ETHER IN KANT AND *ĀKĀŚA* IN PRAŚASTAPĀDA PHILOSOPHY IN COMPARATIVE PERSPECTIVE

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ABSTRACT: The study of Indian and Western systems of Philosophy reveals many points of *thematic* and *methodological* coincidences between them. We have collected a good number of these coincidences in our recent books, where we have included many philosophical texts in Sanskrit and in European languages which contain the expression of astonishing similar ideas and theses. In the present article we add a new instance of coincidence between Indian and Western thought in relation to *ākāśa* in India (limited to the Indian philosophical system Vaiśeṣika) and *ether* (*Aether* or *Äther* in German) in the *Opus postumum* of Kant. The inexistence of both *ākāśa* and *ether* has been established by Modern Science. *Ākāśa* and *ether* in India and the West, respectively, constitute a notorious example of *āśrayāsiddha*, the well-known logical defect considered by Indian Logic.

KEY WORDS: ether, Kant, *ākāśa,* Praśastapāda, *Opus Postumum,* Vaiśeṣika, Philosophy.

Ether *en Kant y* ākāśa *en Praśastapāda*
Filosofía desde una perspectiva comparativista

RESUMEN: El estudio de los sistemas de Filosofía indios y occidentales revela muchos puntos de coincidencias *temáticas* y *metodológicas* entre ambos. Hemos reunido un buen número de estas coincidencias en nuestras publicaciones recientes, donde hemos incluido muchos textos filosóficos en sánscrito y en lenguas europeas que contienen la expresión de ideas y tesis asombrosamente similares. En el presente artículo agregamos un nueva instancia de coincidencia entre el pensamiento indio y el occidental en relación con *ākāśa* en India (limitado al sistema filosófico indio Vaiśeṣika) y *éter* (*Aether* or *Äther* en alemán) en el *Opus postumum* de Kant. La inexistencia de ambos, el *ākāśa* y el *éter* ha sido establecida por la Ciencia Moderna. *Ākāśa* y *ether* en la India y en Occidente, respectivamente, constituyen un ejemplo notorio de *āśrayāsiddha*, el bien conocido defecto lógico considerado por la Lógica india.

PALABRAS CLAVE: ether, Kant, *ākāśa,* Praśastapāda, *Opus Postumum,* Vaiśeṣika, Filosofía.

The study of Indian and Western systems of Philosophy reveals many points of *thematic* and *methodological* coincidences between them. We have collected a good number of these coincidences in our recent publications[1]. In the present

[1] *On the Myth of the Opposition between Indian Thought and Western Philosophy* published by Olms Verlag in 2004 (reviewed by E. STEINKELLNER in *Wiener Zeitschrift für die Kunde Süd-Asiens*, 2004); *Filosofía Yoga: Un Camino Místico Universal*, Barcelona: Editorial Kairós, 2006; *Filosofía de la India: Del Veda al Vedānta. El sistema Sāṃkhya*, Barcelona: Editorial Kairós, 2008; and, recently, *Essays on Indian Philosophy in Comparative Perspective*, Hildesheim-Zürich-New York: Georg Olms Verlag, 2009, where we have included many philosophical texts which contain Western and Indian Philosophy theories in comparative perspective.

article we add a new instance of them in relation to *ākāśa* (limited to the Indian philosophical system Vaiśeṣika), and *ether* (*Aether* or *Äther* in German) in the *Opus postumum* of Kant.

Kant (1724-1804)

Definition and attributes of 'Aether'

In *Opus postumum XII. Convolut, X. (Halb) Bogen, 1. Seite*, Vol. XXII, pp. 609-610[2], Kant gives a definition of the *caloric* (*Wärmestoff*) also called *ether* (*Aether* or *Äther*) and he mentions some of its attributes:

«By the concept of caloric [= ether], I understand a universally distributed, all-penetrating matter, internally uniformly moving in all its parts, and remaining permanently in this state of internal motion (agitation). It forms an absolute, self-subsistent whole, which, as elementary material, both occupies (*occupans*) and fills (*replens*) cosmic space. The parts of it, continuously agitating one another in their place (hence not locomotively, [but] concussively – not progressively) and ceaselessly agitating other bodies, preserve the system in constant motion, and contain the moving forces as an outer sense-object.

This matter is also, as a consequence of the aforementioned attributes, negatively characterized: as imponderable, incohersible, incohesible, and inexhaustible; for the contrary characterization (*Beschaffenheit*) would conflict with those attributes. Ponderability, cohersibility, cohesion, and exhaustibility, presuppose moving forces which act in opposition to the latter and cancel their effect». [Eckart Förster and Michael Rosen's translation, in *Immanuel Kant, Opus Postumum*, edited with and introduction and notes, by Eckart Förster, Cambridge: Cambridge University Press, 1995, pp. 97-98] (*Unter dem Begriffe des Wärmestoffs verstehe ich eine allverbreitete, alldurchdringende, innerlich in allen seinen Theilen gleichförmig bewegende und in dieser inneren Bewegung* (agitation) *beharrlich begriffene Materie welche ein den Weltraum als Elementarstoff einnehmendes* (occupans) *und zugleich erfüllendes* (replens) *absolutes, für sich bestehendes Ganze ausmacht dessen Theile in ihrem Platze (folglich nicht* locomotiv *concussorisch // nicht progressiv*) *continuirlich einander und andere Körper unablässig agitirend das System in beständiger Bewegung erhalten und als äuseres Sinnenobject die bewegenden Kräfte enthalten.*

Diese Materie wird zu Folge obbenannter Attribute auch negativ characterisirt: als imponderabel, incoërcibel, incohäsibel, und inexhaustibel weil das Gegentheil dieser Beschaffenheit jenen wiederstreiten würde. – Wägbarkeit, Sperrbarkeit, Zusammenhängen, und Erschopfbarkeit setzen bewegende Kräfte voraus die jenen entgegengesetzt wirken und die Wirkung derselben ausheben).

[2] Preussischen Akademie der Wissenschaften edition, 1936-1938, Vols. XXI and XXII of the complete works of Kant.

The definition of ether together with the attributes and functions that are conferred to it show the great and complex importance that ether has in Kant's explanation of nature.

Other attributes of ether

In many passages of Kant's *Opus Postumum* are mentioned other numerous attributes of *ether* or *caloric*. For a more complete enumeration of these attributes we remit to the excellent *Index* II. *Sachverzeichnis sub Aether*, p. 641, and *sub Wärmestoff*, pp. 739-743, by Gerhard Lehmann at the end of the Preussischen Akademie der Wissenschaften's edition.

We give in this paragraph and in the next ones some examples of these attributes – those that seem to us the most characteristic of *ether* or *caloric*: the ether is a living force (I,380,9-10); the ether fills everything (I,428,27); it fills the space (II,111,13); the ether is the fundamental element (I,467,14); the ether is an object of the sense-organs, although it, as the space itself, does not fall under the senses but only under intellect (I,562,9-10); the ether, notwithstanding being an object of the sense-organs, cannot be the object of an experience (I,562,14-18); it is an all-pervading matter, provided with moving forces, and permanently moving (I,562,17-19); the ether pervades everything and constitutes a unity (I,645,12-13); the ether is the *primum mobile* not in the sense that it changes its place in the space but in the sense that it is internally in perpetual movement (II,106,20-22); the ether would be the only originally elastic matter (II,214,13-14); the magnitude of the ether in its totality is the only absolute magnitude (II,427,9-10); the ether as the whole of matter, moving itself and moving others, is basis of the elementary system of all the forces dynamically moving (II,608,14-15); the ether possesses a living force (II,22,1); the ether is presented as a continuum which exists by itself (II,587,23-24); the material called caloric is all-embracing, *individual* (*unica*), the basis of all forces for the knowledge of the object of the one experience; it is *universally distributed*, *all-penetrating*, *all-moving* (not that it is itself movable (*locomotive*, that is displaceable)), and as such it is necessary, i.e. *permanent*. For *sempiternitas est necessitas phaenomenon* (I,584, at the end).

Some functions of the ether

Besides the attributes mentioned in the previous paragraph, let us now mention other attributes that basically refer to the effects that ether or caloric produces in other elements:

The ether makes possible connexion among things; without ether there is no cohesion, which is necessary for the formation of physical bodies (I,378,15-18); the ether is the basis of all the matter that fills the space (I,380,7-8); the vibration of ether pushes it among the parts of the bodies and presses them together (I,424,7-8); the ether, since it fills everything, makes possible all special limited matter (I,428,

27-28); the ether is the «*Grundelement*» whose vibrations make possible unions and separations of the other elements (I,467,14); the ether makes the space an object of the sense-organs, and perception possible (II,109,18-19, and II,110,9-11); the ether is the principle of possibility for the experience of time and space (II,605,29-30); caloric or ether is the *basis* (first cause) of all moving forces of matter, for it is thought as the primary material (*materia primaria*) which moves by itself (I,605, 5-7); the caloric or ether is what makes space a sense-object and experience of it possible (I,219,14-17); the caloric, an imponderable matter in itself, is the cause of the ponderability of things (II,197,3-4); the caloric is the cause of polishing (I,328, 9-13); it is an all-moving element (I,584,25); it makes possible the knowledge of nearness and remoteness (I,220,7-9); there is impossibility of movement without ether (I,219,25-220,2; I,223,2-224,2).

In the paragraph *Demonstration of the existence of ether or caloric* are enumerated other attributes of ether or caloric which are similar to those mentioned in the present paragraph, which reveal in a very forcible way the *necessity* of the existence of that matter for the functioning of reality according to Kant.

The ontological status of ether

Kant refers to the ether or caloric as something that exists both as an *idea* and *in re*. The next firstly quoted texts refer to the first aspect; the others to the second one:

The ether is an *idea* and *not the object of an experience* (I,378,9-11); the ether as a matter filling cosmic space is an *inevitably necessary hypothesis* (I,378, 15-16); the universally distributed and all-penetrating ether is assumed as a *merely hypothetical thing* (*ens rationis*) in order to explain certain phenomena (II,125, 4-7); the ether is a *hypothetical thing* assumed in order to make space into a sense-object (II,126,5-6); the ether is the *hypothesis of a matter* for which all bodies are permeable, but which is itself expansive (II,193,3-4); the ether is referred to as *fiction* or *fantasy* (II,109,18-19); the ether is an *idea* created not through experience but *a priori* (II,587,23-24); as God regarded as a natural being is a *hypothetical being assumed* for the explanation of appearances, so is ether *for making space into a sense object* (II,126,4-6). The words *idea*, *hypothesis*, *fiction*, *hypothetical thing*, *hypothetical being*, utilized by Kant in the previous references of the *Opus postumum*, do not mean that the ether does not really exist, but only that its *existence in intellectu* is taken into account.

Other texts of the *Opus postumum* will clearly refer to the *existence in re* of the ether, as for instance: the ether (or caloric) is *not a hypothetically* (i.e. conditionally) but a *categorically given matter* (I,584,1-2); the ether is *not a hypothetical matter* conceived *for* the purpose of explaining certain phenomena, but *a matter necessarily deduced from* a priori *concepts* for the sake of the possibility of a single all-embracing experience (I,563,11-15); the very title at the beginning of IInd fascicle, sheet VII, page 4 (I,222,14-19), which introduces the remarks that follow it, reads: *On an all-penetrating matter* [the ether or caloric] *which fills the whole of space as a non-hypothetical, but* a priori *given, material for a world-system*; the primary material

[ether or caloric] is a categorically and *a priori* demonstrable material (I,223,1 and 9); the primary material [ether or caloric], is not a hypothetical material, but a real, existing material (I,225,24); it emerges from *a priori* concepts according to the rule of identity (I,228,12-13); this material is not a hypothetical one (which remains always problematic), but categorical (I,233,12-13); the caloric is not hypothetical (I,233,21-22); the concept of caloric has an objective reality (I,575,3-5); the material, called caloric, exists and its *a priori* presupposition is necessary (I,216,10-11); it is a given, originally moving, world-material, it cannot be assumed merely problematically (217,12-17).

