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Research article

On the Perceptibility of Motion: An Inquiry from the Indian Philosophical Traditions

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Abstract
This paper discusses an important issue regarding the concept of motion from the perspective of Indian philosophical traditions. We can recognise two camps in Indian philosophical schools regarding the epistemic means (*pramāṇa*) through which one cognises motion. Some Indian philosophical schools claim that motion is completely imperceptible and one infers motion by perceiving contact and separation of an object with another object or space. Among these schools, we have considered Patañjali and Rāmānuja (the author of *Tantrarahasya*) as the main advocators of this position. The other group claims that motion is perceptible and we infer motion only when the object possessing the motion is not perceptible. Supporters of this position are mainly the Nyāya-Vaiśeṣika school and Nārāyaṇabhaṭṭa the author of *Mānameyodaya*. While summarising and critically analysing these positions, we support the view that motion is perceptible by showing the following: (1) The position that motion is non-perceptible leads to some ontological issues (2) The position that motion is perceptible is more economical and simpler.

Keywords: motion, perception, inference, Nyāya-Vaiśaṣika, Vyākaraṇa, Mīmāṃsā

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1. Introduction

This paper discusses an important issue in the philosophy of motion from the perspective of Indian philosophical traditions. The concept of motion has been putting forth challenges to philosophers all the time. In Western philosophy, the concept of motion has been the focus of discussion from the time of pre-Socratic philosophers. This concept started gaining importance when *change* was highlighted and conceived as the base of everything in the world. by Heraclitus (c. 540 BCE-c. 480). Heraclitus propagated that change (or motion) is the fundamental reality and essence of all things.[i] Opposite of this position was the position of Greek philosophers from Elea. They advocated that change is merely an appearance and it does not exist. According to them "nothing can change and if we think we see change we are fooled; for it cannot be" (Frost, 1989). Parmenides (c. 485 BCE) taught that any change is inconceivable and that whatever we perceive as change or motion is an illusion. Zeno (490 BCE), from the same philosophical school, tried to show that proving the existence of change would lead to a contradiction.[ii] Thus, the concern of Western philosophers seems to be focused on the question of the existence of change (including motion). But when it comes to the Indian philosophical schools—the philosophical schools we are concerned with

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in this paper—there seems no disagreement with regard to the existence of change or motion. They all agree that motion exists and we experience it.[iii] The disagreement arises concerning the epistemic means (*pramāṇa*) through which one grasps motion. This leads to an interesting discussion in the tradition as to whether motion is perceived through our senses or if is it the case that we perceive merely a displacement and infer motion as a cause of such displacement. This paper tries to articulate the positions of a few schools of Indian philosophy on this issue and critically analyse them.

The debate is between two camps. One camp belongs to the supporters of the position that motion cannot be perceived at all but it is inferred. According to them, what we perceive is merely a contact or separation of an object with a specific space at a particular moment in time. Motion is a logical explanation for the contact and separation of an object from that specific space. Primary advocators of this position are Patañjali (between the 2nd century BCE to 4th century CE) in his commentary on the *Aṣṭādhyāyī* of Pāṇinī (between 6th and 4th century BCE) and Rāmānuja (ca.1500 AD), the author of *Tantrarahasya*, a text of Prābhākara Mīmāṃsā school. We also can find supporting thoughts in *Vaiyākaraṇabhūṣaṇasāra,* a text of Indian grammar and its commentaries *Prabhā* and *Darpaṇa*. Among the Indian grammarians, Patañjali clearly states that all actions are inferred. This undoubtedly implies that motion is inferable and not perceptible. But *Vaiyākaraṇabhūṣaṇasāra* seems to rethink this and hold the position that a part of the motion is perceptible whereas, as a whole, motion is inferred. The opposite camp propagates that motion is perceived but it is inferred in certain cases where the object in motion is not perceptible or depending on the context. Players of this camp include the Indian realist school Nyāya-Vaiśeṣika and Nārāyaṇabhaṭṭa (16 CE) a Mīmāṃsaka and author of *Mānameyodaya,* an important text of the Mīmāṃsā school. We mainly consider the arguments of the Indian realists from *Nyāyabhāṣya* of Vātsyāyana (ca. 350 CE) and *Nyāyavārttika* of Udyotakara (6 CE), as well as arguments from *Mānameyodaya,* supporting this view.

While summarising and critically analysing these positions, we support the view that motion is perceptible by showing the following: (1) The position that motion is non-perceptible leads to some ontological issues (2) The position that motion is perceptible is more economical and simpler.

