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THEOLOGY, MODERN SCIENCE AND THE MEDIATIONS OF MEANING

A REFLECTION ON THE CONTRIBUTION OF JEAN LADRIÈRE

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RÉSUMÉ : Selon Ladrière, la philosophie joue un rôle médiateur entre la science et la théologie. Cette approche tient pour acquis l'impact historique de la science sur la philosophie. L'interprétation de cet impact fait suite à une lecture de Kant et de Husserl et de leur notion du champ transcendantal. Le sens du champ transcendantal et ses implications pour la relation entre le soi et le monde se poursuivent à travers une réflexion sur la science comme instance de la dynamique de la raison en acte. Ladrière démontre comment un tel enrichissement de l'expérience de la raison donne accès aux dimensions existentielles et spirituelles qui rendent possible le dialogue entre la science et la théologie.

ABSTRACT : Ladrière argues that philosophy plays a mediating role in the dialogue between science and theology. This argument accepts the historical impact of science on philosophy. Ladrière explores this impact through Kant and Husserl and their notion of a transcendental field. A reflection on science, as an instance of reason in act, enriches our meaning of transcendental field and its implications for a relationship between self and world. Ladrière's philosophy deepens the experience of reason and indicates where this experience is open to existential and spiritual dimensions which allow for the possibility of a dialogue between science and theology.

> Rester étranger à cette science, c'est rester étranger à la culture de ce temps et donc à sa propre histoire, c'est manquer — pour une part tout au moins — l'enracinement qui porte l'homme d'aujourd'hui, c'est se soustraire en partie à l'universalité de la communication. C'est aussi rester partiellement obscur à soi-même, car, que nous le voulions ou non, le monde où nous vivons est imprégné de la présence de la science. Ne pas comprendre en quoi consiste cette présence, c'est se rendre incapable de ressaisir de façon réfléchie ce dont on vit à chaque instant, c'est adopter le parti pris de la passivité et renoncer à l'authenticité de la participation.
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> Jean Ladrière, "La science dans une philosophie de la culture"

Given the historical and cognitive impact that science has made on contemporary cultures, theological attempts to communicate the meaning of faith to culture can no longer avoid an encounter with the phenomenon of modern science. On the

assumption that the best form for such an encounter is one of dialogue, this article seeks to demonstrate how the thought of Jean Ladrière contributes to the strategy of such a dialogue.[1]

Among scholars committed to such a dialogue, Ladrière recognizes that a successful dialogue requires a finely tuned attention to the way human beings constitute acts of meaning. Attention to both the semantic and cognitive rules and operations of discourse has led us to appreciate the distinct character of different disciplines. Cognitive awareness has helped us to understand how each discipline enjoys its own autonomy with respect to different objects and tasks of investigation, how each relates forms of experience and understanding, and how each enjoys the authority to construct its own methodological and conceptual strategies in response to questions. Semantic awareness has helped us to understand how different realms of experience call for different operations of language, how these different operations reflect different existential stances and how distinct disciplines define their relationship to one another by virtue of these stances.[2]

The nuanced attention which Ladrière's work has given to both the cognitive and semantic acts of meaning has allowed us to further understand that if a successful dialogue is to take place between theology and science, such an encounter cannot take place head on. Such a dialogue requires a mediating partner : philosophy.[3] Our argument is that the work of Jean Ladrière provides needed resources for working through and meeting the key challenges which a dialogue between theology and science evokes.[4] We shall identify three of these challenges which will shape the order of our presentation of Ladrière's contribution.

First, while one of the main axes of Ladrière's work is a nuanced and detailed analysis of the form of discourse and of the elements which constitute scientific discourse, Ladrière takes up his interpretation of science and theology within the larger

1. This commitment is present in Ladrière's earliest publications. See, for example, Jean LADRIÈRE, *La science, le monde et la foi*, Tournai, Casterman, 1974.
2. For a fascinating interpretation of the contribution of the thought of Jean Ladrière given this approach, see Jean-François MALHERBE, *Le langage théologique à l'âge de la science. Lecture de Jean Ladrière*, Paris, Cerf (coll. "Cogitatio Fidei," 129), 1985.
3. "Je vois volontiers la philosophie comme jouant un rôle de charnière entre les sciences et la théologie" (Jean LADRIÈRE, "Nature et culture, approche philosophique," *Le Supplément*, 182-183 [octobre-décembre 1992], p. 195). Also on this point, see Jean LADRIÈRE, "The Role of Philosophy in the Science-Theology Dialogue," in Niels H. GREGERSEN, Ulf GÖRMAN and Christoph WASSERMANN, ed., *The Interplay between Scientific and Theological Worldviews I*, Geneva, Labor et Fides (coll. "Studies in Science & Theology," 5), 1999, p. 217-237. "La Science, la philosophie et la foi," in Jean LADRIÈRE, *Articulation du sens. I. Discours scientifique et parole de la foi*, Paris, Cerf (coll. "Cogitatio Fidei," 124), 1984, p. 161-190.
4. William STOEGER, a principal figure in promoting the dialogue between theology and science, writes, "in the dialogue between religion and science, the intermediate dialogue between philosophy and science must always be considered. Without it, that between relgion [*sic*] and science will be partially blind." See his "Contemporary Cosmology and Its Implications for the Science-Theology Dialogue," in Robert J. RUSSELL, William R. STOEGER, s.j., and George V. COYNE, s.j., ed., *Physics, Philosophy and Theology : A Common Quest for Understanding*, Vatican City State, Vatican Observatory, 1988, p. 241. Failing attention to the philosophical mediation, Stoeger also refers to "less control and enlightened research, and undoubtedly, more isolation and confusion" (p. 239).

trajectories of the history of philosophy and a developed interpretation of the methods and tasks of philosophy itself. It must not be forgotten that the emergence of modern science, especially in the formal and empirical disciplines, was a decisive event for philosophy itself. An interpretation of the meaning of modern science is incomplete without an understanding of the impact of science's claim to autonomy from philosophy and the subsequent efforts on the part of philosophy, given the emergence of this *de facto* autonomy, to come to terms with its own responsibilities with respect to the tasks and mission of reason. The first part of our article will consist of Ladrière's assessment of the significance of Kant and Husserl for understanding the role of modern science. At the core of our reading of Ladrière's approach to these thinkers will be an interpretation of the relationship between one's self and the world.

Secondly, the understanding of the relationship between self and world will be transformed by the impact of science. The second part of our presentation will take up Ladrière's articulation of the grammar and dynamism of modern science. Science is an act and as such is made up of different operations which order and organize a complex set of cognitive terms and their relations. We speak of concepts, theories, models, hypotheses, images, metaphors, perception, judgement. We allude to nature, order, cosmos, intelligibilities, representations, inquiry, limits, presuppositions. What do all these notions and terms mean ? How do they function coherently so that science acquires the status of a disciplined pattern of reasoning ? Patiently, Ladrière attends to these operations. In detailed and nuanced fashion, he identifies their role in an ordered strategy of inquiry.

Ladrière's objective is not simply to describe and to outline. Science is a dynamism of inquiry and it represents an act of reasoning. What is the significance of such an act for reason itself ? Given this emphasis, our intention in the second part will not be to define each of the cognitive notions and terms. Rather, our focus will be on the dynamism itself and the role played by a select number of these notions and terms with respect to that dynamism. Furthermore, that dynamism seeks a knowledge of the world. We shall attempt to follow Ladrière's interpretation of science to the point where science, as a form of questioning open to the self-disclosure of the world as cosmos, bears within its own dynamism traces of added dimensions of meaning with regard to our experience of the world.

Thirdly, these traces of the added dimensions lead Ladrière to a reflection on openness. How do we think the openness of openness ?[5] A consideration of the ontological and metaphysical question resurfaces in a reflection on science as an act of meaning. There is no attempt on Ladrière's part to catch science off guard here, as if to make it say more than it does. Science intends an integrated knowledge of the

5. Ladrière relates the question of the deepening of our experience of world to philosophical developments which have, following Heidegger, questioned the status of metaphysics. If metaphysics can no longer be considered a totalizing knowledge in the form of representation, how, asks Ladrière, can we think "l'ouverture comme ouverture" ? See, "Le Destin de la raison," in *Vie sociale et destinée*, Gembloux, Duculot, 1973, p. 32. See also the subsection "La problématique de la limite," in "Le langage théologique et le discours de la représentation," in *Articulation du sens. II. Les Langages de la foi*, Paris, Cerf (coll. "Cogitatio Fidei," 125), 1984, p. 205-214. We shall take up this issue again in part III of this article.

world as universe, but it does not succeed simply by employing formal deductive procedures. As we shall see, for Ladrière, scientific theory is an act of interpretation and there is something in this act which testifies to the character of an event. In its own acts of investigation, science can surprise itself. In that moment of self-presence, it discerns openness, novelty and originality. In this respect, Ladrière appeals to the power of phenomenology to allow reason to be present to itself. Phenomenology discerns this not beyond science, but in the act of scientific reasoning itself.

