrong), man denied his condition of created being. His view of things altered. The retribution for it? A distortion of desire towards lust, the exploitation of man and the universe by sheer will-power and covetous desires. Such are at least the essence of the temptation and its consequence: the withdrawing of God who would henceforth hide his Face from man's knowledge. The story of the garden of Eden does not mention that desire for knowledge and power could have been justified if it had not turned into lust. P. Tillich is the most honest of all exegetes when he writes: 'One is given but little evidence of the relation of Adam to the fruit of the Tree of Life whose access he had obtained at first and seen denied afterwards; he may not enjoy eternity without God. Likewise one can infer by analogy that he cannot possess knowledge without God, either.'<sup>7</sup>

The Bible's narrative from Genesis, according to Biblical anthropology, and the myth of Protagoras, according to the philosophical anthropology of Plato, attest to the existence of levels in the ontological structure of man in multiple coordinates. Both texts agree on one point: man has kept on asking about his own self from the very beginning of his existence; man to himself, so intimate and also so mysterious, is not just a product of nature nor a promethean being, nor even a political animal.

## II. THE 'INTER-COMPETENTIAL' DIALOGUE

As far as the practical consequences are concerned, it would be suitable, P. Germain suggested, to create a device to designate working points of agreement between us: the experts in this committee representative of 'spiritual, cultural, philosophical and religious values' (or 'thinking' as I suggested personally). The function of this suitable device being 'an open dialogue' between science in the positive and precise epistemological meaning of the word and the other modes of thinking and questioning. Division or 'schism among the minds' (Laurent Schwarz) is to be avoided. In a pluralistic society dialogue is possibly the only means of coexistence. But the purpose behind establishing an open dialogue which would preserve a cultural *equilibrium and balance* between the essential

<sup>7</sup> P. Tillich, *Existence and the Christ*.

prospects of the search for man, does not mean encountering no difficulties at all.

Briefly sketched: how should we conceive co-operation among the experts in the absence of any methodology towards a dynamic for such open dialogue between science, philosophy and religion? Let us notice that there is an added problem for the theology of dialogues which might be interconfessional or interreligious...I would like to argue in favour of this sort of dialogue which I would prefer to call inter-competential.

– Now about its possibility. We have some knowledge of partial approximation of it. The consultative committees of bio-ethics usually organize debates and discussions in a rather informal way, a few other working groups do as well. Why not seize the opportunity? Even if we should not over-simplify our relation to the unknown especially in a period of crisis of meaning, and even if we should preserve internal limitations in such a critical period.

– I come to the difficulties and dangers we would have to face. First, dialogue in the democratic and rigorous sense of the word tends to be confused with 'plain conversation', 'polemics', 'negotiation', 'contradictory discussion'. As yet, the notion has not been conceived as a definite heuristic way of thinking. Second, each form of questioning tries to re-categorize others in perfect good faith. Each tends to stand alone in front of the fundamentals. I do not believe any longer that one and the same man can be an expert or a good scholar in more than one speciality, but he can control and rectify the formulation other experts are forging for his own questions and answers.

Another point to be elaborated, concerning the nature of the correlations between modes of interrogation: are they of a contradictory, contrary, complementary, or even of a compatible nature? They depend upon ideas concerning the relationship between hypothesis, observation, and theoretical modelization. Their explanations, even the bare facts, are what they are only in accordance with the kind of categorization provided by a culture and the way the latter interrogates the world. But what is most crucial is their transcendental articulation.

Man for science... He cannot stand outside his mind so as to get a view of things, man and the universe. Man is involved in questioning through research, in fundamentally categorizing again and again the various classes of facts, and as a result is involved in the building up of theories, doctrines, interpretative systems and ideologies, to go back to the epistemic distinctions of K. Popper. How is man to understand himself in his own

multiple ways of thinking – that is the most fundamental question, *Die Hauptfrage*, Kant would have said.