2. Basic ontological exposition of motion

2.1. Grammarian's view

Grammarians' approach to the concept of motion is analysing the word referring to it.[iv] The word used for motion in the tradition is *gati*. The grammarians analyse this word further as a combination of two parts: The verbal root '*gam*' (*dhātu*) and the suffix '*ti*' (*pratyaya*). The verbal root '*gam*' refers to a specific activity (*vyāpāra*) that favours establishing contact (of an object) with a subsequent space.[v] According to the grammarians, *vyāpāra* is the set of denotations of all the verbal roots (*dhātuvācya*). Words *kriyā*, *bhāvanā, utpādanā* are said to be synonyms of the word *vyāpāra.*[vi] *Vyāpāra* is an activity that brings about some change (*utpādanā*). We do observe things/objects in the world. Along with objects we also cognise activity that is different from objects and it brings about some change in the state of affairs of objects. All such activities are denoted by the word *vyāpāra.*

Activity has a different nature from that of an object. E.g., one cognises easily and successfully an object like a pot as 'there is a pot. But when it comes to an activity, recognising an activity as 'one activity' or segregating one activity from the other is not an easy task. E.g., defining a simple activity such as 'cooking' raises several philosophical questions. What does the activity 'cooking' refer to? Is it one activity or a set of activities? Can a cogniser point out the starting point and end point of this activity? If it is a set of activities, then whether all the internal activities are always carried out? Are they all done together or can one perform an activity with some time gap? etc. Grammarians decide on an activity as 'one activity' depending on the result that activity is supposed to bring out, or in other words, the result that activity regularly brings out. E.g., the verb '*pacati* (cooks)' is constructed from the verbal root '*pac*'. This verbal root denotes a *vyāpara,* i.e., a set of all the activities that result in cooking some dish.[vii] The *vyāpāra* denoted

by *pac* includes several internal activities like blowing the fire (*phūtkāra*) or turning on the burner, placing the vessel on the oven (*cullyuparidhāraṇa*) etc. Thus, reference to a verbal root is some groups of internal activities that aim at a particular result. Thus, an activity of cooking is a group of all those activities that help in producing the desired food.

Among all the activities, motion (denoted by *gam* root) is defined as the activity that results in contact (of an object) with a subsequent space. The suffix '*ti*' is used in the sense of *bhāva,* i.e., action again. But it merely declares the action denoted by the verbal root *gam.* Thus, when put together (*gam+ti*), *gati* only means 'a specific activity (*vyāpāra*) that favours establishing contact with a subsequent space'.

2.2. View of the Indian Realists

The Nyāya-Vaiśeṣika school draws its ontology from the Vaiśeṣikas.[viii] We see two tendencies in the Nyāya-Vaiśeṣika texts regarding motion. The first one is to consider motion as one of the five types of actions namely, upward movement (*utkṣepaṇa*), downward movement (*apakṣepaṇa*), contraction (*ākuñcana*), expansion (*prasaraṇa*) and motion (*gamana*/*gati*).[ix] Here, the word motion is used to refer to those movements where directionality is not fixed like the other four actions. In other words, these are actions where we cannot specify one directionality. The second tendency is to consider motion synonymous with action, or in other words, any action is motion whether directionality is fixed or not.[x]

The Nyāya-Vaiśeṣika ontology divides the entire world into seven basic categories (*saptapadārtha*). These categories are substance (*dravya*), attributes (*guṇa*), action (*karma*), inherence (*samavāya*), universal (*sāmānya*), unique particular (*viśeṣa*), absence (*abhāva*).[xi] Any object that one can name or recognize is either a category or a combination of these categories. E.g., when one recognizes the colour 'red' of a cloth, the colour is an attribute. The red cloth is a combination of two categories: (1) a substance, which is the substance of earth (*pṛthivī*) in the case of cloth and (2) red colour, an attribute. These categories are subdivided into nine substances, twenty-four attributes, five actions, one inherence, infinite universals, infinite unique particulars, and four absences.

Among these categories 'action' is a basic category that always inheres in the substance. According to the Nyāya-Vaiśeṣika, inherence is a relation that resides between two inseparable (*ayutasiddha*) entities. Two entities *x* and *y* are called inseparable if the existence of any one of them presupposes the existence of the other.[xii] Even action and substance are inseparable since action cannot exist without a substance. Action cannot inhere in any other categories. E.g., we never experience 'a colour is moving' or 'a pot-ness is falling down'. Among the seven categories only substance gives us a cognition that it is moving. Even among substances, the omnipresent (*vibhu*) substances like the aether or the self also cannot house motion. Thus, although motion is an independent category it can be located only in non-omnipresent substances.[xiii]

3. Is motion perceived or inferred: the main debate

Different Indian philosophical schools and philosophers have disagreements regarding the epistemic instrument (*pramāṇa*) that cognizes action. The issue is about how motion is grasped by a cogniser. Is it through perception or is it the case that we perceive merely the change in place (displacement) of an object and infer motion from such observation?

3.1. Nyāya-Vaiśeṣika position

Motion is perceptible according to the Nyāya-Vaiśeṣika school.[xiv] Their explanation is as follows: First, the sense faculty of the eye connects with the object, say a ball, and perceives the ball. When there is motion in the ball, the eye sense faculty (*cakṣurindriya*) connects with the motion inhering in the ball. This type of connection is called connected-inherence (*saṃyukta-samavāya-sannikarṣa*). The sense faculty that grasps the substance through this connection also grasps the attribute and action inhering from that substance. Among our sense organs, only the eye and tactile sense faculties can grasp a substance. Since a motion inheres in substance only, we can grasp motion either by seeing or by touching an object.