At this junction of a heightened presence to itself, a deepened understanding of the structure of relationship between self and world is summoned which is reflected in the language of responsibility and in the notion of existence. There is a correlation between interiority, presence of reason to itself in the act of science, and an enriched understanding of the world.[6] At this point, phenomenology turns toward a spiritual and ethical experience.[7]

The results of this third part of our reflections will bring us to the threshold of an encounter with theology. The implications for theology and its responsibility in this dialogue will be developed in our concluding remarks. We shall see that a theological reading represents an effort on the part of the theologian to enter into a dialogue with science by accompanying a philosophical reflection on the mediations of meaning. Our aim is to show how, on the basis of an approach which follows Ladrière's own reflections, the theologian can become aware of the role of meaning in theology's own attempt to communicate a faith experience to modern culture.

I. PHILOSOPHY AS AGENT OF MEDIATION : THE MOVEMENT FROM KANT TO HUSSERL

Theology appeals to philosophy to play a mediating role in this dialogue because philosophy offers the opportunity to attune ourselves to the inner dynamism of science's own search for understanding. The mediating role will itself be constitutive of the communication between science and theology. That is, philosophy is present not merely as a neutral agent which transmits information back and forth between the scientist and the theologian. The emergence of philosophy as a mediating agent is a

6. "L'exemple de la science est ici particulièrement instructif, [...] parce que l'objectivation s'y réalise de la manière la plus claire, pour cette raison qu'elle s'accompagne de sa propre réflexion" (J. LADRIÈRE, "Le christianisme et le devenir de la raison," in Roland DUCRET, Danièle HERVIEU-LÉGER et Paul LADRIÈRE, dir. [Centre Thomas More], *Christianisme et modernité*, Paris, Cerf, 1970, p. 214).

7. Ladrière presents this spiritual and ethical experience in the context of Husserl's contribution to the contemporary movement of philosophy. Where Husserl explored the limits of philosophy, at the same time, he opened reason to new horizons. "Nous pouvons évoquer l'expérience spirituelle, non la transformer en discours, parce qu'elle est au-delà du discours" ("Le Destin de la raison," p. 36). More recently, the same line of thought is taken up by Ladrière with respect to phenomenology, in "The Role of Philosophy in the Science-Theology Dialogue," p. 225-226. See also, "Le christianisme et le devenir de la raison," p. 216, for Ladrière's interpretation of the way Husserl undertook anew "l'entreprise kantienne de fondation," which led to the perspective of the *Lebenswelt*.

constitutive condition of the contemporary context in which both partners become aware of mediated meaning in general.[8]

The advent of modern science was an event for Christian faith and Western culture, governed as this culture was for over 1 500 years by a Christian imagination.[9] Further, the emergence of modern science was also an event internal to the philosophical experience itself. Historically, the contribution made by science to acts of understanding is essential for understanding the present mediating responsibilities and agency of philosophy. Scientific reasoning's claim to autonomy constituted a crisis for philosophy, that is, it constituted a moment in which reason needed to become aware of what was going forward.[10] In the Western tradition, philosophy was generally defined by an Aristotelian tradition, dedicated to a search for first principles, governed by the rule of logic, and responsible for the validity of content and argument in subsidiary disciplines.[11] Once confronted by a form of independently minded reason, especially in face of the empirical evidence that modern science works, philosophy had to reassess its own role and responsibilities.[12]

If philosophy could no longer take responsibility for the methods and contents of disciplines, it could take responsibility for the way in which each discipline responded to the exigencies of reason itself. How philosophy responded to this event, especially in the developing reflections of epistemology, is part of the history of contemporary philosophy. One of the principal virtues of Ladrière's work is to direct our attention to this drama and to assist the theologian in understanding something of the deeper truth of the dialogue among disciplines which results as a consequence.

It is impossible within the scope of this article to account for the extensive number of philosophical conversations with classical thinkers which Ladrière takes up in his work. We shall structure our presentation by referring to two figures who are prominent in Ladrière's own account of the relationship between modern science and philosophy : Kant and Husserl. Accordingly, from our reading of Ladrière, the major events of the plot may be outlined as follows : following the emergence of Newtonian science, Kant raised the question of the conditions for the possibility of our knowledge of the cosmos, i.e. physics. In order to develop his response, Kant appealed to a transcendental field whose main foundation was the subject as knower. However, given the character of the transcendental field, it being a purely formal and

8. For a general reflection on the mediation of meaning, see Bernard LONERGAN, *Method in Theology*, Toronto, University of Toronto Press, 1971, chapter 3 on "Meaning," p. 57-99.

9. Jean LADRIÈRE, "Science contemporaine et foi chrétienne. Nouvelle position d'un ancien problème," in *Le monde, la science et la foi*, p. 17-33. Also, Herbert BUTTERFIELD, *The Origins of Modern Science 1300-1800*, New York, The Free Press, 1957. Eric VOEGELIN, *From Enlightenment to Revolution*, edited by John H. HALLOWELL, Durham, Duke University Press, 1975, especially, p. 3-6.

10. Jean LADRIÈRE, "La raison scientifique et la foi," in *Articulation du sens II*, p. 270. Crisis, for Ladrière, is related to the emergence of "critique."

11. On the philosophical history leading up to the writing of Kant's *Critique of Pure Reason*, see Martin HEIDEGGER, *What Is a Thing ?*, Chicago, Henry Regnery, 1967.

12. See Jean LADRIÈRE, "The Role of Philosophy in the Science-Theology Dialogue," p. 224.

conceptual openness, the question of the relationship between knower and concrete world would remain in abeyance.

According to Ladrière, it fell to Husserl to rethink and to provide a wider interpretation of this transcendental field.[13] Husserl's achievement was to pose the question of the relationship between self and world at a deeper level than that governed by the epistemological dichotomy between subject and object. While not abandoning the notion of a transcendental ego, Husserl adverted to the notion of intentionality and referred to a Life world, *Lebenswelt, le vécu.* As a result, Husserl directed our attention to a deeper relationship between self and world which allows us both to attend to the role of science in our interpretation of the world and in this way to enhance our sense of belonging (presence of self to self) to an augmented notion of world.

The drama of the autonomy of science from philosophy never resulted in a formal separation. Rather, the question became how does philosophy accompany science in its own quest for autonomy and in this act of accompaniment return with an enriched appreciation of reason, its mission and vocation ? Insofar as science became an event for philosophy, philosophy would now need to attend to the history of activity and the internal operations of the sciences themselves. In the following section, we shall follow how Ladrière takes up this drama in more detail. By introducing the theologian to this drama, the task of mediating a dialogue between science and theology will be possible.

1. Kant and the Transcendental Field

Kant's own philosophy took as its starting point the developments of Newton. How was such knowledge as modern physics possible ?[14] This question involves a number of presuppositions. First is required, a recognition of the limits of science. Science, as autonomous, has become a region within which a certain form of reason takes shape and, by virtue of these limits, becomes possible. Secondly, the questions represent a departure from Hume's empiricism. Kant opts for an approach whose categories represent a distancing from the immediacy of perception, and a move, via intuition,[15] to the formation of theoretical concepts. These concepts, for Kant, constitute an anticipation (an *a priori* power) of an intelligibility of the structure of the world. They represent a form of logic which attempts to account for any particular thing as it shows itself against the backdrop of the intelligible structuring of the

13. "L'exemple de Kant, et après lui celui de Husserl, sont tout à fait significatifs. Chez l'un et chez l'autre, nous voyons que le problème philosophique central est celui de la constitution du champ transcendantal" (Jean LADRIÈRE, "La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," in *La science face aux attentes de l'homme contemporain*, colloque de l'Académie internationale de philosophie des sciences, 5-8 avril 1983 à Séville-La Rabida, Bruxelles, Office internationale de librairie [coll. "Archives de l'Institut international des sciences théoriques," 26], 1984, p. 35).

14. "La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 33.

