

posteriori identities between phenomenal and physical (or functional) properties. In a paper co-written with David Chalmers, Jackson also objects to a *posteriori* physicalism. According to Chalmers and Jackson (2001), the approach used by a *posteriori* physicalists presumes that there is a deep schism between concepts and ontology, a schism that would undercut the justification for uncontroversial identity statements.

Despite his continuing opposition to a *posteriori* physicalism, Jackson now rejects the knowledge argument (Jackson 2003). He contends that phenomenal knowledge is deducible, in principle, from physical knowledge, even if we may be unable to perform the deduction. Jackson's turnabout is based on his acceptance of representationalism, which claims that the phenomenal character of a state is exhausted by its representational content. For instance, suppose that one of Mary's subjects, Joe, gazes at a ripe tomato. Representationalists maintain that the visual phenomenal quality of Joe's experience is fully captured by the fact that his state represents *there is something round and red before me*. (Specific representational contents will be much more detailed, of course.) Because Mary can, in principle, know the representational contents of Joe's states before her release, she can in principle know all that there is to know about what it is like to see red.

OVERALL ASSESSMENT

The knowledge argument is an argument against physicalism. Yet its importance stems as much from the richness and variety of the responses inspired by its provocative reasoning as from its conclusion. Discussion of the argument has profoundly affected debate on a range of issues, including: differences between propositional knowledge and ability, the relation between identity and deducibility, and the special features of phenomenal knowledge. While the majority of philosophers ultimately reject the argument, a vocal minority accepts it as sound.

See also Functionalism; Mind-Body Problem; Physicalism; Qualia.

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KNOWLEDGE IN INDIAN PHILOSOPHY

Almost all the philosophical texts in classical India were written in Sanskrit. How does one say *knowledge* in Sanskrit? And what do the Sanskrit terms that may be translated by the English word *knowledge* mean exactly? There are no simple answers to these questions.

In Western philosophy truth and falsity are usually ascribed to statements, propositions, or beliefs. In the Indian tradition truth and falsity are ascribed to a cogni-

tion or an awareness (the most common term is *jñāna*, but there are a relatively large number of synonyms, or quasi synonyms, such as *vijñāna*, *buddhi*, *dhi* and *citta*). The word *jñāna* is derived from the root *jñā*, which is etymologically related to the English word *know*. Nevertheless, the rendering of *jñāna* as knowledge is generally avoided because *jñāna* can be true or false, whereas false knowledge or wrong knowledge seems like a contradiction in terms (at least in English). Furthermore, *jñāna* is a particular and momentary event, whereas *knowledge* often refers to a general and lasting acquaintance with facts. Furthermore, knowledge is, or may be, an abstract entity that is shared by many persons; *jñāna* is always individual and belongs to a single person. Finally, *knowledge*, unlike *jñāna*, is a collective term and can only be used in the singular. A person has many *jñānas*, but not many *knowledges*.

The different ontologies of the various traditions of Indian philosophy necessitate different notions of *jñāna*. According to some Brahminical schools, *jñāna* is a momentary property of the eternal individual soul (*ātman*). The relationship between *jñāna* and *soul* is the relationship between quality and substance. It is the same relation that occurs between a color and the material substance like a pot in which it inheres. In contrast, the Buddhists reject the idea of substance in general and of a permanent soul or self in particular. According to them an awareness (*jñāna*) is a primitive (nonderivative) element of existence (*dharma*) that depends only on its causes and conditions (e.g., sense, object, and previous mental factors), not on any substrate such as a permanent soul. The Sāṃkhya and Yoga are unique in the Brahminical tradition in claiming that the cognitive and psychological processes occur in the realm of matter and have no direct contact with the conscious soul, which is distinct from them and completely passive (for more details, see Chakravarti 1975, pp. 171–196). Finally, according to the materialists (Cārvāka or Lokāyata), an awareness, or consciousness, arises from the combination of the material elements earth, water, fire, and wind when they evolve into body, sense, and object, just as the power of intoxication arises when certain substances ferment (Nimai 1976, Franco 1997, pp. 98–99).