*Science and the Crisis of Sense*

This question, after the questioning we have just outlined, requires a broad answer. It will not be impossible for science to face a crisis in sense if the scientists listen to experts of other modes of thinking and first of all recognize them at their face-value, and listen and work in committees like this one. The practice of thinking comes to the practice of different relations to the unknown in correlation with the main modes of questioning. At the risk of incurring a reproach of reiteration, I venture to repeat that scientific questioning speaks of our interest in positive knowledge because our survival is at stake; the questioning of poetics stems from a legitimate wish to express an enigmatic facticity, the richness and varieties of the 'humanities' using a literary language as means of communication between persons; and the religious questioning originates from a desire to elucidate a mysterious donation; each with a different categorial orientation, each on a different level of organization.

In the eyes of mere ideology, all forms of relationship between humans appear to be reduced to a single pattern, all realities transformed into objects and all objects into pieces of apparatus. Science becomes a cause of rupture in civilization. Yet, at the synodal session which concluded on October 23th 1999, many bishops declared that the time for ideological struggle against modern culture – more particularly against those of its determinants called science and theology – is now superseded. Away with that endless pessimistic view on the relations of Christian faith to science! Enough of incommunication and the harmful hits at each other!

It should be made clear that scientific quest for truth exceeds the concern for technical applications, its epistemological autonomy prevents it from being subjugated by economic interests. Of course this fact does not render it able to respond to the question of significance. The location of science in human culture has to be re-assigned. Part of the problem depends on the very identification of reason. At this price, only, could some real work be carried out on the venture of science, and only as long as scientists are ready to admit that non-scientific questions can arise from other parts of the scenery.

Should we speak here of a scientific – that is operative, mathematico-experimental – kind of rationality? Or of a rightly orientated reason, the

*recta ratio*, taken into account by the Pope in his latest encyclical, *Fides et Ratio* (nn. 50-52)? One cannot, he says, speak of human reasoning separately from the ill directed uses of reason. Man's reason has been 'damaged', yet it also has shown possibilities toward rectification. The Christians least inclined to inform themselves of the Magisterial position on the subject should apply themselves to reading this text instead of speculating about science and philosophy. My personal position on the matter is to dismiss both parties – the scientific and the philosophical.

John Paul II devotes section 77 to 'the work of our critical reason in the light of faith'. This is theological reason. The message is clear enough: reason can be saved only by faith. Yet faith will never be man's province without reason. The contention is far from being ineluctable. Again, the issue is a matter of response to ultimate questions bearing upon sense, truth and being. At all events, we run into the danger of giving rise to a new idolatrous scientism in declining 'to recognize as valid, forms and knowledge different from those proper to the positive sciences, and driving back into the domain of pure imaginings the theological as well as the ethical aspects of religious knowledge' (n. 88). This is no appropriate time to choose stricture in the name of a restricted rationalism.

### *On Rationality*

Josef Ratzinger remarks that it was Augustine who, without the slightest hesitation, assigned Christianity its place within the domain of philosophical rationality as well as natural theology. The synthesis of faith, reason and life used to be a driving power for the Christian penetration of the world. How is it that this is no longer operative to-day at a high speculative level?<sup>8</sup>

Since the rupture caused by Galileo Galilei, physical science has founded a mathematico-experimentally operating rationality that has led to a profound alteration of the very concept of nature. What has occurred has rendered us incapable of achieving an inkling – at the level of intellectual demands – of a direction that could be of any use to our present and most urgent needs, that is to say 'an ethics of universal peace, practical love towards our fellow-men and the necessary means to overstep the boundaries of practical interests'. In this regard the general theory of evolution, which defines itself as the royal road of biology and 'more and more as pri-

<sup>8</sup> J. Ratzinger, 'La foi chrétienne et la question de la vérité', Conference at the Sorbonne, 27 November 1999.

mary philosophy',<sup>9</sup> clearly fails to attempt to remodel the human ethos. Why? Because the ethos of evolution 'ineluctably finds its key-notion in the domain of selection, hence in the struggle for survival by means of successful adaptation, and also in the triumph of the fittest and finally the strongest'.

For the theologian, the status of reason appears to be definable only in reference to that of faith. The use of reason is prior to faith, but with the help of the categorial presupposition of Revelation it can lead to belief. Faith, therefore, is not just an assent of reason, it also brings into play some act of the will.<sup>10</sup> In that case the fullest practice of reason is brought about by reason and enlightened by faith.