15. See note 38 below for a comment on the notion of intuition.

world. Thus, a concept is a theoretical construct which anticipates the way in which a phenomenon will show itself to the one who enquires.[16]

Given these presuppositions, Ladrière reminds us that Kant's approach is characterized by two features. First, the emphasis is placed on the knowing subject. The subject becomes the new principle or foundation of knowing (*hypokeimenon*),[17] in that the subject is the one responsible for the theoretical initiative which transcends the realm of perception. In this regard Kant remains heir to the Cartesian emphasis on the knower.[18] So much is this the case that there is really no reference to any precise object in Kant's approach, let alone to the world in its concreteness.[19] For Ladrière, the re-appropriation of the relationship to the world is left to Husserl, for whom a relationship will be based on a widening of our account of experience and our account of reasoning.[20] We must be cautious here. Ladrière does not suggest that there is a separation from science in Kant. Rather, Kant's main concern is an appeal to the intelligibility of nature. While there is an openness to content, it remains a formal openness.[21]

This leads to a second feature, namely, the formal quality of meaning in Kant's approach. If a breach with science does not exist, the emphasis is on a mathematizing of nature. Ladrière emphasizes Kant's development of a transcendental field, that is, a way of representing the intelligibility of nature.[22] It attempts to identify that background against which and from which the world as phenomenon could show itself. In this way, Kant is able to identify the conceptual framework within which it is possible to think the reality of Newtonian physics. However, if the transcendental field was without content, it was not without semantic form. Mathematics provided the design of the transcendental field. Given the formal and structural emphases of mathematical logic, the metaphysical outcome would be a form of representation. The foundation of the transcendental form, was the knowing subject and was

16. "La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 35-37.
17. *Ibid.*, p. 36.
18. See, for example, "The Role of Philosophy in the Science-Theology Dialogue," p. 224.
19. With respect to Kant's notion of the transcendental subject : "Mais la subjectivité dont il est question ici n'est plus qu'une instance constituante, elle n'a par elle-même aucun contenu" ("La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 33).
20. "À partir de là Husserl décrivait un programme immense pour une reconstruction d'une philosophie de la raison" (*ibid.*, p. 35). "[...] nous avons affaire à un élargissement considérable du concept de la raison" (*ibid.*, p. 29).
21. See, for example, Jean LADRIÈRE, "La normativité de la pensée scientifique," in Gilbert HOTTOIS, ed., *Philosophies et sciences*, Bruxelles, Éditions de l'Université de Bruxelles, 1986, p. 31-32, 40.
22. With respect to the notion of "field," Ladrière writes : "On a vraiment affaire, dans le cas de ce concept, à une représentation qui permet de comprendre le phénomène dans sa relation au tout, qui explique les détails du phénomène par la structuration de l'espace-temps pris dans son ensemble [...]" (Jean LADRIÈRE, "Statut de la science dans la dynamique de compréhension," in *Chemins de la raison*, Paris, Desclée de Brouwer [coll. "Recherches et débats. Centre catholique des intellectuels français,"] 1972, p. 39). See also, "La Contribution de la Science à la Composante Cognitive de la Culture," in G.B. MARINI, Bettolo MARINI and Paul POUPARD, ed., *Scientific Meeting On Science in the Context of Human Culture II : September 30-October 4 1991*, Vatican City, Pontificia Academia Scientiarum, 1997, p. 121-122 ; and "La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 33-35, for a discussion of "field" with respect to Kant and Husserl.

identified with the constructive power of human reason and spirit. As already indicated, there was not a separation from science. Kant anticipated the questioning of modern physics. Yet, the focus was on the pure mathematical structuring of nature as a form of intelligibility.[23] We shall examine further the implications of Kant's form of questioning by turning to their impacts on the dialogue between science and theology.

2. Historical Impact on the Relationship between Theology and Science

Metaphysics of Knowledge. — Ladrière's account of the place of Kant within the philosophy experience allows us to deepen our understanding of two persistent theological attitudes and debates with respect to modern science. The first concerns the modern history of Catholic philosophical and theological scholarship, and its concerns with an affirmation of reality and being. The second, while more internal to the ongoing history of philosophical debates, has left its mark on theological investigation in the form of an appeal to deconstruction and postmodernism.

With respect to the first, the developments of Kantian philosophy ran headlong into schools of Catholic theological scholarship committed to a metaphysics of knowledge, the ground for which was the ability of human reason to affirm Being. It is not possible to go into these debates in detail.[24] But it is possible, as Ladrière has suggested, to understand how a conflict could arise. If Kant's proposal of a transcendental field changed the way in which the question of the intelligibility of nature was raised, a continued commitment to Aristotelian logic and its specific way of reaching first principles would create difficulties in communication with modern culture. Ladrière suggests that Kant's way of identifying the transcendental field can be seen as a way of transposing Aristotle's quest to reach first principles. However, if no attention is paid to how Kant invites us to rethink the way we ask the question of principles in light of the developments of modern science, Catholic scholarship will continue to be frustrated when it persists in asking the question of the intelligibility of Being out of the context of Aristotelian logic.[25]

Moreover, the turn to the transcendental subject continued to be a puzzle for Catholic scholarship in epistemology. Étienne Gilson's reaction perhaps best summed up the difficulty : if you begin inside your mind, you will never get out of it. How could an appeal to transcendental subjectivity resolve the new questions regarding subjectivity and objectivity ? It was not until the work of Joseph Maréchal attempted to reread Aquinas' logic of understanding in light of Kant's epistemology that some

23. For Ladrière's presentation of the key elements see : "Le langage théologique et le discours de la représentation," especially, p. 196-205.

24. On these questions see, for example, Gerald McCool, *Catholic Theology in the Nineteenth Century : The Quest for a Unitary Method*, New York, Seabury Press, 1977, especially p. 32-36, in which McCool outlines some of the philosophical difficulties. With respect to the role in contemporary Catholic scholarship played by Joseph Maréchal, see the recent text, Paul Gilbert, ed., *Au point de départ. Joseph Maréchal entre la critique kantienne et l'ontologie thomiste*, Bruxelles, Lessius, 2000.

25. On the historical philosophical background, see Heidegger, *What Is a Thing ?* On how this impacted Catholic theology and philosophy, see J. Ladrière, "Science contemporaine et foi chrétienne. Nouvelle position d'un ancien problème," especially, p. 17-21.

new avenues of communication began to open up. Many are familiar with the recent offshoots of this approach in modern catholic scholarship especially through the work of Henri de Lubac and Karl Rahner's own attempts to communicate the intelligibility of the Christian mystery via an attentiveness to our presence to ourselves as questioners and free agents.[26]

However, in some ways, these initiatives remained limited by Kantian formalism. It is one thing to promote a logic of openness ; it is another to complete this logic by an empirically valid account of how this openness discloses an intrinsic relationship to being. In my judgement, the work of Bernard Lonergan represented its own decisive moment in Catholic scholarship in this respect. Lonergan's attention to intellectual, moral and religious conversion became an advertance to empirical foundations of an affirmation of existence, a judgement with respect to reality. The strategy for validating and justifying this was an attention to the patterns and operations of reason in act. While Lonergan developed this approach with respect to understanding in general, I believe that it is the merit of the work of Ladrière to have worked this out with specific attention to the operations of acts of understanding in contemporary science.[27]

However, these recent developments represented a transposition in Catholic philosophical scholarship which had escaped many of the earliest debates and their reactions to Kant's transcendental approach. The difficulty was that the older ontology could not be rehabilitated simply by introducing the transcendental dimension of Kantian philosophy. Ladrière argues that we could no longer pose the ontological question in the same way.[28] To the extent to which Catholic theology and scholarship remained bound to an older form of metaphysics, it could not meet head on the impact of modern science on culture. Part of the answer is to understand how philosophy is called upon to play a new mediating role under the impact of developments in modern science.

Deconstruction and Postmodernity. — The second attitude and debate concerns deconstruction and postmodernism. The transcendental field as a structuring order of representation was the condition of the possibility of knowing. This is why, if there is a cognitional and formal openness, there remains a semantic form. Kant's approach anticipated, by way of these concepts, the possibility of ongoing discovery. It anticipated reaching something of a totally integrated knowledge, but this knowledge was anticipated within the formal order of representation. In its givenness, the world

26. A good example of Henri de Lubac's appeal to Maréchal can be found in his *Sur les Chemins de Dieu*, Paris, Aubier-Montaigne, 1966. A classic presentation by Karl Rahner remains the opening chapters of his *Foundations of Christian Faith*, New York, Seabury, 1978.

27. Regarding Ladrière's development, it is worth recalling his own account of the history of the Institut supérieur de Philosophie, its founding commitment to Thomism, and his predecessors, Désiré Nys and Fernand Renoirte, who taught cosmology and philosophy of science. See Ladrière's account of this history in "Cent ans de philosophie à l'Institut supérieur de Philosophie," *Revue Philosophique de Louvain*, 88 (mai 1990), p. 169-213. Regarding his references to Nys and Renoirte, p. 182 and 204 respectively.

28. "Ce qui est certain, c'est que l'on ne peut plus penser l'ontologie comme il était possible de le faire avant l'ouverture du champ transcendantal" ("La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 41).

was structured on the basis of mathematical form. Yet, as Ladrière points out, this was *pure* openness and form. Moreover, its foundation was the subject as knower and the subject's own formal and constructed conceptual categories of reasoning — the order of pure thought. Reality is thereby thought from the perspective of the self-constituting acts of consciousness of the subject and, as such, the totality of the world is already anticipated by this formal structure of representation.