Harmonizing both positions – if one does not want to assume a certain ambiguity in Kant – it could be said that for Kant the ether was a *hypothesis* (*fiction* or *fantasy*, *ens rationis*) established *a priori*, but at the same time *corresponding to a true actually existing entity*.

Demonstration of the existence of ether or caloric

1. Kant's reasoning in his *Opus postumum* starts from the idea that *an empty or void space is in no way an object of possible experience, since an empty or void space is not existing, and nonbeing cannot be perceived*, as it is stated in many passages of his work, as for instance:

I,549,17-19 (*der leere Raum … ist kein Gegestand möglicher Erfahrung*); I,582, 17-20 (*das Nichtsein kan nicht Wargenommen werden*); I,590,10-21 (*das Leere … kein Gegestand der Warnehmung ist (denn das Nichtsein kann nicht wargenommen werden*); I,602,2-3 (*der leere umschlossene oder umschliessende Raum is kein Gegestand der Erfahrung*); I,604,12-13 (*der leere Raum ist kein Gegenstand möglicher Erfahrung (das Nichtsein kann nicht wargenommen werden*)); II,552, 25-26 (*das Nichtsein kein Erfahrungsgegestand seyn kann*); II,553,31-33 (*Der leere Raum ist kein Gegenstand möglicher Erfahrung; also nur der von Materie durchgängig in Substanz eingenommene Raum*); II,555,2-4 (*der leere Raum kein Gegestand möglicher Erfahrung mithin der Begriff eines Ganzen bewegender Kräfte aus solchen Bestandstücken ein unhaltbarer Erfahrungsbegrief ist*).

2. In nature are given a series of processes or phenomena, which require the existence of a real existing space and a causal factor that make possible and explain their existence and functioning. Kant considers that the «ether or caloric» (provided with the attributes he ascribes it and that we have indicated above, and whose existence was transmitted to him by tradition) filling the empty or void space makes it perceptible, an object of possible experience, providing thus the *necessary* locus for the possibility of experience of outer sensible beings, and acting as the privileged causal factor of those processes and phenomena, as it is clearly expressed in the following statements of Kant on and around the *ether*:

— In empty space there is no transition from what is full through the void to the full again, since in it there cannot be motion for the senses as it is possible in a space filled with matter, for only of space filled with matter is it pos-

sible to have experience (*Bewegung der Materie im leeren Raum ist kein Gegenstand möglicher Erfahrung; also ist es auch nicht der Übergang vom Vollen durch das Leere zum Vollen. Es kann also für die Sinne keine Bewegung ... geben als in einem von Materie erfülleten Raum denn von dem ist allein möglich eine Erfahrung zu haben* I,223,10-15).

— Caloric is perceptible space, the principle of possible experience of all the dimensions of space, the opposite of empty space; in perceptible space everything can change position; it is a matter universally distributed and its existence is necessary (*Wärmestoff ist der perceptibele Raum, ... Princip der Möglichkeit der Erfahrung aller Dimensionen desselben das Gegenstück vom leeren Raum da im Raum alles Ortbewegbar ist ... so ist jene Materie durch das ganze Weltgebäude ausgebreitet u. seine Existenz notwendig* I,224,14-20).

— Space, as object of possible experience, is the elementary material, called caloric, that makes space sensible (*Der Raum selbst als Gegenstand möglicher Erfahrung vorgestellt ist der Elementarstoff ... Er macht den Raum sensibel heisst Wärmestoff* I,228,24-25).

— The matter (constituted by the ether) with the mere attribute of being a sensible space, present in all the corporeal, must be a self-subsistent, all-penetrating, uninterrupted, uniformly overextended whole and a material which serves as basis to the moving forces by means of its movement in order to produce the possibility of one experience (*die Materie also, bloss mit der Eigenschaft ein sensibeler Raum mithin in allem Körperlichen dynamisch gegenwärtig zu sein muss ein für sich bestehendes alldurdringendes ununterbrochenes gleichförmig ausgebreitetes Ganze und ein Stoff seyn welcher den bewegenden Kräften mit ihrer Bewegung zur Basis dient zur Möglichkeit Einer Erfahrung* I,236,15-20).

— Without the ether, space would not be perceived and consequently no object could be given (*Der Begriff einer allerfüllenden alldurchdringend bewegenden Materie liegt schon darinn dass sonst der Raum nicht wargenommen werden mithin aus kein Object sein würde* II,421,1-3).

— The ether is the privileged causal factor, conceived as the primary matter (that makes possible and explains the existence and functioning of processes and phenomena in nature) (*Basis*, *erste Ursache, Urstoff*, *materia primaria* I,605,5-7).

— The ether must be thought as *primum mobile*; without it space would not be an object of perception through sense-organs, and thus nothing would be outside me (... *ich muss mir den Aether als das* primum mobile ... *denken, weil ohne ihn voraus zu setzen der Raum selbst kein Sinnengegenstand also nichts ausser mir wäre* II,106,20-22).

— The ether is the basis of all the possible perceptions of the moving forces of matter, is the concept of an elementary material that in itself attracts and repels; it is continuously internally self-moving (*Die Basis aller möglichen Warnehmungen der Bewegenden Kräfte der Materie ... ist der Befriff einer*

Elementarstoff blos in seinen eigenen Teilen anziehend abstossend ... sich selbst innerlich continuirlich bewegend ist I,225,12-19).

— Without the acceptance of the existence of the ether, there would not be unity of our external experience (*Wir würden gar keine Einheit äuserer Erfahrung haben wenn wir nicht die Existenz eines solchen Stoff voraussetzen* I,592, 23-24).

— The ether is the basis for the unification of the moving forces of matter into the unity of experience (*die Basis der Vereinigung aller Kräfte der Materie zur Einheit der Erfahrung* I,602,10-11).

— What makes possible the very existence and the functioning of everything in nature is the ether: it explains, for instance, 'cohesion' in bodies, as due to pressure of the ether through gravity (*Zusammenhang ist also das erste, was Erklärungsgrunde bedarf (Druck des* aethers *durch die Schwere)...* (I,374,1-2); and 'solidity' as a derivative property, which consists in an inner resistance, this resistance must derive from the same force which creates cohesion, this force is only possible through the original perpetual vibration of the ether (*Also muss die Festigkeit eine abgeleitete Eigenschaft sein, die in einem inneren Wiederstande bestehet ...* (I,374,12-13); (*Dieser Wiederstand muss von derselben Kraft herrühren welche den Zusammenhang macht* (I,374,16-17); *... Diese ist nur durch ursprüngliche immerwährende Erschütterung des* aethers *moglich* (I,374,20-21).

— Without accepting the ether as a matter filling cosmic space no cohesion –necessary for the formation of a physical body– can be thought; ether is thus an inevitably necessary hypothesis (*Eine solche den Weltraum erfüllende Materie anzunehmen is eine unvermeidlich notwendige Hypothese weil ohne ihn kein Zusammenhang als welcher zu Bildung eines physischen Körpers notwendig ist gedacht werden kann* I,378,15-18).

— The primary matter is ether, an hypothetical thing to which reason must have recourse in order to attain the supreme cause of the phenomena of the corporeal world (*Diese ursprünglich/elastische Materie ist nun der Aether ein hypothetisches Ding wohin gleichwohl die Vernunft um zu einem obersten Grunde der Phänomene der Körperwelt zu gelangen greifen muss* I,253, 8-10).

3. The mode of demonstrating the existence of this material called 'ether or caloric' is referred to by Kant in many passages of his *Opus postumum*. The ether is not demonstrated through experience, it is inferred or deduced *a priori*, analytically, from concepts, i.e. according to the principle or rule of identity and not synthetically; it is categorically, necessarily and not hypothetically invented; its mode of proving is unique of its kind, as is stated in the following texts:

— The ether's existence is not derived from experience, rather it is the ether itself what makes experience possible (*... welcher von keiner Erfahrung abgeleitet ist vielmehr sie selbst möglich macht* I,603,14-15).

— The existence of caloric or ether cannot be *directly* demonstrated, since that would have to be done by experience, but experience offers only phenomena

whose ground of explanation can only count as hypotheses; its existence can be proved only *indirectly* on the ground of the *subjective* principle of the *possibility* of experience and not of the objective principle of the experience itself, in other words: the possibility to have experience of it becomes its ground of proof, from this ground of proof it is possible to derive its concept of *object*, and to establish *a priori* – through reason – the conditions of possibility of knowledge of the object and of its actuality (*Wärmestoff kann* direct *nicht bewiessen werden; denn das müsste durch Erfahrung geschehen. Diese bietet aber nur Phänomene dar deren Erklärungsgründe selbst nur als Hypothesen gelten können. Sie kann also ... nur* indirect *das* subjective *Princip der Möglichkeit der Erfahrung statt des objectiven der Erfahrung selbst zum Grunde legend beweisführend sein nämlich das Vermögen überhaupt über diesen Gegestand Erfahrung zu haben zum Beweisgrunde aufzustellen und aus diesem ihren Begriffe von* Object *ableiten und* a priori *durch Vernunft die Bedingungen der Möglichkeit der Erkentnis desselben der Wirklichkeit des Objects (unter jenen Bestimmungen desselben) darstellen* I,548,14-549,6).

— This primary matter which is only in thought is neither a hypothetical thing nor an object of experience … but it has reality and its existence may be postulated, since without the acceptance of such a world-material and of its moving forces, space would be no sense-object and experience of it, either affirming or denying it, would not take place. Of such a formless primary material filling all spaces and which can be proved only by reason, in relation to which we conceive nothing else than all-penetrating moving forces extended all over the space, it is possible to postulate its reality even prior to experience, i.e. *a priori*, for the sake of possible experience (*Dieser Urstoff der blos in Gedanken da ist ... ist nun kein hypthetisches Ding auch nicht ein Erfahrungsobject ... hat aber doch Realitat und seine Existenz kann postuliert werden weil ohne die Annahme eines solchen Weltstoff und der bewegenden Kräfte desselben der Raum kein Sinnesobject sein und Erfahrung über dasselbe weder bejahend noch verneinend statt finden würde. – Von einem solchen formlosen alle Räume durchdringenden nur durch die Vernunft zu bewährenden Urstoffe von welchem wir nichts mehr als blos im Raume verbreitete und alldurdringende webegende Kräfte denken lässt sich seine Wirklichkeit auch vor der Erfahrung mithin* a priori *zum Behuf möglicher Erfahrung postuliren* I,219,10-22).

— That in cosmic space a material, as the ether, exists, which is the basis of all the moving forces of matter can *a priori* be inferred according to the principle of identity, since the actuality of empty space without the limitation by full space would not be an object of possible experience (*Das eine Stoff im Weltraume existire der die Basis aller bewegenden Kräfte der Materie ausmache kann* a priori *schon nach dem Princip der Identität schon daraus gefolgert werden weil selbst die Wirklichkeit* (actualitas) *des leeren Raums ohne Begrenzung durch del vollen kein Gegestand möglicher Erfahrung sein würde* I,226,16-20).