In fact, natural reason has been a real problem to all theologians in the latter part of this century, just as it has been to all philosophers. Indeed the very model of an 'emancipated reason' through its bare 'natural light' has flatly failed. When considering reason it is not just the same thing whether one starts from action (like M. Blondel) or from the experience of interpersonal communion (like G. Marcel) or from an affective center of consciousness (as M. Heidegger did).

Philosophical inquiries distinguish several types of rationality. At the same time, positive or natural rights also proceed from a certain type of rationality: the *practical*, if not juridical. Reason, as the faculty of all principles, has no longer to assert itself as being freed from all options of belief. Thus, as regards *critical* reason, its prerequisite for any rational approach is a clear consciousness of the limit that this approach precisely presents in relation to the reality dealt with. As a rule, the philosopher's reason can be thought in *several* directions: the intuitive, dialectic, ontological, hermeneutic, transcendental, without excluding the Thomist model which will retain the value of a regulating concept.

John Paul II refrains from proclaiming neo-Thomism the perennial philosophy of the Catholic Church – on the contrary, he mentions many trends of thought that are more recent and have 'produced philosophical works of great influence and lasting value' (n. 59). *Fides et Ratio* pleads in favour of a philosophical reason that recognized its own capacity for contention against theology. Balthasar was himself convinced that there was no theology without philosophy. Our prevailing mode of thinking has raised faith and reason to a permanent constitutive tension that actuates or will actu-

<sup>9</sup> *Ibid.*

<sup>10</sup> Aquinas, ST IIa IIae q2 a. 1 et 2.

ate the vitality of both philosophy and theology. As a matter of fact, some works related to theological questioning also deal with philosophical issues such as the natural and spiritual worlds, creation, time and eternity, the person. The cognitive modes are clear. Yet, in the typological and epistemic areas not everybody can transgress the boundaries. They are endowed with categorial sense. On the plane of textual immanence there are no gaps so to say – the strictest boundaries concerning the interrogative modes having been delineated as early as their organizing planning out.

Here is an example. Two interrogative modes bring face to face *two readings* of the universe: one can be scientific as the universe is questioned from the view-point of evolution. The other one is religious as it is questioned from that of creation. Man being the only interrogator of his self and the world cannot but ask the question whether evolution, to which he is historically bound, *makes sense* or not. To put both categories together, the proceedings consist in interrogating evolution itself by asking about its sense or no-sense, relating to man within nature from a theological point of view.

Instead of affecting mutual ignorance, or promoting hierarchies in learning, a positive attitude would call for dialogue between partners as subjects facing each other, with a capacity to control any capture and to start its legitimating process. Then each, from his own categorial view-point, would help his partner towards rectifying and renewing himself. Then a better knowledge of the rooting of mankind in cosmos would allow us to understand better the working of the Saviour of the world, and extend his intervention of the category of events in theological speculations: Christ's commitment to saving man enables us to anticipate a new world.

A fairly good convergence is promoted when starting from the view-point of the theological categories of Creation and Redemption. The proclamation of Christ's resurrection from the dead implies a specific *Weltanschauung* while it also gives sense and meaning to man's life. In point of fact, it is time for the theologian to take up an evolving vision of the universe under the action of Christ (*in quo omnia constant*).

### III. HOW TO SURVIVE SCIENCE?

Science is more and more conceived as our best means (if not the only one) to survive. The question in J.J. Salomon's recent book asking 'how to survive science?' is ironical. It bears the stamp of marked ideology. In this respect, it is unfair, needlessly provocative and, undoubtedly, far from being

well stated. What is the true situation? Science is not intrinsically dangerous nor are all its effects equally so. Some of them serve man fairly well, bringing hope and enlightenment – the hope of freeing man from diseases, debilitating labour or climatic conditions; enlightenment, by providing a space for authentic research into the structure of matter, the cosmos and life. We may take as granted that it may be dangerous because of misdirected effects which escape control in advanced techniques, and in trespassing its own limits when attended by ideological distortions or philosophical extrapolations.