Ladrière remarks that the status of modern science became based on the same "presuppositions of a philosophy of subjectivity."[29] Science, in its mathematization of nature, became the "objective" representation of the world, that which could account for the intelligibility of nature. This intelligibility was the idea of the genesis from which the world is given and so mathematical representation intended to offer a complete re-effectuation of the world as world. The impact of this metaphysical form would be felt in all its power with the growing and almost indissociable relationship between science and modern technology.[30] Heidegger, in his celebrated *Letter on Humanism*, signalled that metaphysics had run its course to the end and this end was the experience of alienation from the immediacy of the self-disclosure, the Saying of Being. The latest form of a metaphysics, the form of representation, was not the true carrier of the truth of Being. Rather, it represented, historically, a way of asking the question of Being which had parted company with the self-disclosure of Being from the very beginning. The modern *hubris* of subjectivity was not the grandeur of a philosophical tradition ; it was its extreme form of disillusionment and alienation from Being.

Heidegger's reflections on the end of metaphysics brought metaphysics itself to critical awareness. Was not this awareness of metaphysics as metaphysics in its own way a limited language, and was it not itself in need of a deconstructive reading whereby its initial impetus and presuppositions would be brought to the light of day ? Diverse are the philosophical trajectories which stem from this conviction. One is the suspicion of any foundationalist stance. The expression of this suspicion is a constant appeal to the diversity of conversations, dialogues, contexts and perspectives which characterize a large part of the field of present-day dialogue between religion and science and a demand for a recognition of the plurality of approaches. But here the question remains, what is the basis of communicability amid the diversity and among the approaches ? Failing an attention to this, the dialogue will be limited to identify-

29. "Le langage théologique et le discours de la représentation," p. 204.

30. Ladrière remarks on how scientific reasoning, in its aim to manipulate objects, has led, especially in the sphere of the appropriation of this aim by technology, to the fear of dehumanization. See, for example, his book *Les enjeux de la rationalité. Le défi de la science et de la technologie aux cultures*, Paris, Aubier-Montaigne/Unesco, 1977 [in English, *The Challenge Presented to Culture by Science and Technology*, Paris, Unesco, 1977]. See also, "La raison scientifique et la foi," in *Articulation du sens II* : "C'est ici que se marque l'aspect de 'déshumanisation' qu'on a souvent reproché à la science" (p. 265). The philosophical literature on the philosophical evaluation of the relationship between science and technology with respect to the impact on humanity is abundant. See, for example, Hans Georg GADAMER, *Reason in the Age of Science*, London, Cambridge, MIT Press, 1981. Note especially the translator's (Fred Lawrence) "Introduction," p. IX-XXXIII. Also, Hannah ARENDT, *The Human Condition*, Chicago & London, University of Chicago Press, 1958.

ing a typology of existing conversations and a typology of models. An explanatory account which is able to articulate the roles played by differentiated and diverse conversations within the complex of mediated meaning is needed. Such an explanatory account is not neutral ; it has an empirical basis for Ladrière. It is gained in the act of attending to reason in act. If Ladrière does not anticipate a return to the totalizing ontology of representation, he has not let go of the need for rethinking ontology.

A second general trajectory from Heideggerian conviction is the radicalization of our point of departure. Aesthetic strategies and categories become prominent once more in our time whereby an attempt is made to place ourselves, through incessant critique, within the immediate proximity of the appearance of Being in all its fullness. The ineffability of religious awe and a sense of the mystical depth of cosmic life are evoked. But is such an access even possible independent of the finite resources of language available at any age ? Is there not an oversight here of our finite and historical condition which can only follow the path of the mediations of meaning ?

Both trajectories reflect the experience of the crisis of reason. In face of both suspicion and radical critique, in what can reason hope ? The answer is not found outside the effort of reason itself, however. While Ladrière recognizes the limits of a metaphysics of representation, the critique of metaphysics must continue to draw upon something of the metaphysical language available in order to establish the critique. In short, the response is not a flight from the finitude of reason but a heightened attention to its mediations. In this context, the Heideggerian "end" of metaphysics is seen in a different light.[31]

First, the "end" is not a chronological "end." The end is a critique in the sense of an awareness of the exposure of metaphysics as metaphysics. Secondly, along with this notion of critique comes the experience of the limits of language and any conceptual initiative. But limits need not lead us in the direction of either complete suspicion or abandonment of mediated language. The experience of limits is a radicalization of the experience of philosophy. As radicalization of the question of philosophy, this requires the renewal of an understanding of metaphysics and of the foundations of reason to which it appeals. What is of interest for Ladrière is that this anti-foundational move by Heidegger testifies in its own act to an attempt to discover that most radical place from which the question of Being may be posed, that point from which the genesis of philosophy as philosophy could be initiated. Is this not itself a question of foundations, one comparable to the search for first principles understood in the sense of that originary experience, an *instauration libre* to use Ladrière's expression, which philosophy recognizes in its own givenness to itself ? And does not this experience shed light on the straining effort of philosophical reason toward a fullness of understanding and not its abandonment ?[32]

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31. "La fin de la métaphysique, c'est le moment où il devient possible de *penser* la métaphysique comme telle" ("Le langage théologique et le discours de la représentation," p. 206).

32. "Car toute tentative de dépasser la métaphysique ne peut s'effectuer que dans le cadre du langage actuellement disponible, qui est lui-même sous-tendu par la métaphysique" ("Le langage théologique et le

Given such an attestation, a strategy for responding to recent debates will not come simply by extending the *a priori* formal openness of reason. It will only occur, as we have suggested, where philosophy, as a hermeneutical wager, works from the experience of the generosity of reason in act. But where is reason found in act ? It is found in the disciplines themselves and in a privileged way, it gives evidence of itself in modern science as an act of understanding.[33] But in order to take up this reflection on disciplines in the acts of investigation and inquiry, Ladrière identifies a development that needed to take place within the internal history of philosophy itself, Husserlian phenomenology.

3. Husserl and the Development of the Transcendental field : Intentionality and the Life World

For Ladrière, Kant's contribution was to open up the transcendental field. His appeal to Husserl is based on the way Husserl re-appropriated and widened the transcendental field. As noted above, Ladrière credits Husserl with giving a new possibility to reason.[34] Kant had presented the transcendental field as a structured, encompassing order of representation. However, this overlooked features testified to in the act of reason itself.[35]

Reason is not simply a static order of concepts, however generalized these concepts are. Reason is a dynamism. The acknowledgement of the dynamism of reason correlated with a wider and deeper experience of reason, linked to a wider and deeper sense of participation in life. Ladrière reminds us that Husserl had intended both to identify with and remain loyal to the notion of a transcendental subjectivity. Nonetheless, in his appeal to intentionality he attempted to identify an order of concepts which superseded the epistemological dichotomies between subject and object. In this respect, Husserl's intentionality gave greater attention to the notions of experience and existence.

Given this enlargement of the formal structure of the Kantian transcendental field, the implications of this attention to the dynamism of reason are significant for a second reason. Husserl's insights had implications for the place of science in the articulation of philosophical reason. Husserl had brought a reference to the world back within the orbit of transcendental reflection. Husserl opened wide the question of a horizon toward which reason strained. Moreover, this horizon was more than a notion of world intended by scientific and mathematized form. The world is the *Lebenswelt*, *le vécu*, from which both reason as representation and science had ab-

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discours de la représentation," p. 205). On the implications for a renewal of speculative discourse after Heidegger, see for example, Jean LADRIÈRE, "Sur la création," in *Articulation du sens II*, p. 286-289.

33. "Il faut ajouter que la science est aussi ce patient travail de la pensée qui empêche l'exigence critique de s'abîmer dans une confrontation stérile avec elle-même" ("La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 43).

34. See above, note 7.

35. Ladrière identifies two in particular : "de figer l'*a priori* dans une structure constituée une fois pour toutes et de ne pas tenir compte de ce qu'il peut y avoir de nouveau et de surprenant dans le cours de l'histoire" ("La normativité de la pensée scientifique," p. 40).

stracted itself. The notion of self would not remain untouched by a new reference to world. Burrowing under, to borrow a phrase from Paul Ricœur, the epistemological dichotomies of subject and object, philosophy would need to resituate debates.[36] Furthermore, beyond displacing epistemological debates, it would also expose the bond of relationship which binds a subject to the world, an augmented world with a corresponding augmented self. We arrive at a critical historical junction, one at which would stand the Heideggerian invitation of the absorption of self in the immediacy of Being.

Inspired by Husserl's effort, Ladrière took a different direction and augmented the implications of Husserl's own phenomenological approach by concentrating on philosophy's own attentiveness to the dynamism of reason in act. Science remains one of the most privileged forms of this dynamism. Science works ! In science, there are answers to questions. In my judgement, Ladrière maximizes the potential of this reference by rehabilitating a space within which the question of science as reason in act could be taken up anew.