The principle that motion is perceptible has certain exceptions according to the Nyāya-Vaiśeṣika school. One of the cases of such exceptions is the motion of the Sun. According to the Naiyāyika, the motion of the Sun is not perceptible but is inferred. The inference is as follows: We perceive that at t_1 the Sun is located at a space S_1 and at t_2 at another space S_2. Since the shift in space (displacement) is possible only through motion, one can conclude that the Sun has motion.[xv]

Uddyotakara (6th century CE), the commentator on *Nyāyabhāṣya* raises certain interesting questions regarding this inference. In this inference, Target (*sādhya*) is motion, the subject of inference (*pakṣa*) is the Sun and the Reason (*hetu*) is the displacement.[xvi] The pervasion (*vyāpti*) is 'where displacement there motion (*yatra deśāntaraprāpti tatra gati*)'. Locating the Reason in the subject of inference (*pakṣadharmatā*) is important and necessary in the process of inference. E.g., when one infers fire on a hill from smoke, one must for sure, locate smoke on the hill as a first step. Similarly, in the present inference, one must establish that the Sun has displacement, i.e., the Sun has shifted from one place to another as a first step for further inference.

According to Uddyotakara, the present inference suffers from the problem of establishing the displacement of the Sun. As per his observations, the problem arises since the displacement of the Sun is also not perceivable.[xvii] Following is the justification of Uddyotakara: To perceive the displacement of an object, one must perceive the contact of that object with different loci at different moments of time. At time t_1 a cogniser perceives the contact (*saṃyoga*) of an object *A* with a specific place l_1. At time t_2 the cogniser perceives the contact of the same object *A* with another place l_2. This leads to the conclusion by the cogniser that object *A* is displaced. A contact is a type of relation (*saṃbandha*) that occurs between two relata. According to the rule of contact, a contact is perceivable only when each relatum of the contact is perceivable.[xviii] E.g., when there is contact between a pot (relatum 1) and a table (relatum 2), both the pot and the table are perceivable. Therefore, the contact between the pot and the table is perceivable too. But although there is contact between a pot (relatum 1) and time (relatum 2), such contact is not perceived simply because one of the relata—time—is not perceivable.

In the present context, the contact between the Sun and space is not perceivable. Although the Sun is perceived, the other relata, namely either aether (*ākāśa*) or space (*dik*) is not perceivable according to the system of Nyāya-Vaiśeṣika. Therefore, even the contact between the Sun and aether or the contact between the Sun and space is non-perceptible.

Thus, Uddyotakara claims that it is not possible to establish displacement (Reason) of the Sun through perception. This inference has a prerequisite for another inference to be valid. The first inference must establish the displacement of the Sun. That inference is as follows: The Sun is displaced since there is a separation of the Sun from a steadfast sight or the Sun is not seen again with a steadfast sight, like Devadatta.[xix] In this inference, Reason is 'perceiving the separation of one object from another object with a steadfast sight'. The Target is displacement. The pervasion is 'where there is a separation of an object from a steadfast sight, there is a displacement of that object'. Thus, this inference establishes that the Sun is displaced. After the establishment of the displacement of the Sun, one can apply the first inference and conclude that the displacement of an object is possible only through motion. Therefore, the Sun has motion.

Although the motion in the Sun is inferred, the Naiyāyikas agree that other motions are perceptible. The condition is that the object that holds the action must be perceptible.

3.2. Grammarian's position

According to the Grammarians motion is never perceived, it is always inferred. Motion is considered one type of action (*kriyā*) and Patañjali clearly states in his *Mahābhāṣya* that no action can be perceived. According to him, any action is completely imperceptible. It is a whole (*samūha*) made of consecutive actions and hence it is impossible to point out an action as we do in case of any mass.[xx]

Patañjali's aphorism clearly states that all actions are imperceptible and thus one infers an action. Vāmanajayāditya supports the view with an explanation of the nature of an action. According to him, any

action can be explained as a whole made of a series of internal short actions. All internal actions (of one action) happen one after the other in time. The crucial point to be noticed is that the main action is spread over a period of time and it is taking place or happening (*sādhyamāna*) from the point of view of each moment involved in it. In this sense, it is still in the state of 'taking place/happening' and not in the state of 'completed' at the moment of time involved in it. In this sense, the main action is 'not-existing' when it is taking place. Our sense faculties are limited. They are capable of perceiving only those objects that exist at the time of perception, i.e., a pot or a mat in front of the eyes of the cogniser. But action is non-existing when it is taking place. Then how can any sense organ perceive an action? Thus, any action is non-perceivable or indirect (*parokṣa*).[xxi]

Among the aphorisms of Pāṇini, two aphorisms related to action are repeatedly discussed in the literature. There seems to be some incompatibility between these two aphorisms as they seem to go against the statement of Patañjali (i.e., all actions are non-perceptible). The first aphorism of Pāṇini is '*parokṣe lit*'. This aphorism states that a particular grammatical usage called '*lit'* is to be carried out only in cases of non-perceptible actions. The word 'non-perceptible' used by Pāṇini as specifying a category of actions, seems to assume that there are perceptible and non-perceptible actions. In that case, the explanation of Patañjali that each and every action is inferred seems incorrect.