— To assume the existence of a matter as ether, with all its characteristics, is a hypothesis which is neither proved nor can be proved by experience, and consequently if it has a fundament, it should come out *a priori* from reason as an idea; be it for *making clear* certain phenomena, or be it to *postulate* them (*Die Existenz einer ... Materie, ... anzunehmen ist eine Hypothese, welche zwar durch keine Erfahrung weder bewährt wird, noch bewährt werden kann und also, wenn sie Grund hat,* a priori *als eine Idee aus der Vernunft hervorgehen müsste; es sey umgewisse Phänomene zu erkären ... oder sie zu postuliren* II,551,18-552,3).
— The deduction of caloric as the basis of that system of moving forces has a principle *a priori* as foundation, i.e. that of the necessary unity in the comprehensive concept of the possibility of One experience, which simultaneously implies – identically, not synthetically, but analytically, following *a priori* from a principle – the reality of the ether (... *die Deduction des Wärmestoffs als der Basis jenes Systems bewegender Kräfte hat ein Princip* a priori *nämlich das der notwendigen Einheit in dem Gesammtbegriffe der Möglichkeit Einer Erfahrung zum Grunde liegen welche zugleich die Wirklichkeit dieses Objects identisch also nicht synthetisch sondern analytisch mithin zu Folge einem Princip* a priori *bei sich führt* I,586,19-24).
— The caloric is not a subsidiary hypothesis but an original one, thus not a hypothetical, i.e. conditional but a categorically given matter, necessarily and not hypothetically invented (*Der Wärmestoff ist nicht Hypothesis* subsidiaria *sondern* originaria *also nicht hypothetisch d.i. bedingt sondern categorisch gegebener Stoff* I,584,1-2).
— Not only the right but also the *necessity* to postulate such a material like the ether with all its qualities is based on its own concept as a space *hypostatically* thought. (*Nicht blos die Befugnis dazu sondern auch die Nothwendigkeit der gleichen allgemein verbreiteten Stoff zu postuliren hat ihren Grund in dem Begriffe desselben als* hypostatisch *gedachten Raumes* I,221,10-13).
— I now demonstrate the existence of this material, the ether, and the necessity of its presupposition *a priori* in the following way: … – The proposition 'There are physical bodies' presupposes the proposition: 'There is a matter whose moving forces and motion precedes the generation of a body in time'… This matter thus, which *a priori* is at the basis of any general//possible experience, cannot be conceived as merely *hypothetical*, but as a given, originally moving world-material not merely problematically assumed … (*Die Existenz dieses Stoffs nun und die Notwendigkeit seiner Vorausetzung* a priori *beweise ich auf folgende Art ... – Der Satz es giebt physische Körper setzt den Satz Voraus: es gibt Materie deren bewegende Kräfte und Bewegung der Erzeugung eines Körpers in der Zeit vorhergeht: ... Dieser Stoff also der jener allgemein//möglichen Erfahrung* a priori *zum Grunde liegt kann nicht als bloss* hypothetischer *sondern als gegebener ursprünglich bewegender Weltstoff angesehen nicht bloss problematisch angenommen werden*... I,216,10-217,16).

— For, if we did allow the caloric to be valid only as a hypothetical material, if nature itself, through its influence on the sensible subject and on the forces that move the consciousness of this latter, did not exercise an influence able to create a system, then we would have sensations and their corresponding perceptions – as they arise from outer forces, without a form (*tumultuously*), form which we ourselves would be obliged completely to give for their union; we would have as an experience a fragmentary aggregate, but no principle of form in the connection of the empirical representations (perceptions), and the norm required in order to have a concept of their whole, would be entirely omitted. (*Denn wenn wir den Wärmestoff blos für einen hypothetischen Stoff ... gelten lassen, wenn die Natur nicht selbst durch ihren Einflus auf das sinnliche Subject und dessen Bewustseyn bewegender Kräfte einen Einflus ausübete der ein System begründen kan so würden wie Empfindungen und ihnen correspondierende Warnehmungen haben wie sie durch äusere Kräfte ohne Form (*tumultuarisch*) die wir ihrer Verbindung durch aus selbst geben müssen ein fragmentarisches Aggregat aber kein Princip der Form in der Verknüpfung empirischer Vorstellungen (der Wahrnehmungen) zu einer Erfahrung haben und die Regel um einem Begriff vom Ganzen derselben zu haben, würde ganz wegfallen* I,603,24-604,6).

— The method of proving the existence of ether or caloric, with all the qualities assigned to it, has *in itself* something *strange*, since its ground of demonstration is *subjective*, derived from the conditions of possibility of experience; it presupposes the moving forces and excludes the void, in order to fill the space with an always active matter, and to ground all this on concepts *not hypothetically* but *a priori* is indeed strange (*Diese Beweisart der Existenz eines eigenen alle Körper durchdringenden und sie innerlich beharlich durch Anziehung und Abstossung agitirenden Weltstoff hat etwas befremdlichesin sich; denn der Beweisgrund ist* subjectiv*, von den Bedingungen der Möglichkeit der Erfahrung hergenommen, welche bewegende Kräfte voraussetzt und das Leere ausschliesst um dem Raum mit einer immer regen Materie zu erfüllen ... und dieser [= diesen] Satz* a priori ohne Hypothese *aufbegriffe zu gründen* I,221,2-10).

— This way of proving the existence of a particular cosmic material has something *peculiar in itself* (*Diese Beweisart der Existenz eines besonderen Weltstoffs ...hat was Sonderbares an sich* I,222,4-5).

— This indirect mode of proof: to demonstrate not objectively, from experience, but from the principle of the possibility of experience in general, *a priori*, and thus *subjectively*, has in itself something strange, since such an inference seems to be not consistent at all nor possible (*Diese indirecte Beweisart nicht objective aus Erfahrung (empirisch) sondern aus dem Princip der Möglichkeit der Erfahrung überhaupt (*a priori*) folglich* subjectiv *Beweis zu führen hat etwas Befremdliches an sich; denn eine solche Schlusart scheint überall nicht folgerecht und möglich zu sein* I,226,1-5).

— This indirect mode of proof of the existence of a thing is *unique* in its kind and therefore also *amazing*, but it will amaze less, if one thinks that its object also is *unique*, and not a concept which is common to several things. (*Diese indirecte Beweisart der Existenz eines Dinges ist* einzig *in ihrer Art und darum auch befremdlich; aber sie wird weniger befremden, wenn man bedenkt dass der Gegenstand derselben auch* einzeln *und kein Begriff ist der mehreren gemein ist* II,554,note**). Cf. I,603,4-5 and I,603,18-19.
— There exists an absolute/whole (the caloric or ether) as a system of the moving forces of matter, because the concept of such a thing is objectively a concept of experience, and therefore such an object of thinking is real; and here and only in this unique case, it can be said *a posse ad esse valet consequentia*, i.e. «the logical consequens 'from *to be possible* to *to exist*' is valid». This concept of ether is unique in its kind because its object is also singular («*es existirt ein Absolut/Ganzes als System der Bewegenden Krafte der Materie denn der Begrif von einem solchen ist objectiv ein Erfahrungsbegrif mithin ist ein solcher gedachte Gegenstand wirklich» (hier, aber auch nur in diesem einzigen Fall, kann gesacht werden* a posse ad esse valet consequentia*) Dieser Begrif ist* einzig *in seiner Art (*vnicus*), darum weil sein Object auch* einzeln (conceptus singularis) *ist* I,592,7-13). This is indeed an amazing affirmation by Kant which contradicts what he himself categorically expresses in II,121,15-17, where he asserts *a posse ad esse* non *valet consequentia.* Cf. the next section *Evaluation of Kant's demonstration of the existence of ether* (6.).

On the ether before and after Kant

Before Kant the belief in the existence of ether, as a material, concrete and actual thing, possessing the capacity to explain many phenomena in nature, was quite commonly accepted. Let us only mention Newton (1642-1727), whom Kant quotes many times in the *Opus postumum*, as one of the propounders of the existence of ether. Edmund Whittaker in his book *A History Of The Theories of Aether & Electricity*, pp. 19-20, gives a summary of Newton's conception of ether[3]:

> *«All space is permeated by an elastic medium or* aether*, which is capable of propagating vibrations in the same way as the air propagates the vibrations of sound, but with far greater velocity.*
>
> *The aether pervades the pores of all material bodies, and is the cause of their cohesion; its density varies from one body to another, being greatest in the free interplanetary spaces. It is not necessarily a single uniform substance:*

[3] Cf. *General Scholium* in Newton's *Principia*, English translation, Berkeley: University of California Press, Los Angeles, London, 1984, Vol. II, p. 547, and also *Queries* 18, 19, 20, 21, 23, 29, in Newton's *Opticks*, London: G. Bell & Sons Ltd., 1931, pp. 348-374; and Edmund Whittaker, *A History Of The Theories of Aether & Electricity*, New York: Dover Publications, Inc., 1989.

> *but just as air contains aqueous vapour, so the aether may contain various 'aethereal spirits', adapted to produce the phenomena of electricity, magnetism and gravitation ... light and aether are capable of mutual interaction; aether is in fact the intermediary between light and ponderable matter ... the condensation or rarefaction of the aether due to a material body extends to some little distance from the surface of the body ...*
>
> *... conduction of heat from hot bodies to contiguous cold ones he conceived to be effected by vibrations of the aether propagated between them; and he supposes that it is the violent agitation of aetheral motions which excites incandescent substances to emit light».*

Even in the century that followed Kant's death the old conception of ether was alive. As Whittaker in the Preface to his quoted book, says: *«The aether played a great part in the physics of the nineteenth century»,* but physicists could not explain in a satisfactory way the nature and function of the ether in the new triumphant theory of the electromagnetic phenomena. Louis de Broglie, in *Matière et lumière*, Paris: Albin Michel, 1937, p. 136, affirms:

> *«Notwithstanding the efforts of a great number of powerful theoreticians [in Physics] (Poisson, Green, Mac Cullagh, F. Neumann, and later on lord Rayleigh, Kirschhoff) a coherent doctrine of the vibrations of the ether could never be completely constituted».*

The enormous progress of science was powerfully changing the scientific knowledge. One of these changes had to do with the *ether*, which had interested so much Kant, and had served him as the principal element for the explanation of nature. Whittaker, in the same Preface quoted before, informs that:

> *«... in the first decade of the twentieth [century], chiefly as a result of the failure of attempts to observe the earth's motion relative to the aether, and the acceptance of the principle that such attempts must always fail,* ***the word 'aether' fell out of favour,*** *and it became customary to refer to the interplanetary spaces as 'vacuous'; the vacuum being conceived as mere emptiness, having no properties except that of propagating electromagnetic waves».* [The bold is ours].

Ernst Cassirer, *Zur modernen Physik*, Oxford : Bruno Cassirer, 1957, p. 65, in the same direction of ideas, affirms:

> *«The notion of ether as an inexperienceable* [unerfahrbaren] *substance was eliminated by the theory of relativity with the aim of giving conceptual expression only to the pure determinations provided by empirical science* [– determinations related to the electromagnetic fields]».

Cassirer's idea is an expression of the sound *Rule IV* of Newton's *Rules of Reasoning in Philosophy*[4]:

> *«In experimental philosophy we are to look upon propositions inferred by general induction from phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time*

[4] In Volume II of Newton's *Principia*, p. 400, already quoted in note 3.

as other phenomena occur, by which they may either be made more accurate or liable to exceptions».