Knowledge in general as referring to an organized body of knowledge, or even a science, is usually called *veda* or *vidyā* (words that are cognate with Latin *videre* and the English *to wit*). When the word *veda* is mentioned without further qualification, it always refers to the four collections of texts known as Rgveda, Yajurveda, Sāmaveda, and Atharvaveda. These contain the knowledge, the knowledge par excellence. The Vedas are the primary scriptures of Brah-

manism and Hinduism. According to Brahminical orthodoxy they are neither of human nor Godly origin, for they are eternal and infallible. The text of the Vedas was revealed (not created) by omniscient Gods such as Brahma, or directly heard by inspired seers (Rishis) of old. Various enumerations and classifications of systematic knowledge, or sciences, have been transmitted; perhaps the most common ones refer to fourteen or eighteen locations of knowledge (*vidyāsthāna*): the four Vedas and the six auxiliary sciences to the Vedic texts (the sciences of articulation or phonology, prosody, grammar, etymology, astronomy/astrology, and ritual/ceremony), religious and social law (*dharmaśāstra*), collections of ancient myths (*purāṇa*), hermeneutics (*mīmāṃsā*), and dialectics (*tarka*); the eighteenfold enumeration adds medicine (*āyurveda*), archery or the science of weapons in general (*dhanurveda*), and *arthaśāstra*, which includes politics and economy.

These lists do not exhaust all the sciences known in ancient India, but they point to an attempt at an exhaustive classification of human cultural practices (Pollock 1985, p. 502). Sheldon Pollock, who examined the notion of *śāstra* in classical India, points out that virtually every human activity had been codified into a science (or a theory, as he renders the word *śāstra*), for instance, cookery, erotics (*kāmaśāstra*), thievery (*cauraśāstra*), agriculture, mathematics, logic, ascetic renunciation, and spiritual liberation. As a rule (there are notable exceptions), the various sciences have not been discovered by their practitioners. Rather, all practice is said to be derived from previously existing knowledge. Science itself is primordial; it is not accumulative, and can only decrease with time.

In Buddhist texts (both in India and Tibet) one encounters a list of five places or locations of knowledge (*vidyāsthānas*) that are to be cultivated by the Bodhisattva on his way to enlightenment. The first of these, the inner science or the own science (*adhyātmavidyā*), is specific to Buddhists, the other four—the science of logical reasons, grammar, medicine, and arts and crafts—are external and considered common to Buddhist and non-Buddhists (Seyfort Ruegg 1995, pp. 9–10). However, the status of the science of reasons, that is, philosophy/dialectics/logic, was ambiguous. Although its position following the inner science clearly implies that it is an external (or non-Buddhist) science, it was sometimes considered to be part of the Buddhist teachings. The science of logical reasons could be assimilated either to *tarka*, dialectics, which have nothing particularly Buddhist about them, or it could be understood as the science of the means of knowledge (*pramāṇa*), as expounded by Dharmakīrti (seventh century) and his followers that was closely associated to the

understanding and interpretation of the Buddhist teachings (Seyfort Ruegg 1995, p. 105). Deliberation and reasoning on the Buddha's teaching were widely perceived to be necessary steps before meditation. Traditionally, the study of the Buddhist scriptures was divided into three steps: listening to the Buddha's words, reflecting on them, and meditating on them.

However, another term that is often used to convey the idea of knowledge is *kalā*, sometimes translated by "art and craft," refers to both "knowledge that" and "knowledge how." There are long lists of the various *kalās* (also called *śilpas*), some of them enumerating sixty-four, some seventy-eight, some more than ninety types. A typical list would include the knowledges of writing, calculation, sculpting, painting, dancing, singing, playing on musical instruments, gambling, speaking courteously, various games, preparing drinks, preparing perfumes, composing poems in various meters, divination, poisons and antidotes, the movement of heavenly bodies, training horses and elephants, archery, and various forms of fighting.

However, these terms for knowledge are not extensively treated in Indian philosophical texts, and except for the four Vedas, do not play an important role in Indian theories of knowledge. For Indian philosophers are not so much concerned with the nature of knowledge as such, but with the means of knowledge (*pramāṇa*).

PRAMĀṆA

To the question "how can one know something?" all Indian philosophers would answer unanimously: by having a means of knowledge. This answer may sound almost tautological and no two significant philosophers would understand the term in exactly the same manner. Nevertheless, the term *pramāṇa* played a crucial role in structuring the Indian epistemologies. It is around this concept, its definitions, and its varieties that Indian philosophy developed in its most dynamic period (roughly from the fifth to the twelfth century). The most important means of knowledge are sense perception (*pratyakṣa*), inference (*anumāna*), and verbal communication (*śabda*), under which sacred writings such as the Vedas or the teaching of the Buddha are subsumed.

