I. W. Mabbett   **Nāgārjuna and Zeno on motion**

Āryadeva: Master, look out! Zeno of Elea, inspired no doubt by jealousy of your superior arguments, has just shot a poisoned arrow at you. Take cover!

Nāgārjuna: Never fear. The arrow will never arrive, and he knows it. It was a mere empty gesture of defiance. Look, he has given up waiting for the arrow to strike me and gone home.

Āryadeva: Nevertheless, I would take cover if I were you. See, the arrow has already traversed half the path it has to travel.

Nāgārjuna: You have little faith in the power of *prajñā*. Why, Zeno himself has proved that an arrow cannot move. At every moment, it is stationary. The period of its travel is made up of an infinite number of moments, and at every one of them it is stationary. So how can it move?

Āryadeva: I wouldn't be so sure of that argument. About eighteen centuries from now, there are going to be some mathematicians and philosophers who will exhibit fatal weaknesses in it. See, the arrow has traversed three-quarters of its path.

Nāgārjuna: But, my friend, I have [he interrupts himself and gestures modestly] superior arguments based on the premises of any opponent you care to name which prove that there can be no arrow and no movement. If there is movement, there must be something moving. Now, if the movement and the thing moving are two things, the thing moving must in itself be without movement ...

Āryadeva: I agree, but meanwhile the arrow has traversed seven-eighths of its path. Take cover!

Nāgārjuna: But this is impossible, because the thing moving must necessarily be actuated by a movement. So then there would be two movements, and two things moving, which is absurd. So really there is no arrow. [The arrow strikes Nāgārjuna.]

Āryadeva: Oh master! Let me draw out the arrow.

Nāgārjuna: Stay! I wish to get to the bottom of this. What sort of man can have shot this arrow at me? What is his stature as a philosopher? Of what race is he? From what place does he come? What sort of bow is it that can thus defy all the laws of dialectics? I need to know how it was made, what sort of string it possesses, what sort of shaft the arrow has ...

Āryadeva: But, master, is it not written that the life of one who is struck by an arrow does not depend on whether the arrow is eternal, or whether it is not eternal, whether it moves, or whether it does not move?

Nāgārjuna: I'm glad you said that. I was just going to say the same thing myself. Draw out the arrow.[1]

It is difficult to read the *kārikās* of Nāgārjuna's *Mūlamādhyamakaśāstra*, in most of the current editions and translations, without a feeling insinuating itself into the mind that in some way Nāgārjuna is exercised by the same problems as Zeno of Elea, and offers solutions which use much the same logic, even if they are different. Jacobi suggested that the two could be compared.[2] Stcherbatsky commented on the parallel: "It is noteworthy that a splendid opportunity offered itself here [that is, in chapter 2 of the *kārikās*] to Nāgārjuna to repeat, in some form or other, some of Zeno of Elea's deductions of our usual conception of motion ad absurdum. The Greek Philosopher was also a monist, he was anxious to prove that motion is impossible, because he followed Parmenides in denying

I. W. Mabbett is Reader in History at Monash University, Clayton Victoria, Australia.

plurality. There is no trace of Nāgārjuna having known them." [3] Kajiyama has seen a resemblance between the arguments of the two thinkers. [4] Murti discussed them together and claimed that Nāgārjuna's arguments are superior because (among other things) they deny the possibility of rest as well as motion, while Zeno denied motion only. [5] Siderits and O'Brien devote an article to the comparison, and suggest ways in which some of the arguments in chapter 2 of the *kārikās* can be interpreted as refutations of the possibility of motion on the supposition that space or time is either continuous or discontinuous in structure, severally. [6]

One important question about Nāgārjuna is whether his arguments succeed in disproving the possibility of any coherent account of motion. Another is whether they are similar to Zeno's. Murti believes that they do indeed succeed in disproving motion, and that they are rather different from, and superior to, Zeno's. Siderits and O'Brien do not accept them all as valid disproofs of motion, but consider that they succeed in showing the absurd implications of the views of Nāgārjuna's 'atomistic' opponents, which was their purpose, and that they are very similar to Zeno's arguments. I believe that each of these views is partly right and partly wrong. I believe that the temptation to make comparisons with Zeno, however natural, tends grievously to obscure Nāgārjuna's meaning.

The two thinkers may not have thought the same things, but there are several telling parallels between the two men all the same. Here are six.

Zeno bent his disputation to the service of his master Parmenides, whose philosophy, in bold contravention of common sense, denied the plurality of the universe's content. Perhaps this makes him a monist, but the inference has been denied in some quarters. Nāgārjuna similarly claimed to show that we cannot coherently conceive of a universe of discrete entities somehow linked together. But he was not a monist. Indeed he denied that he was anything.

Parmenides' philosophy was an obvious target for mockery. Zeno sought to defend it by mocking the mockers—not by proving Parmenides right, but by demonstrating the contentions of his opponents to have contradictory implications. This technique looks like reductio ad absurdum, though it has been denied that it was so in a formal sense. Nāgārjuna's technique was, quite explicitly, to adopt for the sake of argument the assumptions of his opponents and show them to have absurd consequences. This looks like reductio ad absurdum, though we should beware of attributing to Nāgārjuna a conscious acceptance of a formal logic essentially the same as western logic.

It follows that the purpose of Zeno's arguments was not so much to fortify a philosophical citadel of his own as to raze the battlements of his opponents. He should be judged, therefore, not by the validity or profundity of his arguments, but by his success in refuting those particular contentions, weak or strong, which happened as a matter of historical fact to be those of the mockers of Parmenides. Much the same can be said of Nāgārjuna, who claimed not to be proving a particular view correct but to be showing the latent absurdity of all those views

he attacked. He forbade inference from the falsehood of the views he attacked to the truth of their contradictories. But there is an important difference here—Nāgārjuna was more ambitious. He wanted to prove untenable not alone the views of particular antagonists but all views whatsoever.