Thus Kant's cherished theory about the ether, as well as his opposition to atomismus (II,212,3-4) and to void space (*leere Raum*) (I,428,26-30;I,535,21-22;I,564,13-15) became obsolete, as another instance of the unavoidable and each time more profound separation of Philosophy and Science and elimination of pseudo-scientific theories utilized by Philosophy.

Evaluation of Kant's demonstration of the existence of ether

1. The denial by Science of the *existence of ether* more or less a century after Kant's death eliminates the possibility to attribute to ether an empirical, actual, *in re* existence, the possibility of a positive evaluation of Kant's 'philosophical demonstration' of the existence of ether and its attributes, and therefore makes impossible the acceptance of all that Kant has deduced from that existence and of all that Kant had constructed on the basis of that existence.

2. From the point of view of Indian Philosophy Kant's procedure is a clear example of the well-known logical defect considered by Indian Logic and called in Sanskrit *āśrayāsiddha*, an argument or assertion or doctrine in which the existence of the subject is not established and notwithstanding something is attributed to it: in Kant's case a theory constructed on the admission of the existence of a thing, the ether, that has not been proved to exist, and as such devoid of value.

3. This negative evaluation is supported by the opinion of Erich Adickes developed in his book *Kants Opus postumum*. Adickes (1866-1928) was professor of history of philosophy in German universities and consecrated himself to the study of Kant. He critically edited the first five volumes of Kant's complete works (*Kant's gesammelte Schriften* published by the Preussische Akademie der Wissenschaften). He is the author of several works on Kant's philosophy as *Kants Opus postumum dargestellt und beurteilt*, Berlin: Verlag von Reuther & Reichard, 1920, *Kant und das Ding an sich*, Berlin: 1924, reprint: Hildesheim: Olms Verlag, 1977, and *Kant als Naturforscher* in two volumes, Berlin, 1924-1925.

Notwithstanding the adverse judgments of Artur Buchenau and Gerhard Lehman, the editors of the *Opus postumum* in the Preussische Akademie der Wissenschaften, II, p. 770, according to which Adickes' *Kants Opus postumum* is *«only reliable in its philological sections»*, and *«there only when he takes out his testimonies from the manuscript itself (and not from Reicke's edition)»*, many of Adickes' philosophical opinions in this work seem quite well-founded, and moreover they are corroborated by other authors' opinions as we shall see later on. It is necessary to keep in mind that Erich Adickes was a very important scholar specialized in Kant and chiefly in his *Opus postumum*[5].

[5] On Erich Adickes see *Enzyklopädie Philosophie und Wisseschaftstheorie*, Stuttgart-Weimar: Verlag J. B. Metzler, 1995, Vol. I, p. 46.

Let us quote some of Adickes' passages from *Kants Opus postumum dargestellt und beurteilt*, which contain some of his critical opinions regarding Kant's demonstration of the existence of ether or caloric:

> *«About the proving force of his arguments in favor of the existence of caloric Kant thinks ... very highly. His tone is in general very dogmatic and confident of success»* (p. 386).

> *«But all these strong affirmations and grand words cannot however conceal the fact that all the discussed demonstrations of the ether are completely without value and even produce in the total view of Kant's philosophy an effect extremely contrary to its style. The principle of the possibility of experience is applied in them in a complete new way, which Kant himself in the epoch of his full powers, in the decade of the three* Critics*, without any doubt would have condemned in the sharpest terms»* (p. 389).

> *«The demonstrations of the ether have a certain resemblance with the cosmological and teleological arguments in favor of the existence of God, so strenuously and successfully fought against by Kant, ... But also not a few expressions in the demonstrations of ether ... remind the ontological argument in favor of the existence of God, ... In such places the aim is, also in the case of the demonstration of ether, to build a bridge from pure thought* (Denken) *to being* (Sein)*, to derive from mere concepts the necessity of the existence of an actual thing»* (p. 390).

> *«Even ... the demonstrations of the ether could at best lead only to the entire filling of space with any class [of matter], not to the existence of an all-overextended and all-penetrating ether»* (p. 395).

4. Hansgeorg Hoppe in his book *Kants Theorie der Physik. Eine Untersuchung über das Opus postumum von Kant*[6], develops also some critical remarks on Kant's demonstration of the existence of ether in his *Opus postumum*:

> *«[Kant's explanations on ether] allow to understand the reasons why the deduction of ether is adopted in the* Opus postumum*; they point to the fact that the experimental experience is not possible without the assumption of certain dynamic qualities of matter, but of course they are not at all reasons for the possibility of these dynamic qualities being conceived as attributes of a hypostasized caloric or ether. Even if one allows such a hypothesis, the ether teaching remains an explanation* per obscurius *which does not make clear anything, especially since the ether itself because of its attributes is in principle not perceptible, even more not experimentally ascertainable at all»* (p. 100).

And about Kant's assumption of the necessity of a cause, namely the matter called *ether* or *caloric*, for the existence of outer physical bodies (*Opus postumum* I,216-217), he expresses:

> *«That the formation of bodies must be preceded by a cause is certainly correct, but what this cause is cannot be empirically established ... and here is*

[6] Frankfurt am Main: Vittorio Klostermann, 1969.

> *valid what Kant himself in his* Kritik der reinen Vernunft *B 536 says in relation to the cosmological principle of the totality, namely that this cause is not given but only assigned [as a task] to the empirical investigation of the causes»* (p. 101).

5. The *ideas* expressed in the last quotations of Adickes and Hoppe in their criticisms to Kant's conception of ether constitute a *norm* of sound common sense and also of correct reasoning according to Indian Philosophy, as expressed by Kaṇāda, the author of the *Vaiśeṣikasūtras*, the basic treatise of the Vaiśeṣika School, dedicated to the Philosophy of Nature, where it is taught (III, 2, 7): *sāmānyato dṛṣṭāc cāviśeṣaḥ //* «From an inference deduced from a universal fact no particular thing can be asserted».

Śrīśaṅkaramiśra in his commentary *ad locum* gives the following example of the norm expressed by the *sūtra*: It is possible to establish the *universal* fact that *desires*, *feelings*, *sensations*, etc. require a support where to function, but this fact does not authorize to affirm that such a support is a certain *individualized* thing (*brain*, *mind*, *soul*). Another example related to Kant's theory: we may accept by inference that empty space must be filled in order to become an object of perception and be able to allow nature to function, but from this *general* proposition cannot be deduced that *ether*, with all the characteristics that Kant attributes to it, is that *particular* thing which fills the empty space. From a mere *general principle* that affirms that something is *necessary* for something else to be produced, no *specific thing* can be (arbitrarily) elected for that task, unless the existence of this specific thing and its necessity for the occasion be proved at its turn by another *ad hoc* reasoning. From the general (*sāmānya*) necessity of some matter, *as ether, caloric, or whatever*, for explaining the unity of experience or the existence of bodies in space, does not necessarily follow that *ether or caloric or whatever* exists and is that necessary matter; there has not been any inference, any deduction which gives that specific (*viśeṣa*) matter as result.

6. Vittorio Mathieu, professor in the University of Torino and translator of Kant's *Opus postumum*[7] in his article «L'argomento ontologico per dimostrare l'esistenza dell'etere nell' <Opus postumum> di Kant»[8], pp. 271-274, has interesting critical remarks on the relation between the proof of the existence of the ether offered by Kant and the classical ontological argument in favor of the existence of God.

After remembering that the ontological demonstration of the existence of God is contradictory according to Kant for the reasons given by Kant himself in his *Kritik der reinen Vernunft*[9], Mathieu, pp. 272-273, quotes *Opus postumum* II,121, 15-17, where Kant reiterates his rejection of the ontological argument:

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[7] *Immanuel Kant Opus postumum*, Roma-Bari: Editori Laterza, 2004. (First Edition: Zanichelli editor, 1963; second Edition: Laterza, 1984).

[8] Included in the book: *L'argomento ontologico*, a cura di Marco M. Olivetti, Padova: CEDAM Casa Editrice Dott. Antonio Milani, 1990, pp. 271-278.

[9] On the ontological proof in Western Philosophy and the concepts *in intellectu / in re* in

> *«To want to demonstrate the existence of such [a being: God with all His attributes mentioned in II,116,20-26] involves a contradiction, since* a posse ad esse non valet consequentia*». (Die Existenz eines solchen aber direct Beweisen zu wollen enhält einen Wiederspruch denn* a posse ad esse non valet consequentia)».

In this text Kant conclusively discards as a correct means of proof the passage from *posse* (possibility) to *esse* (existence). Mathieu then asks:

> *«… due to what folly that principle which, if applied to the existence of God, would be contradictory, could be applied to the existence of a matter as the* caloric».

as it is maintained by Kant in I,592,10-11:

> «… (here [in the case of ether] but only in this unique case it can be said a posse *ad esse valet consequentia*)». (*… (hier, aber auch nur in diesem einzigen Fall, kann gesagt werden* a posse ad esse valet consequentia*)*).

Mathieu comments this last assertion of Kant in this way:

> *«That is to say: the* consequentia*, invalid in the case of God, is valid in the case of the ether, or caloric».*

And Mathieu ends his criticism with the following words:

> *«And innumerable times is repeated* [in the Opus postumum] *that the demonstration "is not synthetic, through an ampliative judgment, but analytical, through an explicative one – that is, according to the principle of identity" (XXI,549,6). It is sufficient* to think *the concept of the ether, in order to know that it necessarily exists».*

7. These last remarks concerning the passage from *posse* to *esse* leads us to the central point of the problem of the *ontological proof*, whose refutation lies in the admission of two types of existence, one *in intellectu* and the other *in re*, and in the impossibility to pass from the first to the second one without an adequate specific proof[10]. The opposition of these two types of existence constitutes not only the ground for the construction of the *ontological proof* and its rejection but also for the rejection of the necessity of existence of a matter as the ether or caloric.

8. It is interesting to remind what Bhartṛhari (6th century A.D.), the great Indian philosopher of language, says in relation to the same subject of the two levels of existence. For Bhartṛhari this *distinction* between both types of existence is an obvious fact, which constitutes a fundamental principle of rational philosophical

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Indian Philosophy see F. Tola - C. Dragonetti, *Filosofía de la India, Del Veda al Vedānta, El Sistema Sāṃkhya*, pp. 610-614; and *Essays on Indian Philosophy in Comparative Perspective*, Hildesheim-Zürich-New York: Georg Olms Verlag, 2009, Chapter I, *The Fundament of the Ontological Proof and Bhartṛhari*.