What are the means of knowledge (*pramāṇa*)?

The number of means of knowledge that are accepted by the different schools of thought varies strongly. Madhyamaka Buddhists like Nāgārjuna, skeptics like Jayarāsi (Franco 1994), and monists of the Advaita-Vedānta tradition like Śrīharṣa, all of whom deny the possibility of knowledge, obviously accept no means of knowledge to be

reliable (Matilal 1977). All other schools admit that sense perception is a means of knowledge. The materialist school (Lokāyata) is distinguished from other schools by its claim that only sense perception is valid. The Vaiśeṣikas and the Buddhists after Dignāga (fifth century) admit two means of knowledge, namely, perception and inference. The Sāṃkhya admit verbal communication by a trustworthy person (*āptavacana*) besides these two; Buddhist philosophers before Dignāga, for example, Vasubandhu, also admit verbal communication to be a means of knowledge. Philosophers of the Nyāya tradition, with the notable exception of Bhāsarvajña (ninth century), also admit analogy (*upamāna*) as a fourth means of knowledge. The same position was held by certain Buddhists (Franco 2001). The Prābhākara Mīmāṃsakas accept five means of knowledge: the previously mentioned four and presumption (*arthāpatti*). The Bhāṭṭa Mīmāṃsakas and Advaita-Vedāntins admit six means of knowledge: the previously mentioned five and absence (*abhāva*) or nonperception (*anupalabdhi*). In nonphilosophical texts one also encounters inclusion (*sambhava*) and tradition (*aitihya*) as means of knowledge. Since inference and verbal communication are dealt with in separate entries, this entry will focus mainly on a discussion of perception.

PERCEPTION AND SENSES

Perception here refers primarily to sense perception. Indeed, the Sanskrit word that is usually rendered by *perception* is *pratyakṣa*; it contains the semantic element—*akṣa*—which means "eye." However, in some cases such as mental perception of feelings or the extrasensory perception of Yogis, the senses play no role in its arising. Perception is usually said to arise from sense and object. In this connection one has to emphasize the distinction between sense (or sense-faculty) and sense organ. The senses are not identical with the bodily organs to which they are associated. It is an extremely common mistake in Western publications to refer to the senses of seeing, hearing, smelling, touching, and tasting as eyes, ears, nose, skin, and tongue. Indian philosophers, however, clearly distinguish between them.

Thus, according to Nyāya the sense of sight is not the eye, but an invisible ray of light that rests on the pupil of the eye and goes out to reach the object. The sense of hearing is not the ear, but a part of space-ether (*ākāśa*) that is enclosed in the ear. The sense of taste is not the tongue, but a watery substance in the form of half-moon that is spread at the front of the tongue. The sense of smell is a substance made of earth and is found inside the nose; its base is usually called *nāsā*—a cognate of nose—

but sometimes also *tripuṇikā*, that is, "the three cavities," or "the triple cavity," which seems to indicate that its base is the root of the nose. The sense of touch, which is sometimes interpreted as a sense of temperature, is also found inside and throughout the body, not only on the skin.

Already in the early philosophy of nature, the senses were considered to be material. Each sense—except for the auditory—was composed of the four material elements (earth, water, fire, and wind). Their special ability to grasp a certain elemental quality was explained as being due to their composition. The gustatory sense consists mainly of water, and it possesses the quality to be grasped, namely, flavor (VS 8.16–17). Although the element earth also possesses flavor, this quality is not predominant in it. The elemental constitution of the senses is based on the principle that "similar perceives similar." The Nyāya, Vaiśeṣika, and the Mīmāṃsā accepted the so-called accumulation theory of qualities in elements.

Except for hearing, the senses are made of special invisible atoms. Therefore, they cannot perceive themselves and can only be inferred: From the fact that one has a visual awareness, one infers that one has a sense of sight. According to the Buddhists the senses are made of a special subtle and transparent matter (*bhūtaprasāda*); the transparency of this matter is used to explain both its invisibility and its receptivity to other forms. Unlike normal matter, the subtle matter of which the senses are made does not obstruct other matter. When Indian philosophers write about the senses, they think above all about sight. The sense of sight is often used as a model for all other senses; hearing is treated cursorily, the other senses are hardly ever discussed.