Who, precisely, were the antagonists in each case? Our assessment of Zeno's success requires us to identify his intended victims, but it is not at all clear, from the scanty and second-hand fragments of his teachings extant, exactly who they were. They may conceivably have included atomists; this supposition has helped some modern commentators to make sense of various of the paradoxes. But there are different ways of taking some of them (particularly the Stadium), and Zeno's meaning may have been often misunderstood. The case seems better with Nāgārjuna, for we can recognize at many points the schools of Sāṁkhya and Vaiśeṣika, and other opponents. But, as the present discussion illustrates, it is not really clear at all points what Nāgārjuna is saying against whom. Perhaps in places he argues against atomism, but this is at least not obvious.

Both Zeno and Nāgārjuna have been accused of sophistry by some commentators. They offer arguments which may appear at first sight (and perhaps on further inspection) to be mere trickery, verbal prestidigitation. Robinson sees Nāgārjuna as (the American equivalent of) a thimble-rigger.[7] But both have also attracted a great deal of serious attention from modern philosophers who find that their arguments bite on real problems.

Finally, both claimed to show the impossibility of giving any coherent logical account of motion.

Of course, there is a major difference which, taking the kārikās out of their religious context, we may overlook. Nāgārjuna's dialectic is not mere logic, or even mere metalogic. It is heuristic, or therapeutic. Its function is largely to prepare us for meditation or mystic insight.[8] I acknowledge this, but it does not affect what follows. My purpose is chiefly to clarify what Nāgārjuna means when he writes about a certain topic. There may be higher purposes, but this one is sufficient for the moment.

First Zeno. He propounded many paradoxes intended to elicit contradictions implicit in commonsense pluralist thinking. Only some survive, in often obscure fragments preserved in later Greek writings. Of those surviving, some (four or five) concern the possibility of motion. The modern literature on Zeno is so abundant and technical, and the problems of interpretation are so complex, that a bare summary, rather than any serious discussion, must serve here.

The paradoxes of motion are best introduced by one that does not itself concern motion but which well illustrates Zeno's general approach to the problem of motion, or at least the approach which, attributed to Zeno, has been used as a term of comparison for Nāgārjuna's approach. This is the argument about infinite and nil magnitude. If a thing has any magnitude at all, it must have either no magnitude or infinite magnitude. As Aristotle phrases it, "If there exist many things, the things that exist are unlimited. For there are always other things in the

middle of the things that exist, and again others in the middle of these."[9] That is, any thing is infinitely divisible. It therefore has an infinite number of parts (*scilicet*: parts of equal size). If each of these has no magnitude, then it does not exist, and the whole which is the sum of them also does not exist, since zero multiplied even by an infinite number is still zero. But if it has any positive magnitude at all, then the whole has infinite magnitude. Both results are unwelcome.

This paradox invites us to contemplate a continuum of space which is divisible into an infinite number of parts, and elicits difficulties confronting the addition of divisions of the continuum. Similarly, the paradoxes of motion invite us to contemplate continua of space and time which are divisible into an infinite number of points or instants.

The Dichotomy argues for the impossibility of getting anywhere. Before a body can cover a half of any distance, it must cover the first quarter; before this, it must cover the first eighth, and so on infinitely. Before it can cover any positive distance at all, it must first perform an infinite number of tasks. So it cannot start. *A fortiori* it cannot arrive anywhere, for, supposing that it gets halfway, it still has to reach the three-quarter mark, and after that the seven-eighths mark, and so on, so that it must perform an infinite number of tasks before it reaches its goal.

The Achilles paradox is, for most purposes, reducible to the Dichotomy. Achilles, as every schoolboy knows, raced against the tortoise, which was given a start. First Achilles had to run to the tortoise's starting point. While he did so, the tortoise covered a certain distance. Achilles' second task was to run to the point reached by the tortoise while he was performing his first task; his third task was to run to the point reached by the tortoise while he was performing his second task; and so on. Achilles had to accomplish an infinite series of runs converging upon, but never finally reaching, the overtaking point. Therefore he never overtook the tortoise.

The Stadium paradox is the most obscure, and it is not at all clear what proposition it was intended to refute. The contradiction said to result from it is that "half the time is equal to its double".[10] The explanation given can be construed in different ways, and considerable ingenuity has been directed to its interpretation. To be brief, let us suppose simply that two bodies A and B pass each other, moving in opposite directions at the same speed. If this speed is x, then the speed of each in relation to the other is $2x$. Therefore each is moving both at x and at $2x$, which must seem absurd to anybody who has not grasped that speed is relative. On this view of the matter, Zeno was eliciting the inconsistency of an absolute definition of motion. It is a plausible view if we suppose that his contemporaries had not clearly grasped the relativity of speed.[11]

But much of the discussion of the paradox has rested upon the supposition that Zeno's target was atomism—the notion that space and time consist of indivisible ultimate units. Thus, when A has traveled a distance of one indivisible unit of space along B which is passing it, it has traveled half a unit along the

earth's surface; but by definition there is no such distance as half a unit, so the result is absurd. Similarly, if in one indivisible unit of time A has traveled a distance d over the earth's surface, it has traveled $2d$ along B; but there was no time at which it had traveled d along B, for if there existed such a time it would have to be half an indivisible unit, which is absurd.