[10] Cf. note 9.

thinking outside any theological preoccupation. According to Bhartṛhari, in his *Vākyapadīya, Sambandha-samuddeśa* 39-51, there are two types of existence (*sattā*), one the «principal» (*mukhya*), «direct» (*saṃprati*), «external» (*bāhya*) existence, which corresponds to the things of the external world (= existence *in re*), and the other, the «secondary» or «metaphorical» (*aupacāriki*, *upacāra°*) or mental (*bauddha*) existence (= existence *in intellectu*) of all what is expressed by the words. Bhartṛhari in *Sambandha-samuddeśa*, *kārikās* 50 *d* and 51 referring to the distinction between existence *in intellectu* and existence *in re*, says:

*... aupacārikīm //*50*// etāṃ sattāṃ padārtho hi na kaścid ativartate / sā ca sampratisattāyāḥ prithag bhāṣye nidarśitā* //51// «Nothing expressed by a word can go beyond this metaphorical [or mental] existence. And in the *Bhāṣya* it has been taught that it is different from the principal existence» //50 *d*-51//

The notion or idea that a word expresses can never pretend to have an existence other than the metaphorical one, i.e. *in intellectu*; it is obliged to remain within the limits of mere «metaphorical», «secondary» or «mental» existence, which by essence corresponds to it. Obviously, the «principal» or «external» *in re* existence can be attributed to the object, which is expressed by the notion or idea the word refers to, *if and only if* those who affirm that existence adduce solid arguments with that purpose. The existence of something (for instance: *God* or the *ether*) *in intellectu* does not guarantee by itself alone its existence *in re*. The existence of God or the ether or any other existence supposed to be *in re* would have to be demonstrated by other means of proof, and not only by the fact that the corresponding notion or idea exists *in intellectu*. This distinction pointed out by Bhartṛhari has an older antecedent in ancient Indian Philosophy. The oldest Buddhist texts have already distiguished between the existence *in intellectu* i.e. *prajñaptitaḥ*, «as [a mere] concept», namely «without objective reality», and the existence *in re* i.e. *dravyataḥ*, «as a real entity» [11].

9. Finally, let us transcribe the opinion on Kant's demonstration of ether of Eckart Förster, Professor of Philosophy in several English, German and American universities, and belonging to important academies of science. He is the author of a good number of publications on Kant and German Idealism, especially on Kant's *Opus postumum*. In page xli of his book *Immanuel Kant Opus postumum* [12] he expresses:

> *«Kant follows his proofs with reflections on their "strangeness" and "uniqueness", and with a repeated self-assurance that it is the singularity and uniqueness of this world-material that allows for an* a priori *demonstration of its existence. Yet the reader will not fail to notice a certain ambiguity on Kant's part as to whether his proof* ***really*** *establishes the existence of such a material*

[11] Cf. our book *Being as consciousness. Yogācāra Philosophy of Buddhism*, Delhi: Motilal Banarsidass Publishers, 2004, General Introduction, pp. XXXII-XXXIV.

[12] *Edited with an Introduction and Notes, by Eckart Förster, Translated by Eckart Förster and Michael Rosen*, Cambridge: Cambridge University Press, 1995.

> ***"in itself" and outside the idea of it****, or merely* ***"in idea"*** *and thus* ***as a "thought-object"****».* [The bold is ours].

KANT'S OWN OPINION ON HIS WORK ON THE «ÜBERGANG»

Kant structured a theory of ether of imposing proportions, which constituted the ground of the *new science* he intended to construct on the «Transition from the metaphysical foundations of Natural Science to Physics» (*Übergang von den metaphysischen Anfangsgründen der Naturwissenschaft zur Physik*).

Kant considered his work on the *transition* as his *wichtigstes Werk*, «the most important work», his *Hauptwerk*, «major work», and his «*chef d'oeuvre*»[13]. Kant's former student and afterwards friend, adviser and biographer Ehregott Andreas Christoph Wasianski, in his book *Immanuel Kant in seinem Letzten Lebensjahren* (*Ein Beitrag zur Kenntnis seines Charakters und haüslichen Lebens aus dem täglichen Umgange mit ihm*), Königsberg: 1804 (reprinted in Felix Groß, 1912), p. 195, quoted by E. Adickes, p. 3, note 2, informs also that Kant maintained that his *Opus postumum* was «his most important work» (*gab sein Opus postumum für sein wichtiges Werk aus*», but Wasianski adds that «*probably Kant's weakness* [of health] *had great part in this judgment*». Wasianski opinion is corroborated by a letter of Kant to Chr. Garve, dated 21 September 1798 (quoted by Adickes, pp. 1-2), where Kant expresses that his health was not «that of the student (*die des Studierenden*), but [that of] a vegetative person (*Vegetierenden*) (to eat, to walk and to sleep)». This revelation by Kant on his health in his last years perhaps explains the information given by Wasianski (in his quoted biography, p. 194) that sometimes Kant had a great idea of his last work, but sometimes he expresses his will that after his death the manuscript of his *Opus postumum* be burnt[14].

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[13] Cf. the already quoted book of E. ADICKES, *Kants Opus postumum*, p. 3; and ECKART FÖRSTER's Introduction to *Immanuel Kant Opus postumum*, pp. XVI-XVII, where he includes the same information on Kant's opinion of his own work reported by Johann Gottfried Hasse, probably in his work *Kants letzte Äusserungen* [*Äusserungen Kant's von einem seiner Tischgenossen,* Königsberg: Nicolovius, 1804, reprinted in: *Joh. Gottfr. Hasse's Schrift: Letzte Äußerungen Kants und persönliche Notizen aus dem opus postumum*, ed. by Artur Buchenau and Gerhard Lehmann, Berlin: de Gruyter, 1925].

[14] On the possibility of a mental disease Kant may have suffered there are several studies and diagnoses. Let us mention from these last the following ones: frontal brain tumor (Marchand, 1997), vascular dementia (Nores, 2000), Alzheimer's disease (Fellin and Ble, 1997), Lewy body dementia (McKeith *et al.,* 1996; Binetti *et al.,* 2001; Olivier Guard and François Boller, 2005). Cf. the article by the last named authors «Immanuel Kant: Evolution from a Personality 'Disorder' to a Dementia», in *Frontiers of Neurology and Neuroscience*, Vol. XIX *Neurological Disorders in Famous Artists*, pp. 76-84.

Vaiśeṣikasūtras (probably between 200 B.C. and the beginning of the Christian Era) and Praśastapāda (5th-6th century A.D.)

Nature of ākāśa *in the* Vaiśeṣikasūtras *and* Praśastapādabhāṣya

According to the Vaiśeṣika system of Indian Philosophy there are six categories [15] (*padārtha*) (*Vaiśeṣikasūtras* I.1,4 [16]; *Praśastapādabhāṣya* [17], p. 15): *dravya* (substance or matter), *guṇa* (attribute or quality), *karman* (action or movement), *sāmānya* (generality or universal), *viśeṣa* (particularity or particular), *samavāya* (inherence).

The *dravya*s are nine according to *VS* I.1,5 (cf. *PBh*, p. 20):

pṛthivyāpas tejo vāyur ākāśaṃ kālo dig ātmā mana iti dravyāṇi // I,1,5: «Earth, water, fire, air, ***ākāśa***, time, direction of space, soul, mind are the substances».

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[15] On categories in general see our book *Essays on Indian Philosophy in Comparative Perspective*, Hildesheim-Zürich-New York: Georg Olms Verlag, 2009, pp. 19-51; on the Vaiśeṣika system and its authors cf. Bimal Krishna Matilal, *Nyāya-Vaiśeṣika*, Wiesbaden: Otto Harrassowitz, 1977; Kuno Lorenz «Vaiśeṣika», in *Enzyklopädie Philosophie und Wissenschaftstheorie* Band 4, pp. 469-471; K. Preisendanz, «Vaiśeṣika», in *Historisches Wörterbuch der Philosophie*, Band 11, col. 540-542; Wilhelm Halbfass, *On Being and What There is. Classical Vaiśeṣika and the History of Indian Ontology*, Albany: State University of New York Press, 1992; H. Ui, *The Vais'eshika Philosophy according to the Das'apadārtha-s'āstra, Chinese Text with Introduction, Translation and Notes*, Varanasi: Clowkhamba Sanskrit Series Office, 1962; B. Faddegon, *The Vaiçeṣika-System, described with the help of the oldest texts*, Wiesbaden: Dr. Martin Sandig oHG, 1969; Arthur Berriedale Keith, *Indian Logic and Atomism. An Exposition of the Nyāya and Vaiçesika Systems*, New York: Greenwood Press, Publishers, 1968; *Encyclopedia of Indian Philosophies. Indian Metaphysics and Epistemology: The Tradition of Nyāya-Vaiśeṣika up to Gaṅgeśa*, Vol. II, edited by Karl H. Potter, Delhi: Motilal Banarsidass, 1977; Gopinath Kaviraj, *Gleanings from the History and Bibliography of the Nyaya-Vaisesika Literature*, Calcutta: Indian Studies Past & Present, 1961; Sadananda Bhaduri, *Studies in Nyāya-Vaiśeṣika Metaphysics*, Poona: Bhandarkar Oriental Research Institute, 1975.

[16] *VS* from now on = in *Vaiśeṣikasūtropaskara of Śrīśaṅkaramiśra with The 'Prakāśikā' Hindī Commentary by Ācārya Ḍhuṇḍhirājaśāstrī*, Edited by Śrī Nārāyaṅa Miśra, Varanasi: Chowkhamba Sanskrit Series Office, 1969; *The Vaiśeṣikasūtras of Kaṇāda*, New Delhi: Cosmo Publications, 2008 (The Sacred Books of the Hindus), with English translation. Kaṇāda is traditionally considered as the founder of the Vaiśeṣika system and the author of the *Vaiśeṣikasūtras* (200 B.C.-beginning of A.D.). On Kaṇāda see B. K. Matilal, *Nyāya-Vaiśeṣika*, quoted in the previous note, pp. 53-54.

[17] *PBh* from now on = *Praśastapādabhāṣya (Padārthadharmasaṅgraha) With Commentary Nyāyakandalī by Srīdhara Bhaṭṭa Along with Hindi Translation Edited by Durgādhara Jhā*, Varanasi: Sampurnanand Sanskrit Vishvavidyalaya Press, 1977; *Praśastapādabhāṣyam With the Commentary Kiraṇāvalī of Udayanācārya*, Edited by Jitendra S. Jetly, Baroda: Oriental Institute, 1971; in Johannes Bronkhorst - Yves Ramseier, *Word Index to the Praśastapādabhāṣya, a complete word index to the printed editions of the Praśastapādabhāṣya*, Delhi: Motilal Banarsidass Publishers, 1994. On Praśastapāda, author of this excellent commentary on the *Vaiśeṣikasūtras* named *Praśastapādabhāṣyam* or *Padārthadharmasaṃgraha*, see the book of Bimal Krishna Matilal quoted in the previous note, pp. 62-73.

Thus *ākāśa*, which is the subject of this comparative study, is one of the nine substances (*dravya*). We maintain for the fifth matter its Sanskrit name: *ākāśa*, which sometimes is translated by «ether». The study of the nature, attributes, functions and ontological status of *ākāśa* and the way in which Vaiśeṣika Philosophy demonstrates its existence will put in evidence whether it is justified or not the use of the term 'ether' for designating the *ākāśa*.

Definition and attributes of *ākāśa*

We quote Vaiśeṣika texts (of *VS* and/or of *PBh*)

(1) which directly and separately refer to *ākāśa*, or
(2) which refer to the category *dravya*, «matter» when they apply also to *ākāśa* which belongs to that same category, and, finally,
(3) texts in which *ākāśa* is mentioned together with other categories when they deal with characteristics or attributes common to all these categories.

Ākāśa is a substance, *dravya*, whose concept is given by *VS*, where it is stated that any substance, and in fact also *ākāśa* as a *dravya*, is *a substratum* or *support of qualities*, being «sound», *śabda*, its essential characteristic; *ākāśa* has as *its principal action or function the carriage of sound*; and *ākāśa has to exist precisely for explaining the existence of sound*.

Vaiśeṣikasūtras of Kaṇāda (***VS***)

In ***VS* I,1,15** is given the definition of *dravya* or «substance»:

kriyāguṇavat samavāyikāraṇam iti dravyalakṣaṇam // VS I,1,15: «Definition of substance [or matter]: 'that which possesses qualities and action and is an inherent cause (*samavāyikāraṇa*)'».