Vāmanajayāditya discusses this discrepancy in Pāṇini and Patañjalī. He points out that although all the actions are non-perceptible, perceptibility is superimposed in the case of some actions. As he explains in *Kāśikā* commentary, there are actions which seem to be perceptible (*pratyakṣābhimāna*) due to the perceptibility of the substances or elements that hold the action. In other words, if the end result (*sādhya*) of an action is perceptible then we superimpose the perceptibility to the action itself. E.g., the result of the verbal root '*gam*' is the contact of an object with a different place. When the object and the place are perceptible, we superimpose perceptibility to the action of motion as well.[xxii] Pāṇini segregates such actions from the actions wherein along with the action, the components of actions are non-perceptible too. E.g., when one mentions an action that took place many years ago and the components are not perceptible now. According to Vāmanajayāditya, Pāṇini points to these actions by stating them as non-perceptible (*parokṣa*).

Kaunda Bhaṭṭa also seems to take the same path to explain the discrepancy. But he differs slightly from Patañjali's position of non-perceptibility of each and every action in some of his explanations. He furnishes two different elucidations while trying to bring consensus between Pāṇini and Patañjali. The first one is similar to the lines of thought of *kāśikā* that by non-perceptible (*parokṣa*) one must understand that elements/objects involved in that particular action (*sādhana*) are not perceptible.[xxiii] E.g., a person *x* moves from point *a* to *b* in a time period t_{ab}. Once the action is over one may perceive *x*, say at a later point in time. But, *x* qualified by the time period t_{ab} cannot be perceived at any other point in time. Such actions as movement from *a* to *b* are referred to as non-perceptible actions by Pāṇini.[xxiv]

While furnishing the second elucidation, Kaunḍa Bhaṭṭa seems to deviate slightly from this position. He brings in another important issue regarding the perceptibility of motion. This issue is raised and discussed at length by the grammarians. The issue is about the meaning of a very well-used statement '*paśya, mṛgo dhāvati* (look, the dear is running)'. The issue is about the meaning of the word 'look' in the statement. If we accept the position of Patañjali that no action is perceptible, then how can one explain the meaningful usage of the word 'look' in the sentence? The word 'look' in the statement in fact refers to the action of running. Such usage of the word implies that motion can be seen. To accommodate such usage of words towards motion, Kaunḍa Bhaṭṭa hesitatingly states an alternative. According to him, we may say that parts of an action are perceived whereas the whole action is always inferable since the entire action is not a physical object like a pot or a mat.[xxv]

Prabha commentator seems to disagree with the second option. As he points out, there is no further undividable point for the parts of an action. Even a part has sub-parts.[xxvi] A part of an action is also a mixture of its parts. They are not independent referents of the verbal root but are referents as parts of one action. Then logically, how can one claim that as a whole an action is not perceptible whereas a part of the action

is perceptible?[xxvii] He also adds that the word 'look' in the disputed statement can be understood as 'cognize' or 'know' which includes inferential cognition as well. In this way, the statement does not contradict the views of Patañjali.[xxviii]

Prabhā commentator quotes Bhartṛhari in support of his position that motion is inferable. Bhartṛhari looks into action in general, as a group of sequenced parts. According to him, cognition that there is *one* complete action is a mental construct, i.e., in reality, we can never perceive the entire action at any point in time. This is because—as he points out—action is always a group of sequenced parts, i.e., parts that are spread over a time period. Because the parts are sequenced, among these sequenced parts only a few are perceived and few are not. Because few have occurred whereas others are yet to take place. Thus, due to the non-perceptibility of some parts of an action, the action as a whole must be non-perceptible. As Iyer translates the relevant passages of *Vākyapadīyam*:

> What is called action is a collection of parts produced in a sequence and mentally conceived as one and identical to the parts which are subordinate to it. The parts which occur in a sequence and are partially existent and partly not so cannot enter into contact with the senses like the eye whose objects are always the existent. Just as the whole word "cow" is not perceptible to the senses but, after its parts are perceived, is understood as a whole by mind. (Iyer, 1974).[xxix]

Interestingly, Bhartṛhari's statement on the perceptibility of motion is used as support by the grammarians holding either position: One, every action is imperceptible or second, only parts of the action are perceived but as a whole action is not perceptible. The statement merely states that an action as a whole is non-perceptible. It also states that action is a mixture of existing and non-existing parts, which may be read as at least some parts of the action are perceived. But at the same time, it does not specify whether the perceptible elements are further undividable. If they are further dividable then how to consider that they are not wholes but only parts.