Finally, the Arrow paradox. A traveling arrow is motionless. The argument can be reconstructed something like this: if the arrow is moving during a period, it is moving at every particular instant during the period; at any particular instant, it must occupy a volume of space exactly equal to itself, no greater; while it occupies this volume, it has no room to move and so must be at rest; therefore, while it is moving, it is at rest.[12]

All these paradoxes, except apparently the Stadium, turn on the problem of infinite division. A space or line or period of time has an infinite number of parts, mathematically speaking. Each part has no room in it for substance or motion; it is empty (śūnya, we are tempted to say). Therefore the whole has no room in it either. There are places where Nāgārjuna has been taken to be denying the possibility of transition from one part of a continuum to another because of the emptiness of the stages that must be traversed. Therefore the two philosophers may seem to be cooking in the same kitchen.

What of infinity? It is unfinished, has no limits. An infinitely large number is not an actual number, like the number of gods supposed to be on Mount Meru. For any actual number of parts into which a continuum may in thought be divided, an infinite number is larger. So the infinitely small part is not actually there. To ask of it whether it has any positive magnitude or not is like asking, "If I were a completely different person from the person I am, would I have black or brown hair?" (The problem of counterfactuals is involved. "If what does not actually exist actually existed. . . .") The answer, presumably, is "Whatever you like." We are in Zen country.

The first part of an unfinished series may actually exist, but the finish of it does not. So, even if we can say that there are infinitely many sets of equal parts into which a continuum can be divided (the first set containing two equal parts, the second three, and so on), there is no such set containing an infinite number of parts.[13] Therefore Zeno's arguments rest on false premises and fail to get started. This is true of the Arrow as well as the others. What is wrong with the Arrow is not that it conceives of the possibility of motion at an instant, for this conception is normal both to ordinary speech and to mathematics. What is wrong with it is its false assumption that, in order to be moving at an instant, a body must traverse a positive distance at that instant. All that is necessary is that the instant should fall within a period during which the body is moving. (This has been shown by Barnes in the place cited.)

On one level of discourse, the language of ordinary speech applied to mathematical problems ('lower mathematics', let us say), such considerations may furnish satisfactory means of dealing with the problems which the historical

Zeno is actually likely to have had in mind. We may notice that these consider-
ations do not attribute to Zeno, or require for the solution of his conundrums,
any particular theory about the structure of space and time, nor is it necessary to
suppose him to have been attacking any such theory. To be sure, it is a useful
philosophical exercise, in discussing some paradoxes, to refer to the theory that
space or time is either continuous or discontinuous in order to see how it fares
under Zeno's broadside. But to say that much is not to say that Zeno was actually
talking about these particular theories, or even that it is impossible to discuss the
things he actually said without referring to them.

There is an irony in this, because Zeno and Nāgārjuna can be made to fit into
the same slot only to the extent that they may be supposed to have aimed
specifically at the continuous and granular theories. It may yet turn out that both
were innocent of such intentions.

But of course the story does not end there. On another level of discourse, the
level of serious mathematics, it is not possible to deal so cavalierly with the
problem of infinite division. For the mathematician, it is indeed normal to treat a
line as if it consisted of an infinite number of extensionless points. To his habits of
thought, the points are actually there. Therefore, a much more sophisticated
apparatus must be brought to bear if he is to provide a solution to Zeno's puzzles
in properly mathematical language. Perhaps it was not until the nineteenth
century that mathematics began to be able to cope with Zeno. A mathematical
meditation on the paradoxes elicits a whole series of really meaty problems that
provide stimulating exercise for the intellect. As each is solved, another arises.
Salmon writes: "As one peels away outer layers by disposing of the more
superficial difficulties, new and more profound problems are revealed." [14] Zeno
is an onion. The coherent conception of an infinite series of terms with a finite
sum, of the performance of an infinite number of tasks, of a continuum com-
posed of extensionless points—all these challenges, and more, must be met
before we can get to the bottom of the paradoxes.

So, in the language of ordinary speech, Zeno is not entitled to speak of an
infinite number of actual parts constituting a whole, and his juggernaut is quickly
stopped; in mathematical language, he is so entitled, and many technical prob-
lems arise. Is ordinary language right, or is mathematical language right, or both,
or neither? My feeling is that the question is empty. If there are to be two rival
answers to a question, the answers and the question must be all in the same
language. If not, they are neither rivals nor allies—they are not related.

A language is a symbol system. If a symbol system is to be useful for describing
the real world, it must be internally consistent and it must be isomorphic with the
real world at certain critical points, but we cannot demand that it be totally
isomorphic everywhere. Therefore a language, pedantically exploited, is likely
to yield fictions or paradoxes sometimes when it is translated into practical
experience or some other language. The propositions of high-energy physics

produce many paradoxes when they are translated into lay terms. Complex conditional statements in a highly inflected language like Sanskrit may yield nonsense when translated literally into Chinese. That mathematicians use the proposition that a continuum is composed of infinite numbers of extensionless points is a fact about the way mathematical language works rather than a fact about the real world.

Whether this feeling is correct does not matter here. What matters is simply that Zeno's propositions have been read in different ways—sometimes conceptual, sometimes mathematical, and perhaps sometimes confused. The same distinction can be applied to Nāgārjuna.

Let us turn now to Nāgārjuna. The second *prakaraṇa* (chapter) of his *Mūlamādhyamakakārikās* is presupposed by much or most of what follows and pivotal to the whole work. It contains arguments or argument schemata which later chapters frequently cite as authority for their own conclusions. It also contains most of the verses which have lent themselves to the interpretation that they embody arguments like Zeno's or are addressed to the same questions as his paradoxes of motion. Therefore it is necessary to look closely at this chapter if we are to achieve a proper comparison between Nāgārjuna and Zeno.