Here we pass from Ladrière the philosopher to Ladrière the philosopher of science. Rather than attempt to offer a complete account of Ladrière's interpretation of science, we shall limit our remarks to an interpretation of his reading of key features specific to science as a form of reason, and science's role in the constitution of meaning. Husserl had opened up a reference to the world but the emphasis remained on the side of the transcendental ego. By exploring Ladrière's own account of the dynamism of science, we hope to clarify the way in which he augments Husserl's reference to the world, that horizon in relation to which science is able to bring to the fore, in contrast to the formal openness of Kant's conceptual account, the world as phenomenon, the world in the concrete. In this way, we shall see that such notions as existence and experience, to which Husserl appealed in order to supersede the obstacles associated with the epistemological dichotomy of subject and object, are augmented by an understanding of the deeper relationship between self and world. This, in turn, clarifies phenomenology's own ability to expose an openness to spiritual experience.

36. See, on this point, Paul RICŒUR, "Existence et herméneutique," in *Le Conflit des interprétations : essais d'herméneutique*, Paris, Seuil, 1969, p. 7-28. "Il faut donc délibérément sortir du cercle enchanté de la problématique du sujet et de l'objet, et s'interroger sur l'être" (*ibid.*, p. 11).

II. ELEMENTS OF SCIENCE WITHIN A DYNAMIC ACT OF UNDERSTANDING

1. Elements of Scientific Investigation

Scientific theory is at the centre of the scientific understanding.[37] But theory is part of a larger trajectory of the act of scientific understanding which moves from perception to an act of synthesis and judgement of what is. At its simplest level, theory is a way of asking a question about reality. If it begins with perception, it knows that knowledge is not a question of direct seeing. The move from perception to theory is grounded in an understanding, since Kant, that scientific knowledge is indirect knowledge. Thus, theory's interest is not to confirm what is seen, but to arrive at an act of synthesis, a judgement, which affirms that something is known.

A theory is an attempt to answer the question raised by perception and informed by an intuition.[38] Theory identifies and organizes in a formal way a set of relation-

37. See, for example, "La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?" ; and "La Science, la philosophie et la foi." The first part of *Les enjeux de la rationalité* consists of a remarkable praise of the power of theory.

38. The reference to intuition raises numerous epistemological issues and questions. Historically, it has become a dividing line between post-enlightenment Kantian idealism and Aristotelian-Thomistic metaphysics. See, for example, François MARTY, "Méthode transcendantale et ontologie," in GILBERT, ed., *Au point de départ. Joseph Maréchal entre la critique kantienne et l'ontologie thomiste*, p. 157-176, especially p. 161-164 entitled "L'affirmation ontologique, en place de l'intuition intellectuelle." The notion of intuition continues to remain a critical issue regarding an interpretation of judgement of existence. A major reference is the work of Bernard Lonergan who has opposed a notion of the intuition of existence (different from an affirmation of Being which summons the entire dynamism of intellectual inquiry) at the beginning of the act of understanding. See, for example, "Insight : Preface to a Discussion," in *Collection*, Montreal, Palm, p. 152-163, especially p. 157-163. This raises questions regarding Ladrière's own appeal to intuition in the movement from perception to the construction of a theory. I cannot go into the debates at this point, nor do I wish to smooth over substantive difficulties. This having been said, what Lonergan attempts to avoid, I believe, is predicated on an account of the full structure of cognitional operations in act. Lonergan maintains that an act of understanding reaches its end in an act of judgement which is an augmentation of understanding and not simply a confirmation of what was intuited in the beginning, that is, an intuition of existence. On this point I do not discern a major difficulty with Ladrière's approach. Ladrière maintains, with Lonergan, that knowledge is based on strategies of intellectual operations in act. Both maintain that from the beginning there exists a transcendental orientation to and relationship with Being. These acts lead to an enrichment of an understanding of existence, especially with respect to relations of self to a world. Furthermore, understanding of understanding follows upon an analysis of empirical acts of understanding. Neither Lonergan nor Ladrière, from what I understand, propose a metaphysical interpretation based on intuition. This having been said, Ladrière maintains an act of intuition in the construction of theories. First, there is an act of intellectual inquiry which moves from perception to the construction of theory. Secondly, this openness, as intuition, of a possible intelligibility of nature is reflected in the dynamism of an act of representation, itself an operation of human intelligence. Thirdly, the act of understanding intends something to be known. That is, a relationship between the act of knowing and a world to be known exists which grounds the dynamism of understanding. Lonergan himself writes of the isomorphic relationship between the knower and the universe to be known. Fourthly, the articulation of such a relationship is realized and reaches fuller knowledge through a study of acts of understanding. The precise value of Ladrière's approach is to expand reflection in order to discern a structured and ordered set of relationships involving one's self in relation to a world and involving one's self in relation to Being. This, in turn, attunes us to the depth structure of our simultaneous relationship to origin and to fullness, creation and eschatology. Both poles of the relationship are interpreted by Ladrière in the mode of a philosophical reflection, for example, the Aristotelian appeal to principles and the Husserlian appeal to eschaton. Finally, with regard to a line of mediation between Ladrière's language and Lonergan's, see

ships by virtue of which a thing is known according to that set of relationships. To add further precision to this and in order to advance the operation of a theory, a model is adopted. A model is a structured whole which shows how a set of relationships is ordered and operates as a unit. In modern science the privileged language used for identifying the nature of these relationships and the manner of their operations is mathematics. Thus a theory contributes to establishing a form of representation which science brings to reality as a question.

Again, a model does not propose or reflect a purely static order of relationships. In the historical movement from Kant to Husserl, Ladrière identified the move from a static to a dynamic account of the transcendental field. This involved a shift in our anticipation of how the world could appear in its form of phenomenalization. Ladrière's emphasis on the relationship between theory and model is also a way of understanding how science re-effects the world. In modern science, the world is not purely an object out there, as if it were a complete whole or entity whose parts may be identified and reconstituted, as if science were simply attempting to build up a total picture. More profoundly, science attunes our question to the world insofar as the world effects itself in its self-disclosure. The model is a set of relationships which helps us to understand how the world in its phenomenalization exits. This can be further specified if we move from the level of the relationship among perception, theory and model to the level of the very dynamism of the act of scientific understanding itself.[39] How do the elements already identified bring content to what, at the level of theory, is a purely formal operation ?

Ladrière remarks that the dynamism of scientific understanding, both in the application of singular theories and in total organization of a body of theories as a discipline, leads us in two directions which mutually support and clarify one another. There is the direction of particularity and the direction of generality. The structuring of a question through the use of theory and model, given the limits of the discipline involved, leads to an affirmation of something particular which exists. Yet, the findings of modern science have increasingly shown that life assumes the character of life on the move. What is particularly fascinating in modern science is that its entire organization of theories and efforts of modelling have led us to apprehend the emergent character, the history and dynamic movement of life itself.

Hugo A. MEYNELL, *Redirecting Philosophy : Reflections on the Nature of Knowledge from Plato to Lonergan*, Toronto, Buffalo, London, University of Toronto Press, 1998, especially the chapter entitled "Consciousness and Existence : Husserl and Heidegger," p. 179-196. In his assessment of the strengths and limits of Husserl, Meynell offers a framework within which it is possible, in my judgement, to understand the positive contribution which Ladrière makes to the initial impetus of phenomenology. This contribution consists of an interpretation of the relationship between self and world which is augmented by a heightened and critical awareness of scientific inquiry in act.

39. One of the remarkable features of Ladrière's interpretation of science in act, insofar as this involves relationships among different disciplines, is the place given to the role of geometry. Geometry plays an important role in the selection of models with regard to theories. See, for example, "La contribution de la science à la composante cognitive de la culture," p. 125. Also, "Statut de la science dans la dynamique de compréhension," p. 39. Also, J. LADRIÈRE, "Foi et cosmologie," in *Articulation du sens I*, especially p. 204-206.

In addition, science consists of more than the work of one theory at a time. Science consists of a constant going back and forth between the general body of theories of any discipline as a whole and the judgements reached regarding any particular existing reality. Any theory is always part of a larger set of theories and this whole set of theories itself anticipates an intelligibility of the universe. At this point the dynamism of scientific understanding begins to move in the direction of the more general. The discipline as a discipline is moving forward in such a way that the total interaction of answers to questions evokes an image of the world and of the universe as a whole. And just as any particular theory appropriates a model, the discipline as a whole, building on the successes of the theories, begins to construct an image of the world as a whole, a cosmology.[40] In the act of scientific understanding a more and more complex notion of world begins to emerge, a complexity which is related to a heightened awareness of acts of understanding. To appreciate this let us recall the context within which we introduced our reflections.

We began our reflection in this section by drawing attention to Ladrière's own appeal to Husserl's intentionality toward a life world. This notion of world shows itself and is mediated by way of the progressive acts of scientific understanding. Both through the knowledge of particular existent things using theories and models, and through the knowledge of cosmology, something of that intentional world discloses itself. How does it accomplish this ? Here, we recall the intelligibility intended by the transcendental field. The work of scientific disciplines advances an understanding of the intelligibility of nature whose intelligibility is the object of the transcendental notions. The interplay between the singular judgements and cosmology is directly related to the power of scientific understanding to fashion a heuristic. Through this heuristic science can, at one and the same time, say what it has discovered about the concrete world and how knowledge can move forward, expand and anticipate where further discoveries can be found. Within the general field of philosophical reflection on reality, this entire enterprise constitutes an educated heuristic of our relationship to the world. Science, in this context, becomes an intrinsic feature of an interpretation of our experience of belonging to a world and, as such, contributes to a wider understanding of existence.