– Science and ideological distortions. Science for man? To man, science is an occasion for temptation. The truth about science is that scientific activities cannot escape this temptation of power which runs deep in man. Science gives access to a power which it is hard to oppose. Now, power corrupts and absolute power entails absolute corruption. And indeed one must have a staunch heart to resist such temptation. Contemporary technology is a reducer and destroyer of the person. A reducer whenever it bridles the person's inprescriptible prerogatives, by way of detection by sound or photographs, or by censorial operation. A destroyer, also because of the very diversification of constraints and instruments of torture, or from the deterioration of the conscience and the will due to chemicals whose massive and insidious use has been prompted by the progress of pharmacology.

– Science and philosophical extrapolation. One cannot underrate the critical potency of modern reason. Should science change its view objectively to ultimate philosophy, it would then turn into an extremely dangerous tool, since objectivization outside its proper order can be instrumental in the annihilation of the human in man. Such are the misdeeds of self – imprisonment deprived of mediation.

– According to the theologian, the connexion between science and faith is to be logically derived from the theology of Creation incorporating the origin of evil. Nobody can analyze this connexion without submitting scientific activity, like any other human activity to ethical interrogation. It should be recalled that the limitations enforced upon man's condition by sin do affect all his activities.

Truly another danger threatens, which is more insidious because it is more *intrinsic*. Scientific acts and view-points, in so far as they are human, are bearers of limitation and damage: being objectifiers, they are by nature reducers of realities endowed with the status of objects. The sheer fact of

giving an orientation to the scientific eye or act can, under some circumstances, be fraught with ethical consequences. Whether they are 'displaced' in themselves or by reason of their orientation is a point that remains open to discussion: the borderline is not easy to delineate as it is up to scientific theorizing to extend its relevant boundaries as far as possible.

A. Eddington intuitively felt that in the relationship of microphysics with cosmology there lay one of the keys to the scientific intelligibility of the universe. The confession of Creation refers to another mode of assent, tied up with a questioning regime different from the cosmologic pronouncement on initial singularity. Yet the standard model of cosmology speaks for an evolutionary view-point. There is no way to by-pass discussing the importance of the evolutionary theory or the exclusiveness of the positive method as a unique mode of rationality.

This new paradigm, hitherto reserved to the world of the living, is now extended to the whole cosmos. For the purpose of studying nature, the observation principles of quantum mechanics are used, inferring that the universe seems to be set in order to give birth to an observer within itself. The quasi-equality of the larger numbers derives from constants in natural philosophy (c, h, G, mp, H, po, Mu) characterizes a universe inhabited with observers, leastways not incompatible with scientific cosmology and anthropology. From now onwards, this 'anthropic principle',<sup>11</sup> as soon as it is given a finalizing interpretation, will play the role of a criterion between possible worlds. Here the question arises: are we entitled to go this far? Two courses lie open to us:

1) the metaphysical *a parte rei*. One regrets that philosophers are only too ready to renounce the ultimate issue, alleging the crisis of metaphysics (*FR*, n. 56). Then, and then only, the ultimate conclusion permits disclosure of sense *a parte rei*.<sup>12</sup> The anthropic principle alluded to above might well be utilized in its strong form at the borderline of cosmological and metaphysical questionings. But as its interpretation is tied to finality, the universe emerging out of primary undetermination gains access to awareness through the emergence of man at the final stage of human history. An access to attention to the point that this finalizing of interpretation turns it away from science and renews its links to a philosophy of nature and a nat-

<sup>11</sup> Cf. J. D. Barreau and F. Tipler, *The Anthropic Cosmological Principle* (Clarendon Press, Oxford, 1986), ch 7.

<sup>12</sup> G. Martelet, *Evolution et création, Sens ou non sens de l'homme dans la nature*, (Cerf, 1998).

ural theology.<sup>13</sup> While emphasizing intelligibility in the course of evolution, it is argued that its proper cause is the concern of intelligibility and refers to a superior principle of unity.