Our troubles begin with the first verse, II. 1:

> *Gataṃ na gamyate tāvad agataṃ naiva gamyate*
> *gatāgatavinirmuktaṃ gamyamānaṃ na gamyate*[15]

Here, *gata* means 'gone' and *agata* 'not gone'. *Gamyate* and *gamyamāna* have inspired a variety of translations. S. Yamaguchi, cited by K. K. Inada, "enlightens us that the final *na gamyate* refers to the fact that a certain condition is unknowable or inconceivable."[16] For *gamyamāna*, Inada has 'the present passing away',[17] Streng has 'the present going to',[18] Sprung has 'what ... is just being traversed',[19] Siderits and O'Brien have 'present-being-gone-to',[20] and May has 'un mouvement actuel'.[21]

The final *gamyate* is particularly problematic, for the verb may be taken either in its normal sense of 'go' or in the sense of 'observe, understand, guess'.[22] Monier-Williams attributes this second sense especially to the passive—'to be understood or meant'.[23] Translators agree in taking *gamyate* upon its first two occurrences in the first sense; the *gamyate* at the end of the verse is taken sometimes in the first sense and sometimes in the second.

The case for understanding the final *gamyate* in the sense of 'observe' or 'understand' rests ultimately upon the later commentators, for instance, Candrakīrti, who unambiguously glosses it as *prajñāyate*, immediately after paraphrasing *gamyamānaṃ na gamyate* as *na ... tṛtīyam aparam adhvajātaṃ paśyāmo gamyamānaṃ nāma*.[24] Candrakīrti explains the double entendre clearly in his commentary on verse 2.[25] Both Buddhapālita and Bhāvaviveka, as cited by Hopkins, had also followed this interpretation, the first explaining *na gamyate* as

"is not correct because of not being apprehended," the second explaining it as "is not apprehended." [26] A. Saito adds the authority of the *Akutobhayā* for this interpretation, as embodied in the Tibetan translations. [27]

The case for understanding *gamyate* in the sense of 'go' rests upon its contexts. Verse 1 is concerned, in the first line, to deny the predicate *gamyate* of two entities, *gataṃ* and *agataṃ*. In these two cases, Candrakīrti and translators agree in taking *gam* in the sense of 'go'. In the second line, it is said that a third entity, *gamyamāna*, lacks the predicate *gamyate*. What could be more natural than to suppose that it is the same predicate? Otherwise, Nāgārjuna must be supposed to be making a pun which he cannot be proved to be making.

Further, in verse 2, Nāgārjuna introduces a possible objection to his argument, an objection which asserts that, because activity is in the *gamyamāna*, there is really motion (*gati*) in the *gamyamāna* after all. The point is not that therefore the *gamyamāna* is perceived; it is that therefore it has motion. Other things being equal, it is obviously more natural to regard the objection in verse 2 as a precise contradiction of the proposition *gamyamānaṃ na gamyate*; since it says that there is motion in the *gamyamāna*, this suggests that *na gamyate* denies motion.

Again, as May points out, verse 8 is analogous in structure to verse 1: it denies the predicate *gacchati* firstly to the entity 'goer', and secondly to the entity 'non-goer'; then it asks what third entity there is apart from these two to which one could apply the predicate *gacchati*. Here, fairly obviously, *gacchati* means the same ('go') in all three cases, and is so interpreted by Candrakīrti. As May says, the double meaning of *gam* embarrassed the Tibetan translators of the Prasannapadā where *śes pa* ('known') is used at verse 1 and *'gro ba* ('gone') on later occasions. [28]

The authority of Piṅgala can be added for the translation 'go'; the *zhōng-lùn* translates the last part of verse 1 as *qù shí yì wú qù*. [29]

May says that the translation of *gam* as 'go' "semble plus naturelle." [30] It will be followed here.

Only now is it possible to return to the beginning and consider how the relevant verses should be translated. Verse 1 denies the single predicate *gamyate* to the three entities *gataṃ*, *agataṃ*, and, separate from these two, the *gamyamānaṃ*. That is, literally, it is false to say, of what has been gone, what has not been gone, or what is now being gone, that it is gone. How are we to understand this?

Throughout the *kārikās*, Nāgārjuna is concerned essentially with the relationship of dependence. A predicate, characteristic or effect may be said to depend upon its subject, entity or cause. The difficulties in defining this dependence seem to Nāgārjuna, in every case he examines, to be insoluble.

In the present chapter, the dependence of the predicate *gamyate* upon its subject is taken as a paradigm case. In this first verse, Nāgārjuna is not thinking of a movement as an event dependent on a cause or instigator, an agent or 'goer', for that is a different example considered later on in the chapter. He appears to be

thinking of a movement, independently of any cause or agent, as a change in state. It is a field event. A movement is the alteration of the field from one state to another. The field is the space in which the movement occurs—*adhvajāta*, according to Candrakīrti. Of course, Candrakīrti does not have to be right in taking *gamyamāna* in this way. There may be a better way of interpreting the expression, but until a better way has been established it seems reasonable to adopt the present one.

It does not, in fact, matter enormously to the immediate argument how we translate *gamyamāna*; what matters is only that it, along with *gata* and *agata*, is an example of a thing ostensibly depended upon, and Nāgārjuna is concerned to explore the meaning of the dependence of one thing or property (such as *gamyate*) upon another (such as *gata*, *agata* or *gamyamāna*). For convenience in this case, we can describe the thing depended upon as the field or locus of a movement. So the problem is to define the relationship between the field or locus, the space in which a movement occurs, and the movement which represents a change in it or characterizes it. Let us render the sense of verse 1 as follows:

A field or locus of past motion is not characterized by movement; similarly a field or locus without motion is not characterized by movement either. When the locus with or without motion is eliminated, the locus of present motion (also) is not characterized by movement.