2. Consequences for the Dialogue between Theology and Science

Before we return to a consideration of further features of the scientific understanding, it is worthwhile, once again, to say a few words about the consequences of this line of thought for the dialogue between theology and science. First, these remarks reaffirm the distance between the findings and notions of science and those of

40. On the role of myth in the development of cosmology, see "Foi et cosmologie," especially the section entitled "Le mythe et la pensée cosmologique," p. 192-214. As a general reference, see Milton K. MUNITZ, *Cosmic Understanding : Philosophy and Science of the Universe*, Princeton, Princeton University Press, 1986 ; and Mary HESSE, "Cosmology as Myth," in David TRACY and Nicholas LASH, ed., *Cosmology and Theology* [*Concilium*, 166], New York, Seabury, 1983, p. 49-54. See also, M. HESSE, "Physics, Philosophy, and Myth," in *Physics, Philosophy and Theology : A Common Quest for Understanding*, p. 185-202.

theology. Both science's knowledge of concrete existing realities and the generalized narrative of the intelligibility of nature obey strict limits within a philosophical interpretation of acts of meaning and their relationships. There is no direct route between science and theology. Efforts within existing dialogues which attempt to bring the findings of science too quickly to the threshold of theology not only frustrate the long term solutions to the challenges encountered by faith in its own dialogue with modern culture, but also generate a situation in which it is impossible for science not to feel perplexed by the response of theologians and their appeal to notions such as creation, providence, divine initiative, etc.

Secondly, this is not an excuse for abandoning a dialogue between the scientist and the theologian. Yet, it is not enough, in the present contexts of dialogue and debate, simply to affirm that science and theology belong to two different orders of reality. Such an affirmation begs the question of the basis of a genuine dialogue. Furthermore, theology wishes to communicate faith experience at the level of its age. We have seen that science and philosophy are two essential features of this age.[41] A theology wishing to communicate with modern culture can only do so if it has accompanied culture in its own exploration of basic meaning and its self-constituting understanding of a relationship to the world. Science plays a privileged role in this search.

These remarks concerning the differentiation between science and theology do not indicate yet how a dialogue Ladrière proposes is possible through the mediation of philosophy. To do so we need to return to our consideration of science in act and identify where, intrinsic to this act and respecting the limits of its own act of understanding, the basis upon which a dialogue is possible. The key is not to add further elements to an existing act of reason, but to return to and to attend to science in its own acts of understanding where we can discern an abiding testimony to further dimensions, a surplus, of meaning. This will lead to a deepening of our interpretation of the relationship between self and world.

III. OPENNESS TO SPIRITUAL EXPERIENCE

The importance of attending to the experience of science in act is that philosophy remains linked to the empirical evidence for a second order reflection, a reflective and critical awareness of what is going forward. Such a reflective and radicalized effort attunes reason to deeper structures which support the diverse acts of reason themselves. With regard to the act of scientific investigation itself, Ladrière draws our attention to a remarkable event which takes place in the movement from perception to theory. The movement is not a smooth deductive one, but represents a leap in understanding. Theory assigns a direction to a question but in order to do so, theory must intuit an intelligibility without which we would remain at the level of

41. Regarding the views of systematic theology, Bernard LONERGAN writes : "[...] the understanding to be reached is to be on the level of one's times. [...] In the contemporary world it has to be at home in modern science, modern scholarship, and modern philosophy" (*Method in Theology*, p. 350).

perception. What is the basis of such an act of interpretation and why is it potentially fruitful ?

The answer to this question does not come from looking back from theory to perception, but by looking forward to the anticipated moment of knowledge in judgement. Beyond anticipating an affirmation of some particular reality, scientific theory anticipates something of the totality of the world. The dynamism of scientific understanding anticipates an integrated understanding of the world as a whole, and it is this general intelligibility, as an interpretation of nature, which exercises its influence and presence upon the formulation of the question. There is give-and-take between a theory which draws upon models in order to affirm what exists. But, for Ladrière, this very movement as an act of interpretation testifies, at the same time, to an interpretation of nature in general.[42] Based on this act of interpretation, Ladrière underlines the event character, the creativity and novelty involved in a methodologically refined strategy used by empirical scientific disciplines. Method is a way of accounting for the way any particular science moves from perception through theory to synthesis and judgement and how this entire movement is a discipline's way of relating, through an act of interpretation, its own questions to objects under investigation. But method is not purely a formal operation which leads automatically to results. It guides the dynamism of understanding within the hope that discovery will take place and that interpretation will be maximized.[43] An act of interpretation, as part of the general movement of science itself, anticipates novelty. Thus, in the moment of interpretation which bridges the movement from perception to theory, there is something of a risk and wager involved. This risk is not arbitrary, for it is part of an effort of the discipline as a whole which is supported by the history of the successes of the discipline in responding to questions.[44] Given this awareness, the scientist becomes increasingly alert to his/her own constant openness to and relationship with the world. Science is precise in terms of its controls and criteria, yet its relationship to totality is such that discovery is not always planned. An event character takes place which is reflected at several levels.

First, we have already alluded to the give-and-take between theory and testing as well as to the links among perception, synthesis and judgement. Furthermore, we have already indicated above the way Ladrière sees how this give-and-take leads science to attune its investigation to an emergent character of life on the move. There is a resonance between the novelty in inquiry and the novelty in the event character of life itself. Secondly, such an attunement is present at a general level, where science

42. For Ladrière's account of the role of interpretation in the movement among perception, theory, model and the intelligibility of nature, see his "La pertinence d'une philosophie de la nature aujourd'hui," in Pierre COLIN, *De la nature. De la physique classique au souci écologique*, Paris, Beauchesne (coll. "Institut Catholique de Paris," "Philosophie," 14), 1992, p. 63-93, especially, p. 83-85.

43. "Method is not a set of rules to be followed meticulously by a dolt. It is a framework for collaborative creativity" (LONERGAN, *Method in Theology*, p. XI).

44. In this context, Ladrière draws our attention to the way in which Kantian formalism must be informed by the successes of the history of science. See "La pertinence d'une philosophie de la nature aujourd'hui," p. 83. See also "La normativité de la pensée scientifique," p. 40.

begins to construct an imagination about the event character of the universe as a whole, a cosmology.

All this allows Ladrière to identify another deeper structural relationship supporting the movement of science. While science in its search for full intelligibility anticipates a totality, the ongoing act of scientific investigation realizes that this totality can never be completely given or captured by any of the particular acts of science itself. The full measure of the act of interpretation is not exhausted by science's own heuristic of the world. In the reflective moment in which we become aware of science as an act of interpretation, a hermeneutics emerges whereby we become attentive to a deeper experience of reason. That is, not only theory, but the total movement of scientific investigation is itself seen as an act of interpretation by virtue of which reason attempts to attune itself to nature and reality. For this reason, it was possible from the beginning to speak of science as an event in the order of philosophy itself.

Let us not forget that Kant, upon his interpretation of the significance of Newtonian physics, had shown how a new intelligibility, represented by the transcendental field, was an event for philosophy. The models employed by science became a new way of anticipating and accounting for the order of meaning. Increasingly science demonstrated an intelligibility of a world on the move in such a way that we can refer to an effective self-disclosure of the world, that is, how the world lends itself to language as a form of its own effectuation. In this way, when science is considered by a second order reflection, a philosophy of science, it testifies to a deeper intelligibility of the world as world. As such, science seeks a re-effectuation of the process according to which the world as world gives itself for interpretation.

Consequently, one of the major novelties was the discernment of the event character of the world. Science as a whole attunes itself to the nature of the world, not as a static object, but in the form of an emergent reality. Yet, to say that the world is emergent does not mean that something is happening to the world out there which reason attempts to grasp. We must not lose sight of the act of interpretation which attempted to find a basis for understanding which superseded the epistemological dichotomies of subject and object. The use by science of a form of representation which anticipates the emergent character of life becomes a way of rethinking the genesis of the world as world, as had done previous philosophies in their own times whenever the question of nature was taken up anew.[45] In addition, the novelty of this insight in our age corresponds to a novelty in an interpretation of the act of understanding itself.