3.3. Mīmāṃsaka's view

Mīmāṃsakas are divided about their views on the perceptibility of the action. We can observe both views that (1) motion is perceptible and (2) motion is not-perceptible but inferable in this school.

A prominent Mīmāṃsaka Nārāyaṇabhaṭṭa states clearly in his work *Mānameyodaya* and upholds the view that motion is perceptible. Motion resides in those substances that are not all-pervasive (*avibhu*), it is perceptible and is of the nature of the movement.[xxx] Nārāyaṇabhaṭṭa comes up with the following argument to prove the logical fitness of his position:

According to him, the presence of sense faculties is a prerequisite for cognition of motion. Motion cannot be cognised without the presence of sense faculties. As we observe the positive and negative pervasion (*anvaya-vyatireka*) between the sense faculties and the perception of a pot, we can observe a positive and negative pervasion between the cognition of motion and the presence of the sense faculties. The positive pervasion is 'where sense faculties there the cognition of motion (*indriyasatve karmajñāna satvaṃ*) and the negative pervasion is 'where the absence of sense faculties there the absence of cognition of motion (*indriyābhāve karmajñānābhāvaḥ*). Due to such positive and negative pervasion, we can conclude that the sense faculties are necessary. For the effect, i.e., the cognition of motion, the cause, i.e., sense faculties cannot be a dispensable antecedent (*anyathāsiddhaḥ*)[xxxi]. Thus, the cognition of motion is generated by the sense faculties. Hence, cognition of motion is a perception.[xxxii] He further develops the argument by raising some pertinent questions. Following is the argument:

The main opposition to the position that motion is perceptible comes from observation. The observation is that at each moment, we perceive either a contact (*saṃyoga*) or separation (*vibhāga*) of an object from a particular space. The work of the sense faculties ends here. The perception of contact and separation leads us to further infer that the object has motion. When only contact and separation can explain the process, then claiming that sense faculties directly perceive action along with contact and separation becomes a non-economic standpoint.

Nārāyaṇabhaṭṭa points out certain problems in this argument. According to this argument—as he puts it—only contact and separation are perceived and they are the Reasons (*hetu*) to infer action in an object. Let us test this with an example. Suppose that an eagle sits on a rock and flies away. According to this argument we perceived only a contact between the eagle and the rock and a separation between the eagle and the rock. If one has to infer motion by this, how one decides that the only eagle has motion and the stone does not, whereas both the eagle and the rock are equally party for the contact and separation?[xxxiii]

One can oppose Nārāyaṇabhaṭṭa's argument by saying that motion in an eagle is already well established (*klṛpta*). When one sees an eagle flying one of the conjuncts of this contact (contact of the eagle and the space) namely space/aether is all-pervasive and therefore sure that there is no possibility of motion in space. As a result, one concludes that only the eagle has motion. Thus, the possibility of motion in the eagle is already well established. Therefore, one can infer motion in the eagle and not in the stone, when the eagle comes in contact with the stone and moves away. Nārāyaṇabhaṭṭa refutes this self-raised opposition. He points out that, when the eagle flies, the contact or separation is with space/aether. But aether/space is also non-perceptible along with being all-pervasive. The rule of contact and separation says that contact or separation is perceptible only when both the conjuncts (*saṃyogī*) are perceivable. If one of them is imperceptible, then, as a result, contact and separation with such a conjunct also cannot be perceived. Then, without even perceiving the contact or separation (which are Reasons to infer) of the eagle with space/aether how can one infer motion in the eagle at all?[xxxiv]

He refutes the possibility of explaining the perception of contact and separation of a flying bird in space by claiming that it is a contact and separation between the light element (*tejo 'vayava*) in space and not space directly. But this brings in the same problem of logical undecidability regarding the conclusion that motion is in the eagle and not in the light element whereas both are conjuncts of the contact between the two.[xxxv]

One may oppose Nārāyaṇādvayī the following way. The question is how is it that a person who sits in a moving ship, and staters down at the bottom of the ship, can never perceive motion in that ship? or even we cannot perceive motion in a ship which is far away in the ocean? Had motion been perceptible one should have been able to perceive motion in both cases. If we consider motion as inferable then we can logically explain both the cases that there is no perception of any contact or separation in both cases. Therefore, one cannot infer motion in both cases. But, Nārāyaṇādvayī answers this opposition that the non-perception, if motion in both cases is due to the defect of the object being too close (*atisāmīpyāt*) to the sense faculties or too far away (*atidīrāt*) from the sense faculties.[xxxvi]

The Prābhākara school of Mīmāṃsa holds the view that motion (all actions) is inferable and not perceptible.[xxxvii] Following this school and supporting the position of Patañjali, the *Tantrarahasya* by Rāmānuja holds the view that each and every motion is inferable.[xxxviii]

Śābarabhāṣya states that motion in the Sun is to be inferred by the contact of the Sun with a different space (*deśāntaraprāpti*). It is similar to our perception of a person Devadatta coming into contact with a different space as a result of motion. Therefore, when we see that Sun has come into contact with a different space (say from east to west) we infer that Sun has motion.[xxxix]

4. Whether the motion is perceptible or inferable?

These positions on the perceptibility of action (*kriyā*) in general can be applied to the perceptibility of motion. This will give us the following four positions: (1) Every motion is perceptible (2) Some types of motion are perceptible some are not (3) A part of the motion is perceived but as a whole, motion is inferred (4) Every motion is inferred.