The field which is a locus of past motion or without motion is obviously not characterized by movement; this much can be accepted at once. Further, Nāgārjuna announces, the locus of present motion cannot be said to be characterized by movement. This more contentious claim he proposes to establish in what follows.

There are two reasons why this verse might encourage us to read Zeno's problem mistakenly into the argument. The first is that it is tempting to treat *gata*, *gamyamāna*, and *agata* as past, present, and future conditions, respectively. Thus we imagine Nāgārjuna to be contemplating a time continuum which (we immediately suppose) can be exhaustively divided into past and future, leaving no room for the invisible present in which movement is now occurring. But this is not what the text says, and we must not jump to conclusions.[31]

The second reason is Candrakīrti. On this verse Candrakīrti offers two comments, of which the first looks Zenonian but in fact leaves open the central question, and of which the second undoubtedly is Zenonian.

What he says first is that, because present, past, and future are mutually exclusive, a present movement cannot inhere in the path of a past or future motion, and we do not observe (*na paśyāmaḥ*) any third sort of path, where present motion might occur, besides one characterized by completed or past motion (*gata*) and one characterized by absent or future motion (*anāgata*). The question is why we do not observe any such path. Zeno's answer springs to our minds, but not necessarily to Nāgārjuna's; in fact in later verses he will give a different answer.

But Candrakīrti's further comment clearly suggests Zeno's answer, and it is this especially that is liable to prejudice the modern reader of the *kārikās*. He explains the invisibility of a locus for present motion by attacking the claim that the place occupied by a walking foot surely constitutes a path of present motion. For any particle of matter within the foot, the place occupied by the whole foot is already traversed and hence *gata* (if the particle is at the tip of the toe), or not yet traversed and hence *agata* (if it is at the back of the heel). We might add, though Candrakīrti does not say it, that the place is divisible into two sections (if the particle is in the middle). Since each particle can in turn be subdivided, it is not possible to discover a part of the foot which occupies a path of present motion. (Siderits and O'Brien, apparently relying on Yamaguchi, offer a confused account of this passage. *Aṅgulyagrāvasthitasya paramāṇor yaḥ pūrvo deśaḥ sa tasya gate 'ntargataḥ* is accurately translated by Sprung as: "A place which is earlier for a minute particle located in the tip of the toe falls for it within the sector of the traversed."[32] There is no need to invoke scribal error.) This argument can be made to appear cogent only with the help of Zeno's approach to the problem of infinite divisibility.

But Nāgārjuna must be allowed to speak for himself. In verse 2, leaving aside the ground or locus of completed and the ground of absent motion, he takes up the claim that there is indeed movement inhering in the ground of present motion, since, after all, movement is where activity (*ceṣṭā*) is and activity is in the ground of present motion. In verse 3 he launches his attack on this claim:

> *Gamyamānasya gamanaṃ kathaṃ nāmopapatsyate*
> *gamyamānaṃ vigamanaṃ yadā naivopapadyate*
>
> How can movement occur as a characteristic of the ground
> of present motion, when the ground of present motion does
> not occur without movement?

The term *vigamanaṃ* ("without movement") in the second line is not the only reading, but it has been shown to be correct. The text published by de La Vallée Poussin has *dvigamanaṃ* ("double movement"), probably an error.[33]

Siderits and O'Brien have ingenious Zenonian interpretations for both meanings. First 'double movement'. Imagine that both time and space are granular, composed of ultimate indivisible but extended units. Suppose that in one such unit of time, an object moves through two such units of space. It has arrived at the second of them, but there was no actual time when it was located at the first, for such a time would have to be a division of the ultimate indivisible time unit. So there are two movements, one proceeding directly to the second unit of space (required by the premises) and one passing though the first en route (required by common sense); but in fact there can be only one movement, so the theory of granular space and time is absurd. Now 'without movement'. Imagine that time is granular or discontinuous but space is continuous. Thus an object does not *move* along a line; at each indivisible instant it is at a new point, without having

traversed the preceding interval. So there is no movement; but in fact there is a movement, so the theory of granular time is absurd.[34]

These arguments are what Zeno might have meant if he had said what Nāgārjuna said. However, Nāgārjuna was not Zeno. It remains to be discovered what Nāgārjuna meant, and in the next two verses he goes on to explain his meaning.

> *Gamyamānasya gamanaṃ yasya tasya prasajyate*
> *ṛte gater gamyamānaṃ gamyamānaṃ hi gamyate*

> If you claim that there is movement of the ground of
> present motion, you are committed to the fallacious
> consequence that there is a ground of present motion
> without movement, for the ground of present motion is
> characterized by moving.

> *Gamyamānasya gamane prasaktaṃ gamanadvayam*
> *yena tad gamyamānaṃ ca yac cātra gamanaṃ punaḥ*

> In the movement of the ground of present motion is
> fallaciously entailed a double movement: that by which
> the ground of present motion is what it is, and that
> which is the present motion itself.

In these verses, Nāgārjuna introduces an argument schema that is fundamental to the main thrust of his philosophy. It is a trusted friend through later chapters. And it has nothing to do with Zeno.