The intelligibility of that origin from which there can be discerned a genesis, a re-effectuation of the world, now takes into consideration the profound relationship between humanity's own acts of understanding and disclosure of the world as world. Human beings in the acts of interpreting understanding on the move become aware of

45. Hans Urs VON BALTHASAR once remarked in his book *The God Question and Modern Man*, New York, Seabury, 1967 : "The factor most deeply affected by change in the great phases of the development of mankind is man's relation to nature" (p. 12). This book also appeared under the title *Science, Religion, and Christianity*, Westminster, Newman Press ; London, Burns, Oates & Washbourne, 1958.

a resonance between the structure of understanding and the structuring of the world. In this sense, to the extent to which the world is known in act of meaning, human beings become aware of and responsible for the self-constituting meaning of the world.[46]

Within the context of this second order reflection of science in act, it is important to keep in mind the development from Kant to Husserl which framed our general approach. For Ladrière, this was a development from the world as a static open formal system to a dynamic comprehensive interpretation of the Life World. The development toward intentionality directed our attention to the self-disclosing potential of the world. With the heightened understanding of reason in act, there occurs a heightened understanding of the intelligibility of the world. New questions emerge which direct their attention to that source from which both the effort of understanding and the self-disclosure of the world are given. Here, Ladrière oftentimes alludes to the Aristotelian effort of a search for first principles and the manner in which this has been renewed by drawing upon the notion of a transcendental field.[47]

In this light, the move toward first principles is an attempt to seek fuller and more critical understanding of understanding in act. But in this shift to the heightened awareness of understanding itself in act, the deeper desire of understanding shows itself as well. As desire, such an act seeks not only an origin but also the horizon of the fullness of understanding. The question becomes, what is the nature of this relationship between the dynamism of understanding and the world to be known ? The hermeneutical character of this question raises the act of interpretation beyond the level of a purely theoretical issue to an existential one.

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46. The reflections on the anthropic principle can be followed up at this point, however, this would lead us in a different direction. Ladrière has published several articles on this issue, for example, "Le principe anthropique et la finalité," in J. FOLLON and J. MCEVOY, ed., *Finalité et intentionnalité. Doctrine thomiste et perspectives modernes*, actes du colloque de Louvain-la-Neuve et Louvain, 21-23 mai 1990, Louvain-la-Neuve, Éditions de l'Institut supérieur de Philosophie ; Paris, Vrin ; Leuven, Peeters (coll. "Bibliothèque philosophique de Louvain," 35 [*sic* pour 36]), 1992, p. 259-284. Also, J. LADRIÈRE, "Le principe anthropique. L'homme comme être cosmique," *Cahiers de l'École des Sciences Philosophiques et Religieuses*, 2 (1987), p. 7-31.

47. Throughout his work, in too many instances to be identified, Ladrière refers to the significance of "principles." In his reference to principles, Ladrière identifies both a goal of understanding and a radicalization of the questioning. This shows itself not only in modern science but also as an axis present throughout the history of philosophy from Aristotle to the present. To be sure, the meaning of the notion of principle has been transposed given the developments in philosophy. Nonetheless, in appealing to the elucidation of principles, Ladrière refers to a project which sustains the entire effort of philosophy and allows us to apprehend a contemporaneity among all philosophers throughout history in their quest for authentic understanding. With respect to the notion of principle in modern science, see "Exposé de synthèse" [*Méthodes scientifiques et problèmes réels*], *Revue des Questions Scientifiques*, 145 (1974), p. 139-166, especially, p. 149. Regarding principles and knowledge, see "La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 32. With respect to the way Ladrière identifies the quest for principles as a fundamental task of philosophy, see "Event," in David A. BOILEAU and John A. DICK, ed., *Tradition and Renewal : Philosophical Essays Commemorating the Centennial of Louvain's Institute of Philosophy*, Leuven, Leuven University Press, 1992-1993, p. 147-164, especially, p. 152. With respect to its reference in Aristotle, see "Nature et Culture, Approche Philosophique," p. 198-200. With respect to principles and authentic knowing, see "L'ultime du savoir et la rencontre de l'Ultime. Religion et sciences," *Archives de Philosophie*, 63 (2000), p. 187.

Ladrière has more than once expressed a dissatisfaction with the breach between a Kantian "pure" reason and "practical" reason which we have inherited. It was Husserl's achievement to refer representation, as an act of theoretical construction, once again to its wider participation in a Life World, *le vécu*, from which it had once been drawn apart. As a result, the renewed openness of scientific reason to a fuller horizon is not independent of an encounter with events. However, the nature of the events to which we have been referring is the heightened awareness both on the part of the scientist and the philosopher of their responsibility before reason.[48] In this respect, Ladrière refers in his remarks on Husserl, to a hope, an eschatological reality. Ladrière does not invoke its religious meaning but rather a heightened awareness of the act of understanding which seeks the plenitude of the world as world. In short, it seeks that which grounds the dynamism of the act of scientific understanding.

To be sure, we have transcended here the limits and responsibilities of scientific reason. Yet our reading of Ladrière has indicated how reason can draw upon its particular instances of reason in act in order to show how such acts testify to a surplus of meaning. An enriched understanding of the world shows itself in corresponding heightened acts of interpretation. Ladrière speaks of a speculative and hermeneutical reason here, a reason which reflects upon and interprets the order of reason in act. Again, such acts of awareness are not simply "added onto" scientific reasoning or onto an *a priori* philosophical reflection of science in act. More profoundly, they represent an interiorization, a deepening of the presence to self of the scientist and the philosopher in the acts of understanding and reason. The move toward a speculative reason does not leave behind scientific understanding, any more than science's own attempt to interpret a cosmology left behind its affirmation of concrete existing reality.

This experience of a presence to self, an experience of interiority, is consistent with the deepest desire of the general transcendental dynamic of reason to search out the intelligibility of the world as world. If it has taken its point of departure from Kant, it has also deepened, enriched and augmented the meaning of the transcendental field. To be sure, such an intelligibility seeks an integrated knowledge of the world. But, for Ladrière, this deepest experience of interiority has transcended the dichotomies of subject and object and adverted to an experience which is attuned to the abiding source of that relationship between self and world. For this reason, the measure of interiority is not the physical world or the cosmic universe. Rather, it remains that source from which the world emerges in its openness and it remains that source from which there is a language that gives itself over to the actualizing power and dynamism of reason. At this point, and based precisely on his refined attunement to the acts of reason in all its levels, Ladrière alludes to an experience of *Logos*.

48. "Le passage par la subjectivité représente une péripétie qui n'est plus effaçable. Ce qui demande à être pensé, c'est un sens, ce n'est pas un spectacle, c'est un présent vécu, ce n'est pas un monde d'essences, c'est une destination, ce n'est pas une situation. [...] C'est dire que la compréhension dont il s'agit ici, comme on l'a déjà souligné, est auto-implicative et comporte à ce titre une composante essentielle de nature éthique" ("La science est-elle proportionnée aux exigences intellectuelles de l'homme contemporain ?," p. 46).

Authentic acts of reason, at whatever level they occur, reverberate with this experience of *Logos*, whereby human speech, by its very nature, is bound to reality. This capacity to point to the radicalization of the presence of existence to itself and to direct our attention as well to this spiritual or ethical dimension remains one of the grand achievements of phenomenology.[49]

If this represents a form of the radicalization of experience of existence and the relationship to the world, it is only because a larger horizon of the world continues to be opened up. Our effort in this article was modest. We simply wished to indicate how Husserl's own articulation of the self in intentional relationship to the world acquires new depth and precision with Ladrière's interpretation of science as an act of reason. However, this deepening of this sense of interiority and self-presence is in direct relationship to an eschatological horizon. It reflects a hermeneutical interpretation of an intrinsic relationship between origin and *eschaton*, creation and hope. In this way, Ladrière's approach to a quest for unity and communicability between science and religion represents a complete transformation of the earlier metaphysical language of representation. Moreover, it helps us to discern a metaphysical experience of responsibility, one grounded in a hope which sheds light on the horizon which summons agency and responsibility. Such a metaphysic is a mode of authentic existence. In addition, for Ladrière, reason knows that this fullness is not given independent of human acts of understanding. Such a world does not effect its fullness independent of acts of human appropriation and freedom.

The entire movement from speculative philosophy to science and the return from science to speculative philosophy and ethics is a testimony to this radicalization of openness inscribed within the relationship between self and world. The philosophical effort to articulate the intelligibility of the ground of this openness, the intelligibility and the source of its own genesis, is at the same time a deepening recognition of the transcendental openness in the heart of the world as creation. This remains, throughout much of Ladrière's work, a philosophical appropriation of a religious notion,[50] but it offers a way, based on the testimony of reason in act, by which we may consider, from the side of the experience of reason, a potential openness to a dialogue of science with theology.[51]

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49. "Phenomenology places itself in a point of view from which it is able, at the same time, to show how science is possible and how it enters into the reality of history, and to show how existence unfolds itself and what is properly at stake in its becoming" ("The Role of Philosophy in the Science-Theology Dialogue," p. 225).

50. Among the many instances where Ladrière indicates this, see "L'espérance de la Raison," in Jean GREISCH et Ghislaine FLORIVAL, ed., *Création et événement. Autour de Jean Ladrière*, Centre international de Cerisy-la-Salle, actes de la DÉCADE du 21 au 31 août 1995, Louvain/Paris, Éditions de l'Institut supérieur de Philosophie ; Louvain-la-Neuve, Éditions Peeters, 1996, p. 361-387, especially, p. 366.