Among these positions, the second position can be considered as an extension of the first, since, this position agrees that motion is perceptible. The non-perceptibility of an action depends upon the non-perceptible nature of the object that is moving. When it comes to the third position, it seems to lose relevance in the

case of motion. About the other activities, it becomes meaningful to analyse an activity by recognising the sub-actions involved in it. But, differentiating between the movement of a very short distance and a long distance brings little sense in the present context. Because the present question is about the perceptibility of motion itself. It may be movement of a very short distance say *a* to *b* that is completed within a minute. The question we are interested in is not about not-perceivable destinations or very high-speed movements. The question is about the movement of a perceivable object say a ball, from a perceptible starting point *a* to a perceptible destination *b* in a short time. In other words, it is about the movements of objects those seem to begin and end in front of our eyes.

Thus, we are left with two options, the first and the fourth, i.e., either such a motion is perceptible or it is inferred by perceiving the contact and separation of an object from another object. The main objection from the supporters of the position that the motion is perceptible (here onwards we mention it as Position-1) to the supporters of the position that the motion is inferred (here onwards we mention this position as Position-2) is as follows:

The pivotal argument from the supporters of position-2 is that when we say an object has moved, we perceive merely a contact of two objects *a* and *b* at t_1 and separation of the objects *a* and *b* at t_2. Motion is the logical justification for such contact and separation. We cannot perceive motion since it is not an object with some shape or colour (*piṇḍībhūta*) like a pot or a mat.

An important objection from the supporters of Position-1 is the one raised by Nārāyaṇabhaṭṭa. We can analyse this objection with the following example. Let us imagine there are two objects *a* and *b.* A cogniser perceives a contact between *a* and *b* at t_1. At t_2, the cogniser observes a separation between *a* and *b.* According to Nārāyaṇabhaṭṭa, if the cogniser had to infer motion based on this observation, then there would be a problem. In this observation, there is no deciding element (*vinigamaka*) to conclude whether only *a* has motion or only *b* has motion since both *a* and *b* possess contact and separation equally. Additionally, separation can take place when only *a* moves or only *b* moves or when both *a* and *b* move away from each other. Had it been the case that we perceive only contact and separation between them, then it would be impossible for the cogniser to decide which object has motion. But we perfectly cognise the object in motion and the object that did not move.

Nārāyaṇabhaṭṭa's objection can be answered the following way: The perception of contact and separation more comprehensively than it is put by Nārāyaṇabhaṭṭa. E.g., let us suppose that there is a ball on a specific part of the floor and there is a butterfly on the ball. Let the ball be *b,* floor *f* and butterfly *r.* Let the contact between *b* and *f* be C_1 and the contact between *b* and *r* be C_2. We perceive both C_1 and C_2 along with the conjuncts. When we further perceive that only C_2 is no more perceived (when C_2 is broken) and C_1 continues to exist, we decide that butterfly has motion. When both C_1 and C_2 cease to exist we infer that both the butterfly and the ball have motion. Thus, inferring motion in one object is more systematic and relative.

But even this argument seems to face some issues. This kind of relative conclusion about motion requires at least one object to be not moving. The not moving object, ultimately, is a part of the floor (*prithivi-avayava*). But how does one decide that the part of the floor is not moving? It is possible only when we observe that that part of the floor/earth is in contact with a specific space (*ākāśadeśa*) all the time. That contact between the part of the floor and a specific space is not broken for a long time. But this leads to another problem because contact between space and any object is not perceivable, since space (one of the conjuncts) is non-perceptible.

Bhartṛhari's concept of perceptibility about the reference of verbal root in the case of motion can be interpreted as supporting both positions. The supporters of position-1 interpret his statement about motion as follows: Motion also is made of parts (*avayava*). But parts of motion are a mixture of existing (*sat*) and non-existing (*asat*) elements combined chronologically. This means a part of the motion, which Bhartṛhari calls *existing*, is a part that takes place in front of our eyes. Hence, it is perceptible. The supporters of position-2 interpret his statement about motion differently. As parts of motion always include some non-existing (*asat*) or in other words, not yet existing elements, motion cannot be perceived at all.