PERCEPTION AND CONTACT

There was a strong debate that lasted for centuries between Buddhists and Naiyāyikas on the question of whether the sense and the object must be in contact to produce sense perception. The debate concerned only the senses of seeing and hearing (for everyone agreed that the other senses must be in contact with their objects). The Naiyāyikas and the Mīmāṃsakas maintained that all senses must be in contact with their objects to perceive them. In response to the Buddhist objection that sight perceives objects at a distance and objects that are larger in size than the sense itself, the Naiyāyikas postulated an invisible ray of light that goes from the eye and enters in contact with the object. This ray of light has a broad tip so that it can be in contact with large objects. It is in this context that certain optical theories were developed (Preisendanz 1989).

PERCEPTION AND THE CRITERION OF TRUTH

For a general discussion of truth and error, notably of false inferences, see the entry "Truth and Falsity in Indian Philosophy." The problem of truth is addressed here only in respect to perception. The earliest discussion on the criterion of truth can be found in a short passage of an anonymous Mīmāṃsā commentary that is now lost except in quotations and references in later sources that refer to its author simply as "The Commentator" (*vyatikāra*) (Frauwallner 1968, pp. 107–111). It may seem odd that a Mīmāṃsā commentary that deals with Vedic exegesis should contain digressions on perception and related epistemological problems. Indeed, the rationale for the treatment of perception in Mīmāṃsā writings was originally a negative one: the rejection of sense perception as a means for the apprehension of the *dharma*, understood here as Vedic injunctions (MS 1.1.4).

According to the Commentator, "true perception is the arising of awareness when the senses of a man are in contact with precisely that which the awareness has for its object" (SBh 26.3–4). In other words, when the internal object that appears in the awareness and the external object that is in contact with the senses are identical, the resulting awareness is perception. This is, however, only a general definition. How can one know whether a specific awareness has arisen when the senses are in contact with the same object that appears in the awareness, or whether they were in contact with a different object? One may have an awareness of silver, but how is one to know whether the senses are in contact with silver, or with a glittering conch shell that produces an illusion of silver? The Commentator answers that a subsuming awareness (*bādhaka-jñāna*) arises in respect to a false awareness and asserts its falsity, "That was not silver, the awareness was false." However, the problem with sublation (*bādhā*) as a criterion of truth is that the subsuming awareness arises later, sometimes much later, than the false awareness. How does one know when an awareness is true or false at the time it arises? At that moment there is no difference whatsoever between true and false awarenesses, for the person who mistakes a conch shell for a piece of silver also thinks, "My sense of sight is in contact with silver."

The Commentator suggests that when the causal complex that produces the awareness is disturbed, the awareness is false; otherwise it is true. For instance, when the mind is disturbed by hunger, when the sense of sight is disturbed by an illness, or when the external object is too subtle, the awareness is false; when the causal complex is not disturbed, the awareness that arises from it is

true. By this assertion the Commentator makes the true awarenesses the normal ones, those people usually have, and errors are considered to be an exception. In other words, there is nothing inherently wrong in the cognitive process itself. However, the assertion that a true awareness is produced by undisturbed causes tells one what happens, but not when it happens. That a particular awareness has arisen from undisturbed causes remains to be proved for every single case. The Commentator maintains that if one earnestly searches and does not find any fault with the causal complex, then, because there is no proof to the contrary, we should think (*manyemahi*) that the awareness is true.

Later Mīmāṃsakas like Kumārila (seventh century) had to deal with problems that the Commentator had left open. For instance, in certain cases one is not in a position to rectify an erroneous awareness (*ŚV, Vṛttikāra-grantha* 23). A certain illness of the eye distorts vision in such a way that one sees a double moon. In such cases the mistaken person learns in his or her communication with other people that there is only one moon in the sky. Kumārila also had to deal also with errors that are immanent to the cognitive process. Such errors would render all everyday awarenesses, even those that are usually considered true, essentially erroneous. For instance, according to the Buddhists, every empirical awareness involves a conceptual construction. Empirical awarenesses have wholes (*avayavin*) and universals (*jāti*) as their objects, but these have no correspondence in reality. Even a simple awareness such as "this is a cow" contains at least two parts. The part *this* refers to some concrete individual, the part *cow* to a universal "bovinity" that, at least according to the Indian realists, is a single eternal entity present in all cows and is responsible for the fact that a great number of different individuals are all called cow.