How then are we to understand the argument of verses 2–5? First let us look at the proposal of Murti, who paraphrases it thus:

> It would be pointed out that there is some such space as the 'being traversed';
> for that is the place where the activity is present; and this activity does not pertain
> to the traversed or that portion yet to come. But as the activity belongs to the
> moving body and not to the space, this consideration also will not help us to
> distinguish that space. It is not possible to ascribe motion to both, to the space
> covered and the moving body.[35]

Now let us take Candrakīrti as a guide. Here is Sprung's translation of the commentary on verse 4:

> The one arguing the view that what is in traverse [i.e. *gamyamāna*] has motion
> must think that, as what is in traverse is a mere name devoid of motive activity,
> motive activity is adventitious to it. According to this view it must follow that
> what is in traverse is devoid of motion; that is, movement would be without
> motion! For such a one, what is in traverse moves. . . . As what is in traverse lacks
> motion entirely, for one of such view it follows that it moves, because the activity
> of motion is fully appropriated by the 'it moves'. The undesirable consequence
> follows, therefore, that what is at present in traverse lacks motion.[36]

Sprung's translation of the commentary on verse 5 is less happy; here is a fresh translation:

> One movement is that in relation to which the locus or path (*adhvā*) receives
> the designation 'ground of present motion'. The second is that whereby, on the

basis of that ground of present motion, that locus or path is characterized by movement. This double movement is fallaciously entailed if there is movement of the ground of present motion.

How are we to make sense of this?

Gati and *gamana* mean "movement," not "moving body," and Murti's distinction does not seem to be helpful. We must return to the distinction made above between the field or locus, *adhvajāta*, within which the motion occurs, and the motion itself. The first is conceived of as the ground or substrate of the motion, and the motion is conceived of as the property or characteristic dependent on it. Candrakīrti correctly understands Nāgārjuna to be saying that the attribution of movement to the field in which it occurs entails the absurdity of two movements. The argument runs thus: the field (*adhvajāta*) is one thing, the movement another. The first movement is the movement which the field possesses *by definition* as the "ground of present movement" (*gamyamāna*). It possesses the movement a priori. This first movement is entailed by the very existence of the field of movement. But the movement which actually takes place is not an a priori property; it is contingent and separate. Being a separate entity, it is added to the field from outside, so to speak. But the field already possesses movement by definition; therefore the movement which is added to it is a second movement.

This argument, whatever we may think of it, is not like Zeno's. Zeno sought, on mathematical assumptions, to show the impossibility of analyzing space, time, and motion. Nāgārjuna sought, on metaphysical assumptions, to show the impossibility of analyzing ground and consequent, substance and attribute.

His argument is made clearer in the following verses, 6–11, which apply the same schema to the relationship between subject and verb. As for substrate or locus of motion and the movement which characterizes it, so for the agent of motion, the mover, and its action, the moving. The anomalous double moving (*gamanadvayam*) entailed by the previous analysis of locus and characteristic cannot be tolerated, because this would entail the absurdity of two agents, two separate movers, for there is no moving without a mover (verse 6). A moving entails a mover and vice versa (verse 7). But now it is to be shown that the concept of moving is incoherent. A moving must have a subject, and the subject must be either a mover or a nonmover. Obviously it is not a nonmover (verse 8). But it is not a mover either; "the mover moves" does not make sense, for there is no mover without moving (verse 9). But the statement "the mover moves," intended to attribute moving to the mover, in fact implies the possibility of a mover without a moving (verse 10). For, if the mover moves, there are two movings: that by which the "mover" is realized[37] in its capacity as a mover and that which (in fact, contingently) moves (verse 11). That is, "the mover moves" absurdly entails two movers and two movings. The subject, the mover, must a priori move if it is to be designated in the first place as the subject; to this must be added a second, contingent movement which is comported by the verb, and this being a second

movement must have a second mover. This argument is sufficiently clear, and the version just given is in agreement with those of most modern commentators.[38]

So far, then, there appears to be no evidence that Nāgārjuna was addressing the same problem as Zeno. One paragraph only of Candrakīrti's commentary has suggested an approach like Zeno's. It would be improper to reject Candrakīrti at this point, and accept his authority at others, if the *kārikās* themselves bore out the Zenonian interpretation. But they do not.

Verses 12–14, which argue against the possibility of any movement getting under way, raise problems for us.

> *Gate nārabhyate gantuṃ gantuṃ nārabhyate 'gate*
> *nārabhyate gamyamāne gantum ārabhyate kuha*
>
> Where motion is completed, movement cannot be initiated.
> Where there is no motion, movement cannot be initiated.
> Where motion is (already) under way, movement cannot
> be initiated. Where is movement initiated?
>
> *Na pūrvaṃ gamanārambhād gamyamānaṃ na vā gatam*
> *yatrārabhyeta gamanam agate gamanaṃ kutaḥ*
>
> Before movement is initiated, there is no locus of present
> or completed motion where movement might be initiated.
> And how could there be movement where there is no motion?
>
> *Gataṃ kiṃ gamyamānaṃ kim agataṃ kiṃ vikalpyate*
> *adṛśyamāna ārambhe gamanasyaiva sarvathā*
>
> What can be the meaning of a locus for completed motion,
> a locus for present motion and a locus devoid of motion,
> when we can in no way discover any initiation of movement?

In the verses we might again imagine Zeno's argument, which contemplates a time continuum and divides it into past and future sections which exhaust it. There is no space left for the durationless present in which something might happen. In this case, the argument would be that there is no space between the earlier period of no movement and the later period of movement in which the beginning of movement could happen.

Siderits and O'Brien offer two interpretations of Nāgārjuna's argument, one mathematical (like Zeno's), much as the preceding paragraph here describes, and the other conceptual. They then reduce the conceptual argument to the mathematical, thus securing a close analogy to Zeno.