51. "In that [transcendental] field, science and theology can rejoin each other as emerging from the same realm of possibilities, inscribed in the very structure of existence" ("The Role of Philosophy in the Science-Theology Dialogue," p. 226).

IV. CONCLUDING REMARKS : MEDIATIONS OF MEANING AND THE TASKS OF THEOLOGY

These reflections have led to the threshold of a dialogue between theology and science. We wish to conclude our reflections on Ladrière's approach with a few remarks touching more directly on the implications for the theological partner in the dialogue.

We stated from the outset that philosophy as a mediating agent does not occupy a neutral position between science and theology. The notion of mediation itself is born of an event in the order of reason, the emergence of modern science. The emergence of the autonomy of science was an event for philosophy as much as it was for modern science itself, and we have attempted to say a word about this within a framework whose boundaries were defined by the historical relationship between Kant and Husserl. To refer to science as an event, therefore, implied the experience of a crisis for philosophy. In the face of science's claim to autonomy, philosophy was required to redefine for itself its own responsibilities, its own task and mission. If this became identified with a heightened awareness of reason in act, philosophy recognized that the emergence of the autonomy of science became, not a separation from reason, but a privileged expression of reason in act. Philosophy could not fulfill its tasks independently of establishing an ongoing dialogue with the emergent plurality and diversity of disciplines themselves. For this reason, we have argued throughout our presentation that an understanding of understanding cannot go around the dynamism and acts of modern science.

Such is a reflection on the nature of the mediation agency of philosophy for theology. Thoroughly understood, this does not mean that philosophy simply brings the implications of meaning in science to the threshold of an encounter with theology. The threshold of openness between science and theology occurs from the side of theology only if theology has already accompanied philosophy in its own efforts to interpret the event of modern science. Theology does not stand at the threshold merely awaiting the work of philosophy. Not only would this overlook the longstanding and intrinsic relationship between theology and philosophy,[52] it would also lead to an oversight in theology's own responsibilities in its dialogue with science.

First, theology needs to recognize that the crisis experienced by philosophy is a crisis not only for philosophy. If theology does not accompany this crisis and experience, in a real sense, the abyss which yawns beneath its feet,[53] theology will not gain in its understanding of effort involved in the self-constituting act of meaning, either

52. See Jean LADRIÈRE, "Théologie et historicité," in Marie-Dominique CHENU, *Une école de théologie. Le Saulchoir*, Paris, Cerf, 1985, p. 63-79 : "[...] la théologie met en œuvre, et cela nécessairement, les *moyens* de la raison" (p. 66).

53. "Ici il n'y a plus que le recueillement de la joie. Mais il faut la longue patience de la logique [...] la marche au désert, pour qu'advienne ce qui n'est en aucun lieu, [...] comme une montée sans terme dans le suspens infini de l'abîme" ("Le langage théologique et le discours de la représentation," p. 225). See also, Jean LADRIÈRE, "L'Abîme," in J. BEAUFRET *et al.*, *Savoir, faire, espérer. Les limites de la raison*, Bruxelles, Facultés Universitaires Saint-Louis, 1976, p. 171-191.

in the effort of reason or in the effort of science. Philosophy as a mode of existence continues to re-appropriate a sense of hope. However, the discovery of this hope does not occur outside an attunement to the testimony of scientific reason and its own desire for understanding. In order to enter into a dialogue with modern science, theology needs to make its own such an experience of hope. Indeed, it remains one of the measures of the status of the discipline of theology to be able to distanciate itself in such an act of accompaniment and to discern, before it announces its own hope, the regions in which philosophy, as an authentic mode of existence, is required to travel on its own quest for hope. If it does not take up such an adventure with philosophy, theology will be ill-prepared to encounter science in that region of openness to which Ladrière has referred us.[54]

Secondly, theology cannot avoid the implications of modern philosophy for its own self-constituting acts of understanding. For example, Ladrière's work has consistently shown how the mediation of meaning can open a space from the side of reason which appeals to what, from the side of religious experience, is an avowal of creation. However, this does not mean that for theology the religious meaning of such a notion as creation is fixed. The result of theology's accompaniment of philosophy is a heightened awareness of the mediation of meaning in the history of theology. As a result, theologians need to re-examine the meaning of their own religious notions, such as creation. An attention to philosophy's own discovery of the mediation of meaning alerts the theologian to new questions for the development of doctrine. If the theologian is to communicate meaning at the "measure of our age"[55] then such questions as creation need to become new questions addressed both to scripture and to tradition.

How, for example, does our attention to the mediation of meaning and its heightened awareness of reason as a mode of existence help us to explore further resources of meaning in the biblical avowal of God as Creator ?[56] Furthermore, how does this

54. For Ladrière's remarks on the existential exigencies of authentic dialogue, see for example, "La démarche interdisciplinaire et le dialogue Église-Monde," and "Le Dialogue entre croyants et incroyants," chapters seven and eight respectively in *La science, le monde et la foi.* For Ladrière, dialogue involves not only an understanding of the other's perspective from the other's point of view, but also "an enlightenment of one's own research from the point of view of the other" ("The Role of Philosophy in the Science-Theology Dialogue," p. 218).

55. A theme at the core of Lonergan's exposition of the functional speciality "systematics" in *Method in Theology*, especially p. 350-351.

56. Ladrière has taken up this question in his own reflections on Donald EVAN's book entitled the *Logic of Self-Involvement.* In my judgement, this reading emphasizes the semantics of the biblical language about the avowal of God as Creator. In particular, it draws upon the performative aspects and elements of language as these have been identified in the analytic tradition with an aim to exposing the "self-involvement" implied by religious language. See, "Langage auto-implicatif et langage biblique selon Evans," in *Articulation du sens II*, p. 91-138. In several articles, Ladrière has also explored the speculative resources which Christian theological tradition has drawn upon in order to develop notions of God as Creator and creation. See, for example, "Avant-propos. Approches philosophiques de la création," in Paul BEAUCHAMP, ed., *La création dans l'Orient Ancien*, Congrès de l'ACFEB, Lille (1985), Paris, Cerf, 1987, p. 13-38. Also, "Avant-propos. La tradition philosophique et l'idée de création," *Mélanges de Science Religieuse*, 55, 1 (janvier-mars 1998), p. 5-14. The exploration of the mediations of meaning, especially in its hermeneutical dimensions, invites us to rethink both the biblical and historical traditions. An excellent model for this is the work of Isabel BOCHET, "Interprétation scripturaire et compréhension de soi. Du *De doctrina christia-*

help us to discern more clearly ways in which the dogmatic and doctrinal judgements developed in the history of theological reflection refer to specific historical challenges and different forms of questioning ?

If theology is to enter into a genuine dialogue with science, it cannot simply await the openness constructed from the side of reason. Its own tasks stand before it, tasks which require that theology draw upon the resources of modern scholarship in order to augment its own understanding of faith experience. In the give-and-take of the dialogue, theology is called to attune itself to the resources of revelation whose own structure of self-communication is not foreign to that experience of a *Logos* which inhabits the efforts of human reason. In this regard, the emergence of modern science is an event for theology itself.

Ladrière remarks, in one of his earlier articles, that it is the sign of a generous person to be open to new encounters, especially those in which something of an event occurs, the encounter between one's self and the world.[57] Conversely, it is a sign of the impoverished spirit to retreat from such encounter and close oneself up in the narrower world of self-defined relationships. Our experience is that Ladrière's work offers the theologian the courage to be generous ![58]

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na aux *Confessions* de saint Augustin," in *Comprendre et interpréter. Le paradigme herméneutique de la raison*, Paris, Beauchesne, 1993, p. 21-50. On the biblical side, an excellent model is Anne-Marie PELLETIER, "Le livre d'Isaïe et le temps de l'histoire," *Nouvelle Revue Théologique*, 112 (1990), p. 30-43 ; and "L'exégèse biblique sous l'inspiration de l'herméneutique. Un accès réouvert à la temporalité biblique," in Jean GREISCH et Richard KEARNEY, dir., *Paul Ricœur. Les métamorphoses de la raison herméneutique*, Actes du colloque de Cerisy-la-Salle, 1er-11 août 1988, Paris, Cerf, 1991, p. 297-309.

57. "Le sens de notre vie ne sort pas tout entier d'une pure réflexion ou d'un rêve intérieur, le sens de notre vie nous est suggéré par les rencontres que nous faisons. [...] L'homme généreux rencontre des grandes circonstances et l'homme mesquin rencontre des circonstances dépourvues d'exaltation" ("Le Destin de la raison," p. 35).

58. In *De doctrina christiana* (Bk 2, VII, 9-11), St. Augustine identified seven stages of spiritual development. The fourth stage was called science, which led to the fifth stage, courage. Courage, based on understanding of Christian Teaching, that is, the attunement to the "logic" of God's love, led to a love one's neighbour and one's enemy. This, in turn, led to Wisdom.