2) the transcendental way, *a parte hominis*. The Pope has vividly pleaded the cause of a reason that is not afraid of questioning itself (*FR*, n. 27). In *Fides et Ratio* the Pope again pleads forcefully for restoring to philosophy that place – both mediating and propaedeutical in character – that falls to it by right, so that it can cooperate in a regeneration of sense. The theology of creation is not supposed to determine the value of the constant of gravitation. Its critical function is relevant in the field of faith. Philosophy retains a critical function in the field of thought: to manage the articulation of the two orders of reality or discourse in their respective autonomy. Whether it is the hermeneutics or, as I prefer to say, the erotetics of interrogative structures,<sup>14</sup> a decisive margin of initiative is preserved. In front of a purely scientific modelization, e.g. the irruption of mankind within evolution, many views can indeed be supported – a creationist's, an emergentist's, a materialist's – which are not inevitably adequate.

### *Critical Realism*

The only issue for science to face the crisis of sense should be a recognition of its own inner limits in the light of its external limits. Then a reintegration and a re-articulation are possible in the sphere of regenerated sense.

In the relationship of science and faith, when considering the scientific reading from a theological view-point, one can see a recapturing of one mode of interrogation by the other – this recapture being largely unilateral. Were it handled unwarily it could lead to *concordism* and constitute an unacceptable subversion. Concordism referred to by either party – in a fundamentalist sense by theology, in a positivist sense by science – brings about conflict. Man in our days is tempted to reduce himself to a natural being caught as he is in a world ruled by the dominion of death. But religious man shrinks from such limitations on behalf of the other aspects of human identity and rationality to which the scientific approach has not

<sup>13</sup> J. M. Maldamé, 'Evolution et création. La théorie de l'évolution: ses rapports avec la philosophie de la nature et la théologie de la création', *Revue thomiste* n° 4, 1996, 575-616.

<sup>14</sup> Entailing epistemological consequences on the very status of the synthetic theory of evolution: cf. J. Gayon, *Darwin et l'après Darwin: une histoire de l'hypothèse de sélection naturelle* (Paris, Kimé, 1992).

done justice. Inured to *ontological discordism* which concludes to the existence of realities of different orders, it has taken a double truth course. An *epistemological discordism* recognizing differences in textual types and interrogative modes, would be more appropriate, on the condition it finds its own transcendental articulation within interrogative thinking.

The possibility of a regeneration of sense once restored in its transcendentals, allows us to grasp more easily how watchful philosophical mediation operates. I can see here neither concordism nor ontological discordism, only an outline towards *articulation*. This is a renewed form of *critical realism*. Thus to bring heterogenous levels of thought together, negative rules should be stipulated, such as: no omitting of what is still missing; no trespassing on other people's spheres of competence; no affirmation containing incompatibility. I have privileged a transcendental approach in order to argue that my project was to lay a foundation for an *interrogative* theory in scientific research in order to invest science once again with cultural value and hence to establish it within the economy of sense.

According to the philosopher it is essential to replace scientific *research* in thinking. Philosophical mediation manages an interface where all the branches of learning are dynamically related. Concerning for instance, original sin, mediation is in search of an ultimate convergence. Operating as natural philosophy, it remains with it to question to what extension of sense biology or palaeontology have contributed in the constitution of a natural history of man. As religious philosophy, it behaves towards it as an attempt in the light of the Scriptures to discover the significance of man and evil. As theological philosophy, it keeps in view dogmatic contents and Magisterial teachings. The possibility of critical philosophy consists in operating the erotetico-hermeneutical articulation. It should take care not to give rise to any scientism by declining to admit the legitimacy of forms of knowledge different from those proper to positive sciences, throwing back to the realms of sheer fancy theological knowledge together with religious or ethical learnings (*FR*, n. 88).

A way could be opened which allows us to set scientific knowledge and Christian revelation in fair reciprocity. It is only a question of reaching a synthetic understanding of the reality of the world and the destiny of man's innermost self. Following such a course of thought, one endows the recognition of Christ as *Logos* with cosmic extension, in so far as he is the head and fulcrum of the renovated world. It follows that when connecting the theological considerations of man's place in the universe with the renewed version of the world and the emergence of life as imposed by space physics, cos-

mology and genetics at the turn of this century, one comes across the hope of an eschatological Coming. The present time would be ill-chosen indeed to weaken one and all of our fields of research in the name of a restrictive rationalism. Yes, there are many rationalities in the house of God.