The qualities or *attributes* of *ākāśa* as a *dravya* will be given in the next paragraphs. Concerning *action* and its relation to *ākāśa* it is necessary to understand the expression that affirms that it «possesses action» in the sense that *ākāśa* is the locus in which is given the *motion* of sound. Cf. *VS* V,2,21, quoted afterwards. Matter is the *samavāyikāraṇa* of all the other *padārthas* or categories, the factor whose presence is *necessary* for their existence.

In ***VS* II,1,1-II,1,5** are pointed out *qualities* possessed by other substances and *that ākāśa does not possess*:

rūparasagandhasparśavatī pṛthivī // II,1,1: «Earth possesses color, taste, smell and touch»; *rūparasasparśavatya āpo dravāḥ snigdhāḥ* // II,1,2: «Water possesses color, taste and touch, and is fluid and viscid»; *tejo rūpasparśavat* // II,1,3: «Fire possesses color and touch»; *sparśavān vayuḥ* // II,1,4: «Air possesses touch»; *ta ākāśe na vidyante* // II,1,5: «These [attributes of the other substances mentioned before in the four previous *sūtras* (II,1,1-II,1,4): color, taste, smell, and touch; fluidity and viscidity] do not exist in *ākāśa*».

In ***VS* VIII,1,2** *ākāśa* similarly to other substances (as soul and mind), and contrarily to other substances (as earth, water, and fire) *is not an object of perception*:

tatrātmā manaś cāpratyakṣe // VIII,1,2: «Therein [= among substances] soul and mind [and others as *ākāśa*, time, space, air and ultimate atoms] are not objects of perception».

We understand this text according to the interpretation of the word *ca* («and») of the commentator *Śaṅkaramiśra*, accepted by the Vaiśeṣika tradition, which adds *ākāśa*, time, and space, to soul and mind.

Other sūtras of *VS* refer to important *attributes of ākāśa*:

Substantiality, eternity:

dravyatvanityatve vāyunā vyākhyāte // **II,1,28**: «The substantiality and the eternity of *ākāśa* have been explained by [the explanation of substantiality and eternity of] air [*vāyu*]».

In *VS* II,1,11-II,1,12 is explained *why air is a substance*: 1) because it does not have a substance as its substratum (since either anything is a substance or has a substance as substratum), and 2) because it possesses action (cf. *VS* I,1,15 quoted before) and attributes (cf. the present text and those that follow). And in *VS* II,1,13 is explained *why air is eternal*: the air is eternal because it does not have another substance as its cause, and what exists and has not a substance as cause is eternal.

Unity, individuality:

tattvam bhāvena // **II,1,29**: «By [a similar explanation to that of the *unity* of] existence the unity [of *ākāśa* is explained]».

In *VS* I,2,17 (*saditi liṅgāviśeṣād viśeṣaliṅgābhāvāc caikobhāvaḥ*) is affirmed that existence, *bhāva*, is one (*eka*), 1) because its essential characteristic or mark (*liṅga*), i.e. «being» (*sat*), does not involve in itself any hint of diversity, and 2) also because of the absence in it of any other essential characteristic of diversity: «it exists» = «it exists» and nothing else. Because of the same two reasons due to which «existence» is one, so also *ākāśa* is only one and not many: diversity has nothing to do with it. In II,1,29 the sūtra only points out an analogy between *bhāva*, «existence» and *ākāśa*. In the next sūtra II,1,30 the explanation of the unity of «existence» (*bhāva*) is independently developed in relation to *ākāśa* introducing *śabda* («sound»), the essential characteristic or mark (*liṅga*) of *ākāśa*. To *śabda* is ascribed a nature similar to that of «being» (*sat*), the essential characteristic of «existence» (*bhāva*), asserting that in *śabda* there is no diversity at all, and consequently there is no diversity in *ākāśa* whose *liṅga* (characteristic or mark) is precisely *śabda*, «sound»:

śabdaliṅgāviśeṣād viśeṣaliṅgābhāvāc ca // **II,1,30**: «Because there is *no hint of diversity* in its essential characteristic or mark, i.e. "sound" (*śabda*), and because there does not exist [for it] another essential characteristic or mark [*ākāśa* is one]».

Ākāśa is thus presented as a *unitary*, and consequently indivisible and uniform whole, whose essential attribute is constituted by «sound» (cf. *VS* II,1,27, where is stated that by the method of elimination sound is demonstrated to be the essential characteristic or mark of *ākāśa* as we shall refer later on). From this fact of being one, from the oneness or uniqueness of *ākāśa* follows also its individuality, as will be affirmed by the next sūtra:

tadanuvidhānād ekapṛthaktvañ ceti // **II,1,31**: «Because it [i.e. *individuality*] [always] follows that [*unity* or *uniqueness* or oneness], the individuality also [belongs to *ākāśa*]».

Motionlessness:

dikkālāv ākāśañ ca kriyāvadvaidharmyān niṣkriyāṇi // **V,2,21**: «Space and time, and [also] *ākāśa* are motionless, because of their difference from that which possesses motion».

Motion is conceived by the Vaiśeṣikas to be proper of things that have limited dimensions (*mūrti*), cf. the commentaries of Śaṅkaramiśra *ad locum*, Śrīdharabhaṭṭa *ad PBh* in pp. 56-57) (*mūrtatvam = avacchinnaparimāṇayogitvam*), and Udayana, *Kiraṇāvalī*, p. 24 (*mūrtatvam = asarvagataparimāṇayoga*), and precisely *ākāśa* is an *omnipresent* matter, as it is indicated in the next quotation of *VS*.

Omnipresence (or infinite expansion or universality), infinite greatness:

vibhavān mahān ākāśas tathā cātmā // **VII,1,22**: «In consequence of its omnipresence (or infinite expansion or universality), *ākāśa* is immense (or infinitely large), and also is the soul».

Śaṅkaramiśra's commentary *ad locum* glosses *vibhava* by «*sarvamūrttasaṃyogitva*» or the characteristic of being in conjunction with all dense bodies (cf. *PBh,* pp. 58-59); *mahat* by «*paramamahattva*» or supreme dimension.

Praśastapādabhāṣya (***PBh***)

Now let us analyze the texts concerning *ākāśa*, its *nature* and principal *qualities* according to the excellent *Commentary of Praśastapāda* to the *Vaiśeṣikasūtras* of Kaṇāda:

In **p. 41** ***PBh*** Praśastapāda mentions three important qualities of all categories (*padārtha*), among which is the matter *ākāśa*. These qualities are: real existence (*astitva*), predicability (*abhidheyatva*) and cognoscibility (*jñeyatva*) [18]:

ṣaṇṇām api padārthānām astitvābhidheyatvājneyatvāni / : «Existence, predicability and cognoscibility are the common attributes of the six categories».

In **p. 42** ***PBh*** is affirmed that the fact of being dependent on something else belong to all things except the eternal substances (*dravya*), and as *ākāśa* is an eternal substance, it cannot be in dependence of anything. Cf. *VS* II,1,28 and *PBh* p. 56:

āśritatvañcānyatra nityadravyebhyaḥ / : «The attribute of being dependent [upon something else belongs to all substances] except the eternal substances (*nityadravya*) [i.e. it does not belong to *ākāśa*]».

In **p. 54** ***PBh*** are referred the characteristics of all *dravyas* or substances among which is the matter *ākāśa*: (1) the belongingness to the class 'substance'

[18] On these three concepts in Vaiśeṣika Philosophy see our book *Essays on Indian Philosophy in Comparative Perspective*, Hildesheim: Georg Olms Verlag, 2009, Chapter II, where we point out the coincidence between Vaiśeṣika notion of 'existence' and Aristotle's notion of 'entelechy'.

(*dravyatvayogaḥ*); (2) the capacity in themselves of producing effects (*svātmany ārambhakatva*), (3) having qualities or being related to qualities (*guṇavattvaṃ*), (4) are never destroyed by any of their effects or causes (*kāryyakāraṇāvirodhitva*), and (5) having ultimate particularity, i.e. are connected with atoms (*antyaviśeṣavattvam*):

pṛithivyādīnāṃ navānām api dravyatvayogaḥ svātmany ārambhakatvaṃ guṇavattvaṃ kāryyakāraṇāvirodhitvam antyaviśeṣavattvam /: «Being connected with the class of 'matter', bringing about effects in themselves, being possessed of qualities, being not destructible by their causes and effects, being connected with ultimate individualities».

In **p. 56** ***PBh***, also in an indirect way, are indicated two important characteristics of some type of substances (those which have no parts) to which *ākāśa* belongs (cf. *VS* II,1,29 already quoted): eternality, i.e. is indestructibility, and the character of not being dependent on something else or not inhering in anything:

anāśritatvanityatve cānyatrāvayavidravyebhyaḥ /: «The fact of not being dependent [on something else] and the fact of being eternal [are proper of all substances] except [those] substances that are made up of parts [consequently, as *ākāśa* has not constituent parts, it partakes those qualities]».

In **pp. 58-59** ***PBh*** are mentioned other specific attributes of *ākāśa* that it partakes with some other substances (as time and space): all-penetrating or omnipresent, having the largest dimensions, and being the common basis of all things which are necessarily connected with it:

ākāśakāladigātmanāṃ sarvagatatvaṃ paramamahattvaṃ sarvasaṃyogisamānadeśatvañ ca /: «To *ākāśa*, time, space, and soul belong the attributes of being all-pervading, having the greatest magnitude and being the common receptacle of all material [or conjunct or composite] substances [or things]».

In **p. 59** ***PBh***, including *ākāśa* among other substances: as earth, water, fire, and air, the author shows their points of similarity: all are material elements (*bhūtatva*), they make possible the functioning of each of the external sense-organs which are in relation to them (*indriyaprakṛtitva*), they are endowed with a specific attribute which can be grasped by one or another of the external sense-organs (*bāhyaikaikendriyagrāhyaviśeṣaguṇavattva*):

pṛthivyādīnāṃ pañcānām api bhūtatvendriyaprakṛtitvabāhyaikaikendriyagrāhyaviśeṣaguṇavattvāni / : «To the five [matters] beginning with Earth [= earth, water, fire, air and *ākāśa*] belong being a material element, being what enables sense-organs to function, having a specific quality graspable by one or another of the external sense-organs».

Ākāśa is thus conceived as a material element (*bhūta*) (as earth, water, fire and air); although not being itself perceptible, nevertheless it renders possible that its specific attribute: *śabda*, sound (which, since it comes to being, is supported and carried from one place to another by *ākāśā*) be perceived by the ear.

In **p. 65** ***PBh*** the text assigns to the matter *ākāśa* (and to the souls) the fact of having the distinguishing character of being liable only to a momentary and partial occupation by anything that inheres in them, as for instance feeling in the soul, sound in the *ākāśa*:

ākāśātmanāṃ kṣaṇikaikadeśavṛttiviśeṣaguṇavattvam /: «*Ākāśa* and the souls have the special qualities of being susceptible only of a transitory occupation and in a limited extension».

In **p. 143** ***PBh*** (in the beginning of a long passage especially related to the demonstration of the existence of *ākāśa*) mentions that *ākāśa* (as well as time and space) is, by its very nature, a unique particular, i.e. there is only one *ākāśa*, without lower species. Consequently the word *ākāśa* is a conventional name, as any name *conventionally* given to an individual, and only applicable to that individual:

ākāśakāladiśām ekaikatvād aparajātyabhāve pāribhāṣikyas tisraḥ saṃjñā bhavanti, ākāśaḥ kālo dig iti / : «[The substances] *ākāśa, kāla* [time] and *diś* [space], having not lower species [as the other substances have] because of being each one of them single, have three conventional names: '*ākāśa*', '*kāla*' and '*diś*'».