5. Conclusion

We can see that Position-2 leads us to some loose ends. The supporters of Position-2 face a problem as to how one can someone perceive a contact or separation with space wherein space is considered to be imperceptible. This position puts one into the trouble of accepting that ultimately one cannot perceive even contact and separation. This means we need some other reference point to infer even contact and separation, which becomes inexplicable at this point. Additionally, compared to Position-2, Position-1 seems to be simpler and more economical. There is no need to imagine anything over and above our experience. As Naiyāyikas also point out, motion is very similar to the properties like colour etc. that reside in a substance. If the colour of a perceptible object is perceivable then so is the motion in that object, since motion is very similar to property. Sense faculties have limited capacity. One cannot see an object behind or which is too small or too far or too near. Humans cannot hear certain frequencies of sounds. Similarly, we cannot perceive a certain speed that is too slow or too fast. In such cases, it is agreeable that motion has to be inferred. But when a perceivable object moves between two perceivable reference points in space at a perceivable speed, even then, claiming that motion is not perceptible seems uneconomical and imaginative. Just like how a perceptible fire becomes inferable in the case of a hill that is far away, motion is perceptible and inferable according to the context. This avoids inexplicable situations as in Position-2 and can explain the situations like a bird moving high up in the sky where we cannot mark any reference points to fix its location.

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End Notes

[i] See Frost, S. E. (1989, p. 8)

[ii] *ibid* p. 9 Zeno especially takes the example of a moving arrow to show that motion does not exist. This is known as one of the famous Zeno's paradoxes.

[iii] It is important to mention that the śūnyavāda school of Buddhism denies the existence of motion. Nāgārjuna provides strong arguments in *Mūlamādhyamikakārikā-gatāgataparīkṣā* to show that motion does not exist or in other words it is essentially empty. See Pal (2023) for an elaborated discussion on the topic.

[iv] As Matilal puts it '…grammar is concerned not with ontology but with what people say, how people speak of things and events.', See Matilal (1991, p. 266)

[v] *uttaradeśasaṃyogānukūlavyāpāraḥ,*

[vi] '*vyāpāro bhāvanā saivotpādanā saiva ca kriyā',* See *Vaiyākaraṇabhūṣaṇasāra,* in Pañcholi (2011, p. 62)

[vii] One may ask as to how to explain what is cooking a dish? The result of cooking differs on the nature of the dish. In case of cooking rice, the result is softness of rice (*viklitti*) in case of baking a biscuit, the result is some kind of hardness in that object (*dhṛḍatā*). Thus, in case of cooking rice, the *vyāpāra* is a set of all activities that result in softness in rice.

[viii] There was an explicit marriage between the Nyāya and Vaiśeṣika in 12th century wherein epistemology of Nyāya and ontology of Vaiśeṣika was put together and formed Nyāya-Vaiśeṣika system.

[ix] *utkṣepaṇāpakṣepaṇākuñcanaprasāraṇagamanāni pañcakarmāṇi,* See *Vaiśeṣikasūtra*-7

[x] *karmaparyāya eva gamanaṃ,* See *Vaiśeṣikasūtropaskāra* in Miśra (1969, pp. 38-39)

[xi] See *Tarkasaṃgraha,* in Vaṅgīya (2011, p. 4)

[xii] *ayutasiddhayor madhye yaḥ saṃbandhaḥ saḥ samavāyaḥ| yayor madhye ekamavinaśyad aparāśritamevāvatiṣṭhate tāv ayutasiddhau,* See *Tarkabhāṣā,* Musalagaonkar (2021, p. 31)

[xiii] *Mānameyodaya* also supports this position: "*avibhudravyamātrasthaṃ pratyakṣaṃ calanātmakaṃ| viyogayogayor mūlaṃ karma karmavido viduḥ*" See Yogīndrānanda (2017, p. 261)

[xiv] *karmatvajātis tu pratyakṣasiddhā,* See *Nyāyasiddhāntamuktāvalī* in Śāstrī (2015, p. 54)

[xv] *vrajyāpūrvakam anyatra dṛṣṭasyā 'nyatra darśanam iti, tathā cā''dityasya, tasmād asty apratyakṣāpy ādityasya vrajyeti,* See *Vātsyāyanabhāṣya* in Śāstrī (1922, p. 34)

[xvi] Target (*sādhya*) is what is established through an inference; Subject of inference (*pakṣa*) is about which the inference is formed; Reason (*hetu*) is the reason through which the conclusion is established.