The Buddhists have adduced powerful arguments against the existence of such universals. For instance, the universal bovinity cannot be present entirely in one individual cow, because if this were the case, it would not be able to reside in other cows. Nor can it be partly present in one cow, because it has no parts. Thus, all empirical awarenesses are false because they involve conceptual constructions, and conceptual constructions are faulty because they involve incoherent notions such as that of a universal. Kumārila's response to such objections was to refuse a philosophical engagement. No matter what arguments the Buddhists may raise: If everybody invariably has the awareness in respect to a certain individual, "this is a cow," then such awareness cannot be sublated, for it is more powerful than the other awareness that has found fault in it.

The concept of sublation may seem to presuppose a coherence theory of truth, in which truth is defined by relations between statements (or in the Indian case, between awarenesses), not in terms of relations between statements and reality, as is the case in a correspondence theory of truth. However, in general Indian philosophers always seem to presuppose a correspondence theory of truth. Even though only an awareness can sublate, or assert the falsity of another awareness, this is possible only because the sublating awareness corresponds to reality and the sublated awareness does not. The direct relationship between the two awarenesses remained problematic, and in the final analysis unexplained. To the question of how an awareness that arises later can apprehend the inexistence of an object of an earlier awareness Jayanta, a Nyāya philosopher of the ninth century, simply replies, "What [can] we do, since this is the way the awareness arises?" (*NM I* 171.12)

The correspondence theory of truth is clearly presupposed by the Nyāya criterion of truth called efficiency of activity (*pravṛttisāmarthyā*). The Naiyāyikas argued in favor of a pragmatic principle of confirmation. When one has an awareness of water, one goes toward the perceived water, and if this endeavor is efficient, that is, if one obtains water, then the awareness is true. Otherwise it is false (*NBh*, Introduction). The discussions of the efficiency of activity seem to presuppose a difference in the reliability of the senses. The awareness that has to be confirmed is usually a visual one, and the confirming awareness is of touch or taste (as in the case of water). The expression "efficiency of activity" is often interchangeable with the expression "obtainment of an object/purpose" (*arthaprāpti*). The Naiyāyikas argue that when the awareness is true the object is obtained, and when it is false the object is not obtained.

Another similar but different criterion of truth is used by Dharmakīrti and his followers. Dharmakīrti argues that the production of efficient action (*arthakriyākāritva*) indicates whether an awareness is valid or not. The difference between this and the Nyāya criterion is that the former is not used to prove that the object of the awareness is real. According to Dharmakīrti a false awareness can nevertheless be valid. Although all awarenesses that involve conceptual constructions are false, some such awarenesses (notably inferential awarenesses that always involve universals) lead to successful activity. Dharmakīrti likens their case to someone who mistakes diamond rays for the diamond itself (*PV*, 3.57). Although such a person acts on a false awareness, he or she is nevertheless successful in obtaining the diamond. Another

important aspect that distinguishes the Buddhist criterion from that of the Nyāya is that the object seen and the object obtained can never be the same. According to the Buddhists everything is momentary. Thus, the water seen and the water obtained are not the same water. Another difference between the two criteria is due to the rejection of the substance. The Buddhists denied that there is a certain substance such as water that has properties such as color and flavor. Thus, the seen water and the tasted water are in fact entirely different kinds of atoms that are only loosely connected by a causal relationship (PVSV 70.14f)

The preceding discussion treats the realistic schools. The topic of the criterion of truth in idealistic and illusionistic schools, which consider all empirical awarenesses to be false, arises from a different set of problems and specific metaphysical doctrines. For instance, certain Buddhist Yogācāras consider only those awarenesses to be true that have a correspondence in an unconscious awareness called *ālayavijñāna*. Vedāntins like Śaṅkara (700?–750?) consider empirical awarenesses to be provisionally true until one attains the realization of the identity between ātman and brahman. Everyday awarenesses are like a dream. As long as the dream lasts, the awarenesses of the dream are considered true; when one wakes up they are realized to have been false. These positions, however, are usually ignored in the philosophical debates in classical India.

A SKEPTICAL RESPONSE TO THE CRITERION OF TRUTH

Jayarāśi Bhaṭṭa (fl. c. 800), a skeptic philosopher loosely affiliated to the materialist Lokāyata school, raised a devastating critique of the various criteria of truth. The production by undisturbed causes, he says, cannot be used as a criterion, because it cannot be known whether the causes are undisturbed. The senses do not apprehend themselves, and therefore, cannot apprehend whether their functioning is disturbed or not. Nor can their proper functioning be inferred, because there is no inferential sign on which the inference can rest. If the correct awareness itself is considered to be such a sign, then the argument results in mutual dependence. The awareness is correct because the causes are undisturbed, and the causes are undisturbed because the awareness is correct.