In the same **p. 143** ***PBh*** enumerates some *attributes* (guṇa) of *ākāśa*:

tatrākāśasya guṇāḥ śabdasaṃkhyāparimāṇapṛthaktvasaṃyogavibhāgāḥ / : «There the attributes of ākāśa are: sound (*śabda*), number, dimension, individuality, conjunction and disjunction».

Praśastapāda will deal in a long special section (pp. 227-696) with the analysis of the *guṇas* in general as conceived by the Vaiśeṣikas. We will give only a succinct explanation of these attributes proper of *ākāśa* according to *PBh* 151:

«Sound», *śabda*, is considered by them as the distinctive mark of *ākāśa*, since it belongs to *ākāśa* alone; moreover it is the only logical ground for establishing the existence of *ākāśa*, being *ākāśa* the inherent cause of sound, as we shall see later on.

Because of the absence of diversity in «sound», the essential characteristic of *ākāśa*, *ākāśa* is one (cf. *VS* II,1,29-31). With this explanation the relation of *ākāśa* with «number», *saṃkhyā*, is established.

The attribution of «dimension», *parimāṇa*, to *ākāśa* is grounded in its omnipresence (*vibhava*), which implies its infinite greatness (cf. *VS* VII,1,22). As is stated in *VS* II,1,31 the oneness of *ākāśa*, consisting in its self-identity, i.e. in its non-difference from its own self, is the source of its «individuality», *ekapṛthaktva*.

Finally, as *ākāśa* is the inherent, necessary or inseparable cause of «sound», when sound is connected (*saṃyoga*) with *ākāśa* it comes to be and it ceases to be when it is not connected (*vibhāga*) with *ākāśa* (cf. *VS* I,1,15).

In **p. 229** ***PBh*** will refer to the qualities proper of *amūrta* things, i.e. things of unlimited dimensions, among which is *ākāśa* (cf. *VS* V,2,21 quoted before):

buddhisukhaduḥkhecchādveṣaprayatnadharmādharmabhāvanāśabdā amūrtaguṇāḥ / : «Qualities of things that are of unlimited dimensions are: intellect, pleasure, pain, desire, aversion, effort, virtue, vice, faculty and sound».

Among the qualities enumerated by this text as belonging to *amūrta* things, to *ākāśa* corresponds only *śabda*, «sound», its distinctive mark; the remaining qualities correspond to the soul, *ātman*.

DEMONSTRATION OF *ĀKĀŚA*

The demonstration of the existence of *ākāśa* is given in ***VS* II,1,27** and in *Upaskāra* commentary by Śaṅkaramiśra *ad locum*, and in ***PBh*** and in its commentaries by Śrīdharabhaṭṭa (*Nyāyakandalī*) *ad locum*, pp. 144-154, and by Udayana (*Kiraṇāvalī*), pp. 71-74, where are indicated some attributes of «sound», *śabda*, which are important for the demonstration of *ākāśa*:

VS II,1,27:

pariśeṣāl liṅgam ākāśasya //: «By the method of elimination [sound, *śabda*, is] the distinctive attribute or mark (*liṅga*) of *ākāśa*».

Śaṅkaramiśra's *Upaskāra*, *ad locum*:

... atrāpi śabdaḥ kvacid āśrito guṇatvāt rūpādivad iti sāmānyato dṛṣṭād aṣṭadravyātiriktadravyasiddhiḥ / guṇaścāyaṃ bāhyaikendriyagrāhyajātīyatvāt rūpādivat, anityatve sati vibhusamavetatvāt jñānādivat / anityatvañ ca sādhayiṣyate / pariśeṣasiddhasya dravyasyāvayavakalpanāyāṃ pramāṇābhāvān nityatvaṃ sarvatra śabdopalabdher vibhutvam //: «… Here too sound, because of being an attribute, is supported in something, as color and the remaining attributes. Therefore by a generalizing inference a matter [= *ākāśa*] other than the eight matters is established. And this [= the sound] is an attribute because, like color and the remaining attributes, it belongs to a class capable of being apprehended by [only] one external sense-organ. It is non-eternal, because, like knowledge, etc., it inheres in a universal or all-pervading [matter]… The eternity of the [supporting] matter, [already] proved to exist by the method of elimination, [is established], because of the inexistence of a means of knowledge for the hypothesis of its being formed of parts; and its all-pervadingness [is established] because there is perceptibility of sound everywhere».

PBh, pp. 144-145:

śabdaḥ pratyakṣatve satyakāraṇaguṇapūrvakatvād ayāvaddravyabhāvitvād āśrayād anyatropalabdheś ca na sparśavadviśeṣaguṇaḥ / bāhyendriyapratyakṣatvād ātmāntaragrāhyatvād ātmanyasamavāyād ahaṅkāreṇa vibhaktagrahaṇāc ca nātmaguṇaḥ / śrotragrāhyatvād vaiśeṣikaguṇabhāvāc ca na dikkālamanasām / pariśeṣād guṇo bhūtvā ākāśasyādhigame liṅgam /: «Sound is not a special quality of [matter] provided with touch, because there does not exist, before [its production] in the [tangible matter adduced as its material or inherent] cause, any quality [related to the production of sound]; because there is not coexistence [of sound] with the [tangible] matter; and because there is grasping [of sound] elsewhere than in the substratum [constituted by the tangible matter where it is adduced to be produced]. It [= sound] is not a quality of the soul (*ātman*), because it is perceptible by an external sense-organ; because it is graspable by other souls; because there is no inherence of it in the soul; and because there is grasping of it apart from the ego. It [= sound] is not [a quality] of space, time, and mind, because it is graspable by the ear, and because it exists as a specific quality. [Sound], being a quality, is the essential characteristic (*liṅga*) for ascertaining [the existence] of *ākāśa* through [the inference by] elimination».

In the next paragraphs follow some comments on the preceding quoted text:

The method of elimination (*pariśeṣa*), also referred to in *VS*,II,1,27 and in its commentary by Śaṅkaramiśra *ad locum*, is an inference in which the inferred element, necessary to explain some thesis, is the residuum left by a process of elimination of all the other possible elements that could be adduced with that purpose. This method, also called *śeṣavat* inference [19], «or inference by elimination», is used by Praśastapāda in his text of *PBh*, pp. 144-145, where the nature and mechanism of the method is described. Cf. S. Chatterjee, *The Nyāya Theory of Knowledge*, Calcutta: University of Calcutta, 1965, p. 268.

Liṅga is the mark or characteristic attribute of a substance, the quality possesses only by it.

The existence of *ākāśa* as a ninth matter must be accepted, because «sound», whose existence is evident through common experience, is an attribute (*guṇa*), and as such needs a matter where to inhere (*VS*,I,1,16: *dravyāśrayī*). And as the eight matters: earth, water, fire, air, time, space, soul, and mind (*VS*,I,1,5) cannot serve as a support for sound, a ninth matter, to which the name of *ākāśa* is given, must be postulated. Sound is not only an attribute of *ākāśa* but is also considered by the Vaiśeṣikas as its characteristic mark or *liṅga*, being *ākāśa* its inherent cause (*samavāyikāraṇa*) (*VS*,I,1,15). This reasoning lightly developed in *VS*,II,1,27 is clearly expounded in *PBh*, pp. 144-145.

The theory of *śabdasantāna* or the continous flow of sound as the continuous flow of a wave

In the context of the Vaiśeṣika Philosophy of Nature a study of *ākāśa* is not complete without at least a succinct exposition of its conception of sound (*śabda*). In ***PBh*, pp. 692-696**, is presented a description of «sound», so important an element for the demonstration of the existence of *ākāśa* according to Vaiśeṣika Philosophy, pointing out very interesting features:

śabdo'mbaraguṇaḥ śrotragrāhyaḥ, kṣaṇikaḥ, kāryakāraṇobhayavirodhī, saṃyogavibhāgaśabdajaḥ, pradeśavṛttiḥ, samānāsamānājātīyakāraṇaḥ / sa dvividho varṇalakṣaṇo dhvanilakṣaṇaś ca / tatra akārādir varṇalakṣaṇaḥ, śaṅkhādinimitto dhvanilakṣaṇaś ca / ... avarṇalakṣaṇo'pi bherīdaṇḍasaṃyogāpekṣād bheryākāśasaṃyogād utpadyate / veṇuparvavibhāgād veṇvākāśavibhāgāc ca śabdāc ca saṃyogavibhāganiṣpannād vīcīsantānavac chabdasantāna ityevaṃ santānena śrotrapradeśam āgatasya grahaṇam / śrotraśabdayor gamanāgamanābhāvād aprāptasya grahaṇaṃ nāsti, pariśeṣāt santānasiddhir iti /: «Sound is the quality of *ambara* (= *ākāśa*) [II,1,27]; it is perceptible by the ear [II,2,21]; it is momentary; it is destructor of its effect and of its cause and of both; it can be produced by conjunction [or contact], by disjunction [or rupture], or by another sound also; it stays in a limited place [of its supporting matter]; and its cause may be something of a similar species [as another sound] or something of a different species [II,2,25-32].

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[19] Cf. Mahāmahopādhyāya Bhīmācārya Jhalakīkar, *Nyāyakośa or Dictionary of Technical Terms of Indian Philosophy*, Revised and Re-edited by Mahāmahopādhyāya Vāsudev Shāstrī Abhyankar, Poona: The Bhandarkar Oriental Research Institute, 1978, *sub śeṣavat – (anumānam)*: *yatra kāryeṇa kāraṇam anumīyate tat*: «(an inference) in which through the effect, the cause is deduced».

Sound is of two kinds: the sound produced by human language and the sound in general [not produced by human language]. Thereof the sound produced by human language is the sound of the letters *a* and the rest; and the sound in general [not produced by human language] is caused [for instance] by the blowing of the conch-shell, and such things … Sound not produced by human language [i.e. noise and all sort of sounds in general] arises from conjunction [as for instance] between the kettle-drum and the *ākāśa* in dependence [of course] on the conjunction of the kettle-drum and the stick; and also from disjunction [as for instance] of the bamboo and the *ākāśa* because of the disjunction [or rupture] of a joint of the bamboo.

And from any sound [of any kind that may have been previously] brought about by conjunction or disjunction a continous flow of sound, as the continuous flow of a wave, [is produced], and thus the perception [of sound], when it has reached the place of the ear under the form of a continuous flow, [takes place]. There is no perception [of sound by the ear] if [sound] does not reach [the ear] owing to the inexistence of movement on the part of both, of the ear towards the sound or of the sound towards the ear, [thus] by the principle of elimination, the continuous flow of sound is established».

In this text Praśastapāda points out some characteristics of «sound», *śabda*, that according to the Vaiśeṣikas are in a tight connexion with their conception of *sound* as a *series* of instantaneous sounds, especially dealt with in the last paragraph of the text.

In the first paragraph he states that the matter that supports the sound is *ākāśa*, which is the *medium* that allows it «to travel» from one place (where the sound is produced) to another (where it is grasped by the sense-organ).

It is a fact of experience that sound comes into actual contact with its sense-organ, the ear.

Sound is transient or instantaneous; it is quickly destroyed, as proved by the fact of its not being perceived the very moment after it has been produced; it is not eternal, but it is only a series of instantaneous successive sounds, each one being produced and determined by the preceding one. Cf. Śrīdharabhaṭṭa, *Nyāyakandalī ad kṣaṇika*, *PBh*, p. 692.