[xvii] *na hi savituḥ kaścid deśāntaraprāptiṃ paśyati,* See *Nyāyabhāṣyavārttika,* in Thakur (1997, p. 45)

[xviii] *na hi kadācid api pratyakṣāpratyakṣavṛttiḥ saṃyogo bhavati pratyakṣaḥ, ibid*

[xix] *deśāntaraprāptimān ādityaḥ, acalacakṣuṣo vyavadhānānupapattau dṛṣṭasya punardarśanāviṣayatvāt, devadattavad iti, ibid*

[xx] *kriyā nāmeyam atyantam aparidṛṣṭā pūrvāparībhūtāvayavā na śakyā piṇḍībhūtā nidarśayitum,* See as mentioned in *Vaiyākaraṇabhūṣaṇasāra, Bālakṛṣna* (2011, pp. 146-148)

[xxi] "*dhātvartho hi pūrvāparībhūtāvayavā sādhyamānā kriyā| yac ca sādhyamānaṃ tad asat| taccāsad indriyāṇām aviṣayaḥ, teṣāṃ sadviṣayatvāt| yaccendriyāṇām aviṣayaḥ tat parokṣam iti sa eva hi dhātvarthaḥ parokṣaḥ…*" See *Nyāsaḥ* in Tripāṭhi & Mālavīyaḥ (1986, p. 500)

[xxii] *asti tu loke dhātvarthenā 'pi kārakeṣu pratyakṣābhimānaḥ,* See *Kāśikā* in Tripāṭhi & Mālavīyaḥ (1986, p. 501)

[xxiii] *vyāpārāviṣṭānāṃ kriyānukūlasādhanānām evātra pārokṣyaṃ vivakṣitam,* See *Vaiyākaraṇabhūṣaṇasāra* in Bālakṛṣna (2011, p. 147)

[xxiv] See *Prabha* commentary, *ibid*

[xxv] *…piṇḍībhūtāyā nidarśayitum aśakyatve 'py avayavaśaḥ 'sākṣātkaromi' iti pratīti viṣayatva saṃbhavāt. Anyathā 'paśya mṛgo dhāvati' ityatra tasyā darśana karmatā na syād iti pratibhāti, ibid* p. 148

[xxvi] *yathā pacer udakasecanādayo 'vayavās tathā teṣāmapy avayavāḥ,* See *Darpaṇavyākhyā ibid*

[xxvii] *vastutas tu avayavā api samūhatvena svarūpatas ca pratyakṣajñānāviṣayā eva,* See *Prabhā, ibid*

[xxviii] *ibid*

[xxix]*guṇabhūtair avayavaiḥ samūhaḥ kramajanmanām| buddhyā prakalpitābhedaḥ kriyeti vyapadiśyate||*

kramāt sad asatāṃ teṣām ātmanā na samūhinaḥ| sadvastuviṣayair yānti sambandhaṃ cakṣurādibhiḥ||

yathā gaur iti saṅghātaḥ sarvo nendriyagocaraḥ| bhāgaśastūpalabdhasya buddhau rūpaṃ nirūpyate|| See *Vākyapadīyam* 3-8-4, 6,7

[xxx] *avibhudravyamātrasthaṃ pratyakṣaṃ calanātmakam,* See *Mānameyodaya* in Yogīndānandaḥ (2017, p. 261)

[xxxi] The concept of *an-anyathāsiddha* (not-a dispensable antecedent) is key to deciding whether something, say x, is a cause of an effect y. A cause is something that regularly precedes the effect (*karyaniyatapūrvavṛttitvaṃ*). But there are many things which invariably precede an effect but still are not causes of an effect. E.g., in the case of producing a pot, a stick (*daṇḍa*) is a cause and pre-exists the pot. But, even stick-ness (*daṇḍattva*) pre-exists the production of

pot regularly. But stickiness is not a cause since it is a dispensable antecedent (*anyathāsiddha*). The translation of *anyathāsiddha* is taken from Grimes (1996, p. 46)

[xxxii] *tasyāpi ghaṭādivad ananyathāsiddhendriyānvayavyatirekānuvidhānāt pratyakṣatvasiddheḥ, ibid*

[xxxiii] *saṃyogavibhāgamātrasyaiva netragocaratve tābhyāṃ ca karmānumāne śyenasaṃyogavibhāgābhyāṃ sthāṇāvapi karma Kalpana prasaṅgāt,* See *Mānameyodaya* in Yogīndānandaḥ (2017, p. 262)

[xxxiv] *nahi bhavatām ākāśadeśa saṃyogavibhāgayor darśanāt patattriṇi klṛptakriyatvam, ākāśadeśasya bhavatām apratyakṣatvena tatsaṃyogavibhāgadarśanānupapatteḥ, ibid,* p. 263

[xxxv] *ibid*, p. 264

[xxxvi] *na hi tadā naugataṃ parimāṇam api gṛhyate| tasmādetādṛśeṣu sthāneṣu karmāpratipattiḥ arthendriyayor ubhayor apyavayavāyavinoḥ paraspara saṃyogarūpacatuṣtayasannikarṣābhāvād eva, na saṃyogavibhāgayor adarśanāt|, ibid* p. 265

[xxxvii] See See *Mānameyodaya* in Yogīndānandaḥ (2017, p. 261)

[xxxviii] See Shyamashastri (1928, p. 21)

[xxxix] *sūryo gatimān, deśāntaraprāteḥ, Devadattavat,* See *Śābarabhāṣya* on *Mīmāṃsāsūtra* no. 5

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