Their conceptual version of Nāgārjuna's argument appears to be that the concept of the beginning of motion involves a vicious circle. *Gata, gamyamāna* and *agata* are three moments of time, past, present, and future, and they are conventional constructs which cannot be defined except in relation to the event in question, the movement. Before the movement begins, therefore, the three moments cannot be identified. But the beginning of movement must by definition take place in one of the three moments, and can be identified only in relation to them. The moments and the beginning of movement can be identified only in

relation to each other. Before the movement begins, the moments cannot be identified; therefore the beginning itself cannot be identified.[39]

This is then collapsed into the mathematical version with the claim that the argument must be directed against the view of time as an infinitely divisible continuum. On this view, any attempt to identify a first instant of motion (which would qualify as the beginning of movement) must fail, for, between any instant during the period of motionlessness before movement, however late, and any instant during the period of movement, however, early, there is an infinite number of other instants, and no one of them can be identified as *the first* during the period of movement.[40] This is the reason the beginning of movement cannot be identified, and why the three moments cannot be identified.

Again, it is easy to countenance the proposition that if Zeno had said what Nāgārjuna said, this is very likely what he would have meant. Nāgārjuna's actual meaning, though, may be different.

Prima facie, we would expect to find Nāgārjuna presenting another phase of his argument for the unintelligibility of ground and consequent, substance and attribute, subject and predicate, for this is the gravamen of his thesis. We must therefore interpret the beginning of movement as the attribute whose substance he professes to seek in vain.

This suits the text very well. In earlier verses he has argued for the impossibility of linking movement to a ground or locus. In later verses he will argue for the impossibility of linking the end of movement to a ground or locus. Here he is concerned with the ground for the beginning of movement. Implicitly, it is an argument against change.

For a particular change, he considers, cannot occur in the abstract; it must occur in a particular physical field identifiable in time and space. It must be a characteristic of some particular locus. In the case of the change constituted by the beginning of movement, it is clear, firstly, that this locus cannot be the locus of completed movement, for what is now beginning is by definition not what is completed. Substance and attribute, characterized and characteristic, must exist at the same time. A property cannot be a property of an entity that has ceased to exist. (This is an important theme elsewhere in the *kārikās*.) Secondly, and for analogous reasons, the locus of the beginning of movement cannot be a locus that is devoid of motion. Change cannot be a characteristic of a field that has not begun to change. So perhaps the locus is a locus of present motion.

Now, the previous paragraph was a loose paraphrase and elaboration of what Candrakīrti begins to say under verse 12. It is interesting to see how he continues. The beginning of movement "also does not characterize the locus of present motion because that locus does not exist, (and this in turn is) because (the existence of the locus of present motion) would entail the fallacy of two originations and two originators" (*nāpi gamyamāne tadabhāvāt kriyādvayaprasaṅgāt kartṛdvayaprasaṅgāc ca*).[41] Here we meet again the logic of two movings and two movers. If there is a change, there must be a locus of change; in order to be

identified as a locus of change, it must a priori be characterized by change; if a change occurs in this locus, which by definition is already characterized by change, then there are two changes; therefore there are two entities which change.

The reason why the beginning of movement cannot be identified is that there is no locus for it. If there were a locus at all, there would have to be two loci and two beginnings of movement. The reason is not that a locus cannot be discovered at any point along an infinitely divisible time continuum.

It might be said that Zeno's argument against the possibility of motion getting under way is better than this one, and that this one needs to be supplemented by Zeno's. But that does not mean that Nāgārjuna's argument actually is Zeno's. Siderits and O'Brien say: "Indeed on this interpretation the argument seems specious unless we make the additional assumption that its target includes a 'knife-edge' picture of time." [42] But perhaps it *is* specious. There is no necessary disrespect to Nāgārjuna in saying this, for the whole of the *kārikās* is supposed to be in inverted commas, as we shall have occasion to notice again below.

There is nothing else in the remainder of the chapter which raises any fresh reason for attributing Zeno's interests to Nāgārjuna. Rather, there is further evidence of his concern with the metaphysical question of how substance can be related to attribute, entity to property, and so forth. Just as a movement cannot begin in a field where motion is completed, absent or present, so too, he argues, it cannot end there (verses 15–17). Here the argument is precisely analogous to the one in verses 12–14 about the beginning of movement. It is impossible to specify the relationship between entity and property or subject and predicate, such as mover and movement, for they are neither two separate things nor one and the same (verse 18). They are distinguishable, so they cannot be the same (verse 19), but if they were separate the entity (mover) could in principle exist without its property (movement), which is absurd (verse 20). Therefore we cannot coherently conceive of either (verse 21). The mover does not carry out the movement that realizes it, or any other sort of movement (verses 22–23); neither an existing nor a nonexisting mover moves, so there is no movement, mover or locus of motion (verses 24–25).

The whole chapter thus betrays a deep preoccupation with the logic of the relationship of dependence. Many arguments can be read into the *kārikās* severally, but they have a single essence: the unintelligibility of the dependence of one thing upon another, of epiphenomenon upon substrate.

How valid is this argument? What assumptions made Nāgārjuna's argument seem plausible to anybody? Did it seem plausible to him?

Nāgārjuna's argument assumed the equivalence of analytical and empirical statements referring to the same thing. The statement "Devadatta runs," if true, is true contingently. The statement "The runner runs" is true analytically. For us, there is an important distinction to be made between the two types of statement.

Nāgārjuna's argument made no such distinction. According to it, therefore, whatever can be said correctly about one type can be said correctly about the other. Therefore, in Nāgārjuna's thinking, if an entity has a property as a matter of contingent fact, that is the same as having it by definition, and having it by definition is the same as having it as a matter of contingent fact. If a subject has a predicate, it makes no difference whether it has the predicate contingently or a priori.

Let us pause to notice the importance of this distinction. The words that we use are taken to refer to entities and events. Events and entities can be analyzed into progressively more basic constituents. Any entity or event is a more or less complex cluster of constituent entities or events. A word for a particular thing is intended to identify a more or less loosely defined cluster, of which it should be possible to say what subordinate events or entities are inside it, constituents of it, and what others are outside it, separate from it.