Also, the absence of sublation cannot be used as a criterion of truth. At most one can say that those awarenesses that are sublated are false, but not that those that are not sublated are true. It is possible that sublations do not arise because some causal factor is missing. A person may have an illusion of water in respect to sun rays and not go toward the place of the sun rays. Thus, the causal

factor that could produce the sublation (the proximity) is absent and the sublation does not arise. Besides, one may simply die before the sublation is produced. It is impossible to know at any given moment which awarenesses are true and which are going to be sublated in the future. Jayarāśi's argument bears an obvious similarity to Karl Popper's assertion that the scientific doctrines one holds to be true are only those that are not yet refuted, but they are liable to be so in the future. Of course, the basic concerns of Jayarāśi and Popper are entirely different.

The efficiency of activity based on an awareness also cannot be used as a criterion of an awareness' truth because the claim of efficiency also has to be confirmed: it has to be apprehended and its apprehension has to be ascertained as nonerroneous by another efficiency of activity. It is not true that an awareness will give satisfaction if and only if it is true. To repeat James's example, the pragmatist claims that if one believes that there are tigers in India, and one goes to India and finds tigers there, then, to use the Nyāya terms, the activity is efficient and the awareness is true. However, as critics of pragmatism point out, one may go to Syria, find some tigers there and think that one is in India, or one may go to India and mistake some big cats for tigers, or one can even go to India find tigers and mistake them for cats. Thus, a confirming awareness must be confirmed in its turn, and this would lead to an infinite regress. The arguments against Nyāya apply to the Buddhist criterion of production of efficient action, except that the Buddhist faces some additional difficulties due to the doctrine of momentariness and the rejection of universals.

VERBAL COMMUNICATION

The two main questions with which Indian philosophers who deal with verbal communication are concerned are: (1) What is the process by which one understands the meaning of words? (2) How does one know that words, once understood, are truthful? Concerning the first question see the entry "Philosophy of Language in India." This entry will focus only on the second question.

The veracity of words is crucial to Indian philosophers because knowledge derived from the sacred writings depends on it. Clearly, most religious doctrines could not be established by other means of knowledge such as perception or inference. Furthermore, when one is faced with a plurality of religious traditions, the question invariably arises as to which tradition can be trusted, for all of them cannot be true. Thus, each tradition had to adduce some arguments to justify the teachings it considered to be true. According to the Nyāya-Vaiśeṣika the

Veda was revealed to normal human beings by the Rishis who have direct knowledge of it, and consequently the truthfulness of the Veda, at least as known to one, depends on the truthfulness of the Rishis. Vātsyāyana (fifth century) enumerates three characteristics that must be present if one is to be considered a trustworthy or authoritative person: One has to have direct knowledge of things, compassion toward living beings, and the desire to teach things as they are.

There are basically two ways to prove the validity of a statement made by a reliable person. Either the reliability of the person making the statement is established, or the truthfulness of the statement is directly perceived or inferred. Ideally, the statement should be directly confirmed, but in the case of the Veda this is not always possible, for the truthfulness of a Vedic statement is often beyond the realm of examination by normal human beings, for example, statements concerning heaven. Vātsyāyana's proof is based on the assumption that the different parts of the Veda have the same authors. The statements of the Āyurveda and magical spells (*mantra*), which according to Vātsyāyana form a part of the Veda, have visible results. When certain spells that are intended to remove poison are uttered, the poison is actually removed. Furthermore, certain parts of the Veda proper also have visible results, for example, "One desirous of a village should perform a sacrifice" (*grāmakāmo yajeta*). Vātsyāyana's inference of the validity of the Veda runs as follows: From the parts of the Veda that have visible results one infers the trustworthiness of its authors (qualified by the three characteristics mentioned earlier), and because these are the same trustworthy authors as those of the rest of the Veda, the validity of the latter can be inferred.