As sound is in fact a sound-series each element of the series as a cause gives rise to the following one as an effect, being itself (as cause) destroyed at that moment the next one (as effect) is produced; this process is repeated successively for each element of the series until the disappearance of the sound-series with the last element.

The first sound of the sound-series is produced sometimes by conjunction sometimes by disjunction; the other sounds of the series are produced by the sound emitted before. The conjunction consists in the impact of one body upon another, as that of a hammer upon a bell or that of a stick upon a kettle-drum – as is the example in our text of *PBh*. The disjunction is the splitting between the parts of a compact body, such as when a reed is split or a heated glass cracks or a joint of the bamboo is broken out – as is the example in our text.

Sound can only occupy a limited part of the matter to which it inheres, *ākāśa*, and for a limited lapse of time. Cf. *PBh*, p. 65, quoted before.

The cause of sound may be something of a similar species (as another sound) or something of a different species (as in the case of conjunction or disjunction

between two bodies). It can be said that the first sound of a sound-series is produced by an external energy and the following ones by the propagation of that energy.

In the second paragraph of this text there is a classification of sound in two kinds: the sound produced by human language and the sound in general.

In the last paragraph PBh describes the phenomenon of sound transmission according to Vaiśeṣika Philosophy by means of the wave theory (*śabdasantāna*, or «sound-series», or *vīcīsantāna*, «wave-series»), alluding to the continuous flow of a wave; also called *vīcītaraṅganyāya*, «wave-ondulation method» [20].

Ākāśa, which is the supporting matter of sound, is motionless (see *VS*,V,2,21, and commentaries *ad locum*, quoted before); and *śabda*, being the quality of *ākāśa* inhering in it, is also motionless. But in order to be perceived «sound» must get in contact with its sense-organ, it must reach the ear (also a part of *ākāśa*, cf. *PBh*, p. 152) in a *motionless* manner. To explain the perception of sound there are only two possibilities: motion or series. Thus, having been eliminated the possibility of movement from sound to ear or from ear to sound, it is necessary to find another way for the explanation of the grasping of sound, which is a matter of common experience: what remains – excluded motion – is thus *śabdasantāna*, the already mentioned «wave-ondulation method» or «the continuous flow of sound» or «sound-series».

Jayanta Bhaṭṭa (around 850-900 A.D.), in his important Nyāya treatise *Nyāyamañjarī*, an independent commentary on the important sections of the *Nyāyasūtras* (ed. Benares: Jaya Krishna Dâs Haridâs Gupta, The Chowkhamba Sanskrit Series Office, 1936, pp. 196-200), gives a clear synthetic view of the Vaiśeṣika conception of sound:

saṃyogād vibhāgād vā śabda upajāyate jātaś cāsau tiryag ūrdhvam adhaś ca sarvatodikkāni kadambagolakākāreṇa sajātīyāni [21] *nikaṭadeśāni śabdāntarāṇyārabhate tānyapi tathetyevaṃ vīcīsantānavṛttyārambhaprabandhaprāpto 'ntyaḥ śrotrākāśajanmā śabdas tatsamavetas tenaiva gṛhyate iti*: «Sound is produced by conjunction or by disjunction; and when it is produced, it gives rise to other sounds, transversely going, upwards, downwards, extending in every direction, as it happens with the *kadamba* flower comprising a central ball [and filaments shooting forth from it in all directions]; [other sounds] similar to the first one and very near to the first one. And these [other] ones on their turn [produce other sounds] in a similar way. The last sound, which is connected with the beginning [of the series of sounds] in the manner of a continuous flow of a wave, whose coming forth takes place in that part of the *ākāśa* that is the ear, and that is inseparably connected with it [= the *ākāśa*] – [that last sound] is grasped by the ear».

Final remarks

1. *On the subject-matter: ether and ākāśa*. Kant's *Opus postumum*, two big volumes with a total of more than one thousand two hundred pages, written

[20] Other texts that deal with this theory of *śabdasantāna* or «wave theory of sounds», giving other arguments and/or examples are: Uḍḍyoṭakara, *Nyāyavārttika ad* II,2,14.

[21] Our correction.

from 1796 to 1803, is dedicated in its major part to the nature, attributes, functions and demonstration of the existence of the *ether*, as a means of explanation of reality in order to accomplish the *transition from the metaphysical foundations of Natural Science to Physics*, to fill the gap between Physics and Metaphysics. It was a very ambicious project constructed upon *an element, the ether*, whose existence Kant establishes only *a priori* as a true actually existing entity. The fundament of Kant's explanation of nature was thus a material whose *a priori* presupposition was *necessary*. And for Kant *from this necessity* the ether acquired *existence*, the ether which very soon was to be eliminated by the progress of physical science.

Praśastapāda's commentary of the *Vaiśeṣikasūtras* [22] has less than eighty eight pages, written in a very concise style and explained by very sharp commentators [23]; it is in fact a work of Philosophy of Nature, composed probably in the last half of the 6th century A.D.; very few pages concern *ākāśa* and sound (*śabda*). It belongs to a pre-scientific epoch of human history, when science was very far from the apogee it would reach some twelve or thirteen centuries after. Praśastapāda grants *ākāśa a very modest and limited function*: *to serve as a support* of sound in order to explain the acustic experience; *ākāśa* has not any universal, cosmological function, as it happens with *ether* in Kant's *Opus postumum*.

It was on the part of the Vaiśeṣika system of Indian philosophy a very valuable intuition to give sound a material support, *ākāśa*. Nowadays in the scientific conception of sound the necessity of a support for sound is one of its most important characteristics; sound cannot have its support in itself nor travel through vacuum. The Vaiśeṣika system elected as a necessary support of sound the matter called '*ākāśa*', as a consequence of various speculative reasonings, developed in *PBh*, pp. 144-145. Modern science with arguments founded in observation and experiments has elected air as the support of sound. Another valuable intuition of the Vaiśeṣika was the theory that sound travels under the form of a continuous wave, where the first sound produced by conjunction or disjunction creates a series of sounds that reach the ear considered also a part of *ākāśa*. Modern science has established that sound is really a propagation not of sound but of a disturbance produced in some molecules of air located somewhere; the disturbance is produced by some cause (as the impact of a body upon another); the disturbance in these molecules is transmitted to the molecules located near the firstly affected ones; the transmission continues until it reaches the cavity of the ear considered as a part of the body (while the Vaiśeṣikas thinkers thought it was of the same nature

[22] As edited by J. Bronkhorst and Y. Ramseier.

[23] In the Hindu philosophical systems, each system has a basic text (written in *sūtras* or aforisms which contain the principal tenets of each school) that needs to be explained by commentators, and which are generally edited together with one or several commentaries. Praśastapāda is one of these commentators of the *Vaiśeṣikasūtras*, the root text of the Vaiśeṣika system. Many times the commentators are on their turn commented by other sub-commentators as is the case with Praśastapāda commented by Śrīdharabhaṭṭa, Śaṅkaramiśra and Udayana, all of them great Vaiśeṣika thinkers.

as *ākāśa*), where it is interpreted by the brain as 'sound'. This process is also metaphorically denominated 'wave propagation'.

2. *On the demonstration of ether and ākāśa*. According to Kant *the existence of ether*, necessary for his explanation of reality, *cannot be derived from experience*, cannot be directly, objectively demonstrated; it must come out *a priori* from reason, can be proved only indirectly, is inferred *a priori* as an inevitably necessary assumption for the sake of the possibility of a single all-embracing experience. This indirect mode of proof of the existence of ether is considered by Kant himself as *strange*, *peculiar*, *amazing*, *unique*. The uniqueness of demonstration of ether is based in the uniqueness of the ether. This allows Kant to postulate the validity, *only in this case*, of the principle: *a posse ad esse* valet *consequentia*, which was expressly negated by Kant himself in the case of the ontological proof of the existence of God (II,121,15-17), where this logical consequence is considered by him not valid (*non valet*). As we have already said the existence of ether was denied by science a century after Kant.

The Vaiśeṣika school of Indian philosophy affirms that *ākāśa* is not an object of perception. Consequently its existence *cannot be demonstrated by the experience of the sense-organs*. This is clearly affirmed in *VS* VIII,1,2, and in Śrīdharabhaṭṭa's commentary *ad PBh*, p. 144. The same thing happens with *ether* according to Kant. Praśastapāda does not resort to an *a priori* assumption in order to prove the existence of *ākāśa* or its being the support of sound or the wave-like nature of the transmission of sound. Praśastapāda presents several reasonings to demonstrate his thesis related to sound and its functioning, being sound something perceptible by a sense-organ. Among these reasonings let us mention the *anumāna śeṣavat*, «the inference by elimination», used by him in the case of the existence of the *ākāśa* and also of the continous wave of sound, *śabdasantāna* (*PBh*, pp. 144-145; *PBh*, pp. 692-696 respectively). It is through this *anumāna śeṣavat* that Praśastapāda concludes the necessary existence of both, *ākāśa* and *śabdasantāna*. But evidently these reasonings were insufficient to prove the existence of *ākāśa* and the way how the transmission of sound takes place, since the progress of science has given other explanations regarding these phenomena that interested Praśastapāda. *Ākāśa* is assumed by him to exist simply because it explains the emergence of the attribute of sound and the sensation of hearing. Both Kant on *ether* and Praśastapāda on *ākāśa* posited the existence of a *necessary matter* for their explanation of nature.

3. *On coincidences in nature, attributes and function of ether and ākāśa*. Both, as stated in the quoted texts of Kant and *VS* and *PBh*, are considered as *material substances filling the cosmic space*; both are *inevitably necessary hypothesis* assumed to explain something else; both are by their very nature a *unique particular*; both are *ubiquitous* substances; they are *all-embracing*, *universally distributed*, *individual*; both are *of absolute magnitude* or *infinite greatness*; both have the quality of *real existence*; both are the *common basis of things* which are necessarily connected with them: *all things in Kant*, *sound in Praśastapāda*; *ether makes possible* to experience all that constitutes reality, and

the very existence and functioning of everything in nature, *ākāśa makes possible* the experience of sound, its very existence and functioning.

4. *On the principle of āśrayāsiddha or fallacy of the unproved.* As we said before in the section *Evaluation of Kant's demonstration of the existence of ether* Kant's procedure in relation to ether is an instance of the logical defect considered by Indian Logic among fallacies, and called *āśrayāsiddha*. It is an argument or assertion or doctrine in which the existence of the subject, which will serve or act as the support, locus or substratum (*āśraya*) for further determinations, has not yet been established (*asiddha*) and notwithstanding properties, qualities, functions are attributed to it: In the case of Kant a theory constructed on the existence of the ether that has not been proved.

The same remark is valid for Praśastapāda: he explained the acustic experience having recourse to the hypothesis of the existence of a material substance called *ākāśa* that in fact he only established as support of sound by elimination (*pariśeṣa*) of the other substances considered as such by the Vaiśeṣikas at his time. But the inference by elimination can be valid for *discarding* options, but not for *creating* options by itself, without another specific proof.

Ākāśa is thus an Indian concept in the context of the Vaiśeṣika philosophy that has many points of contact with the notion of *ether* in Kant's *Opus postumum*, and as conceived by Western physicists up to the end of nineteenth century. If it has to be translated, the word 'ether' can be used, but always taking into account the specific and limited sense it had among Vaiśeṣikas.

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