The proof of reliability of a person was further developed by Dharmakīrti, who was concerned with the trustworthiness of the Buddha. It was clear to Dharmakīrti, who was conscious of the problem of induction, that the argument as it appears in *Nyāyabhāṣya* and *Nyāyavārttika* is not valid: Just because someone is trustworthy in matter *x* (e.g., medicine) does not necessarily mean he or she is trustworthy in matter *y* (e.g., rituals and sacrifices). Consequently, Dharmakīrti modifies the argument in two points. First, he does not simply draw an inference from trustworthiness in any part *x* to trustworthiness in any part *y*; he allows such an inference only when one moves from the main part of a teaching to its secondary part. Second, the logical reason used in Dharmakīrti's inference is not just the sameness of the author, but includes the motivations of the speaker in his reasoning,

for example, one should consider whether the speaker may have a motivation to lie.

More specifically the proof runs as follows: The main part of the Buddha's teaching are the four noble truths. These truths can be established independently of the Buddha's authority through perception and inference. Once the four noble truths are established, one can conclude that the Buddha was knowledgeable at least in matters of salvation. From such knowledge one infers that the Buddha has practiced various means for salvation for a long time (i.e., during many lives). However, he need not have practiced for such a long time had he been interested only in his own salvation. Therefore, his efforts were for the sake of other people. His engagement for the benefit of other (in fact, all) living beings in this manner presupposes compassion. Furthermore, the Buddha does not lie, because he has nothing to gain by lying. Therefore, the Buddha is trustworthy. Consequently, one can infer the truth in secondary matters in his teachings that are not open to an examination by normal human beings. As an example for such a domain Dharmakīrti mentions the law of karma. Later Tibetan commentators also mention certain monastic rules that cannot be established independently of the Buddha's word (Tillemans 1993).

Interestingly, the reliability of the Gods must also be established. The Śaiva commentator Sadyajyotiṣa (ninth century) says: Why is the word of Śiva authoritative? Because he is a pure, infallible, gracious lord endowed with knowledge that extends to everything. And his words whose objects are seen can be perceived as fruitful. Therefore, it can be inferred that his words whose objects are not seen are fruitful in exactly the same manner (Franco 1997, pp. 41–42).

THE OTHER PRAMĀṆAS

It is unfortunate that the other means of knowledge receive little attention in the Indian tradition. The Naiyāyikas and the Mīmāṃsakas have accepted analogy or comparison (*upamāna*) as a separate means of knowledge, but discussions about it remain rudimentary. It is defined as "proof of what has to be proved from similarity to something well known" (NS 1.1.6). The stock example for the use of analogy is: Someone does not know what a gayal is and is told "a gayal is like a cow." He or she then goes to the forest and is able to recognize a gayal on seeing it. Another example concerns the recognition of something from its name. For instance, knowing that the herb called bean leaf is like a bean, a person who finds this herb realizes that this is the thing to which the name applies. The Naiyāyikas were not unanimous as to what exactly constitutes the means of

knowledge in this case. The older Naiyāyikas argued that the statement of the instructing person is the means of knowledge; the later Naiyāyikas maintained that it is the cognition of similarity that brings about the understanding. Means of knowledge, by definition, must lead to an awareness of an object previously unknown, for if the object is already known, its awareness will be nothing but recollection, and, except for the Jainas, no school of thought accepted memory as a means of knowledge.

There was some uncertainty as to what exactly is new about the object of the awareness resulting from comparison. To repeat the stock example, when one recognizes that a certain animal is a gayal, it is not the animal as such that is the object of the comparison, because it is apprehended by sense perception. It is also not that there is a similarity between the cow and the gayal, because the similarity was already conveyed by verbal communication. Nor can the resulting awareness consist in the conclusion that the particular animal observed for the first time is a gayal, because in this case comparison would not be different from inference. Indeed, some Mīmāṃsakas who professed this opinion were criticized by the Naiyāyikas for reducing comparison to inference (Bhatt 1962, pp. 290ff). The Naiyāyikas (*NBh* 1.1.6) as well as some Buddhists of the Kushana period (Franco 2001, pp. 11–12) maintained that the result of comparison is the awareness of the designation, that is, that the animal seen in the forest is called gayal. Nevertheless, it remained controversial what distinguishes analogy from inference on the one hand and from verbal testimony on the other, and different opinions were put forward on this issue. The Buddhists, the Vaiśeṣikas, and the Sāṃkhya did not consider analogy to be a separate means of knowledge (Bhatt 1962, pp. 289–307).

Another potentially interesting means of knowledge that remained underdeveloped is *arthāpatti*. There is no agreed translation for this means of knowledge, and it is rendered by presumption, supposition, implication, negative implication, circumstantial evidence, and so on. The two most common examples for *arthāpatti* are: (1) Knowing that someone is alive and not finding him or her at home, one concludes that he or she is outside. (2) One is told that fat Devadatta does not eat during the day, and one concludes that he eats at night. The two examples are distinguished as presumption based on something seen (*dṛṣṭārthāpatti*) and presumption based on something heard (*śrutarthāpatti*). In later texts one distinguishes six types of presumption according to the six means of knowledge on which a presumption can be based.

The examples mentioned in this connection seem construed and artificial and are not taken from an actual philosophical discourse or from everyday life. For instance, presumption based on inference is illustrated as follows: One knows by inference that the sun moves (its movement cannot be perceived, but is inferred because it changes its place in the sky). However, things that move usually possess limbs such as legs. Thus, a conflict between two means of knowledge arises, and this conflict is resolved by the presumption that the sun has a moving power. Conflict or apparent contradiction (*anupapatti*) between two means of knowledge is the essential ingredient of *arthāpatti*, and the resulting presumption resolves the conflict. The contradiction must be apparent. If the contradiction is real, for example, two awarenesses about the same object, one perceiving it as silver and the other as mother-of-pearl, the way of resolving it is by rejecting one of the alternatives as false, not by making a new supposition. Among the important philosophical schools, only the Mīmāṃsā and Vedānta accepted presumption as an independent means of knowledge (Bhatt 1962, pp. 313–340).

The Bhāṭṭa Mīmāṃsakas accepted absence (*abhāva*) as a sixth means of knowledge. A discussion as to how mere absence or nonexistence can be an object of valid cognition appears already in *NS* 2.2.7–12. An objector argues that a negating cognition cannot be valid because it cannot refer to an object in reality. The objection is rebuked by reference to common experience. When some pieces of cloth are marked and some are unmarked, one can be told “Fetch the unmarked pieces,” and one is able to do so. The Naiyāyikas, however, just like the Vaiśeṣikas, the Sāṃkhya, the Buddhists, and the Prābhākara Mīmāṃsakas, considered absence or nonperception to be included in inference. Prāśastapāda identified absence with inference from absence of effect to absence of cause.

CIRCULARITY OF PRAMĀṆAS

A general objection to the *pramāṇas* as such has been raised from the earliest times. If everything is established by means of knowledge, how are the means of knowledge themselves established? If they are established by other means of knowledge, these other means also have to be established by yet other means of knowledge and thus an infinite regress results. If the means of knowledge were to establish one another, a circularity would result. If one claims that the means of knowledge need not be established, the initial position that everything has to be established by means of knowledge has been abandoned. Some claimed that the means of knowledge establish both their objects and themselves, just as a lamp illuminates itself

and its surroundings. However, it remained unclear how this metaphor should actually apply to the *pramāṇas*, and some, like Nāgārjuna (VV, verses 30ff) even argued that actually a lamp cannot illuminate itself.

See also Atomic Theory in Indian Philosophy; Causation in Indian Philosophy; Liberation in Indian Philosophy; Logic, History of: Logic and Inference in Indian Philosophy; Meditation in Indian Philosophy; Mind and Mental States in Buddhist Philosophy; Philosophy of Language in India; Self in Indian Philosophy; Truth and Falsity in Indian Philosophy; Universal Properties in Indian Philosophical Traditions.

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KNUTZEN, MARTIN

(1713–1751)

Martin Knutzen, the German Wolffian philosopher, studied at the University of Königsberg and became an extraordinary professor there in 1734. Because he was a Wolffian, even though an unorthodox one, he never attained a full professorship in that Pietist-dominated school. However, because he was also a Pietist, Knutzen could never attain such a position in other German universities where Wolffians held the power of appointment.

Knutzen disagreed with Christian Wolff on several significant points. His *Commentatio Philosophica de commercio Mentis et Corporis* (Philosophical Commentary on the Relation between Mind and Body; Königsberg, 1735) was an attempt to reconcile Wolff's theory of preestablished harmony with the Pietist doctrine of physical influence. He extended the problem beyond Wolff, from the relation of soul and body to the interrelations of simple substances in general. In this and in a panpsychistic metaphysics, he was closer to Gottfried Wilhelm Leibniz than to Wolff. Knutzen, in his cosmological work *Vernünfftige Gedanken von den Cometen* (Rational thought concerning comets; Königsberg, 1744), was one of the first philosophers in Germany to accept, at least partially, the Newtonian theory of gravitational attraction. His theological work was derivative and of little significance.