It is for the creators and users of language to determine by stipulation where the boundaries of a cluster lie. According to purpose and usage, it may be appropriate, for example, in speaking of a particular red-painted ball, to treat the cluster "ball" either as including or not including its red paint. "I am going to take this ball and paint it red"—the ball exists whole apart from its paint. "I mistook the ball for a tomato"—the ball includes its paint. In each case, being red is a property of an entity, the ball. In the one case, the property is attached from outside; in the other, it is a constituent of the entity. For many purposes and on many occasions, it does not matter where the boundary lies, and usage is vague. Sometimes it matters, and we must stipulate.

"The runner runs." Here the property of running is clearly a constituent element *within* the cluster identified by 'runner'. That is why it is an analytical statement. "Devadatta runs." Here the property is attached to the cluster from outside, for the word 'Devadatta' draws the boundary in a different way. So it is an empirical statement; it points to a merely contingent relationship.

Nāgārjuna's argument cannot admit that different words draw different boundaries. There is a unique individual running, and it has unique boundaries. Therefore with seeming plausibility the argument can proceed. "Devadatta runs." Since we can distinguish between the person, Devadatta, and the property of running, they cannot be numerically identical. The property of running is separate and attached from outside. But what is this Devadatta to which the property is attached? In order to have the property attached to him, he must be a runner. Therefore (by definition) the property of running must be part of what we identify when we identify Devadatta. His running is a constituent of his identity. Yet the running was originally supposed to be attached from outside, so that in himself he lacks running. So we find that he both possesses and lacks running, and that there are two runnings—the one that is constituent of him and the one that is contingently attached from outside.

This is putting words into Nāgārjuna's mouth, but they are very close to his

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own. Dwarfs climb on giants' shoulders, and can see farther: with the advantage of modern thought we can see the fallacy clearly enough.

Was Nāgārjuna taken in? Ostensibly, of course, this is a mistaken or at least trivial question. Mādhyamaka dialectic did not espouse any views, we are told; it merely sought to expose the absurdity of others' views by accepting their premises for the sake of argument and drawing out the contradictions. In the case of the arguments considered above, the opponents under assault were those who (a) believed that it is possible to speak coherently of the dependence relationship between substance and attribute, subject and predicate, and (b) failed to distinguish between analytical and empirical statements.

Yet it may be that, in showing the absurdity of the dependence relationship upon premises that confuse analytical and empirical statements, Nāgārjuna really believed that he had shown the absurdity of the dependence relationship upon any premises whatsoever. After all, his arguments do not so much explain the confusion responsible as manifest it. This is another matter. There is no need to explore the question here.

There were indeed people who debated whether space or time is granular or infinitely divisible, but there is no evidence that these were Nāgārjuna's targets. Therefore there is no evidence that he was concerned with Zeno's problems.

Yet, indirectly, there may be some consonance between Zeno's problems and Nāgārjuna's. Those who failed to distinguish properly and consistently between the analytical and the empirical found themselves unable to account satisfactorily for change. If a thing has a property at all (it seemed to them), it has it essentially, necessarily, and a priori. Therefore it has it as long as it lasts. If anything exists at all, whatever is true about it must be eternally true about it. Hence it was natural for the word "exist" to acquire the meaning "exist eternally." The problems raised by these assumptions were a constant stimulus and irritation to Indian philosophers, like the grain of sand around which the oyster builds its pearl; major doctrines were addressed to these problems, especially the problem of svabhāva which is a refrain of the kārikās. For debaters confronted by the problem of the eternity of what exists, the most urgent issue of all was between an unchanging universe and an unreal one. (Both the Buddha and Nāgārjuna, in their different ways, sought to avoid the issue; but they could not help being exercised by it.)

Now, Heraclitus, like a good Hīnayanist, believed in a universe in constant flux, with nothing solid and lasting in it. You cannot cross the same river twice. Parmenides, Zeno's master, took an opposite view: there is no plurality, no change. In the words of the kavirṣi Hector Monro:

> According to the views of Heraclitus
> The universe is one eternal fidget,
> Wriggling and writhing like the village ijjit,
> Or any of the pop groups that now blight us.
> The river flows with nothing firm to bridge it,

> The variable denotes no constant digit,
> The candle burns in honour of saint Vitus.
> Parmenides, a far more stable character,
> To this continual shimmying remonstrant,
> Protested at a Cosmos so inconstant.
> Penelope, when all the suitors barracked her,
> Not Hollywood's promiscuous animality,
> He thought the proper model for Reality.[43]

Zeno attacked motion and plurality in the service of his master's radical antipluralism. So did Nāgārjuna, from a different point of view.

Now, as it turns out, we can transform each of them into the other by turning him back to front. For one, there is no motion because it never starts; for the other, there is no motion because it has eternally ended.

Imagine that they are in competition to woo Penelope. Both set out at the same time to press their suit upon her. Zeno, by his own account, will never get past his own front door, so he is out of the running.

The case is quite other for Nāgārjuna. If one who sets out has the property of arriving, it is obvious that the setter-out and the arrival must exist at the same time. Otherwise there is no way of bridging the gap between substance and attribute. The entity has its property a priori. Of course, Nāgārjuna's main conclusion is that entities cannot coherently be said to have properties at all. But if, on the level of conventional truth, we wish to speak of entities having properties, we are committed to regarding them as having those properties by definition (verse 3: *gamyamānaṃ vigamanaṃ ... naivopapadyate*). Therefore, if Nāgārjuna is a setter-out who has the property of arriving, the setter-out has that property by definition.

So, if he arrives at all, he arrives instantaneously. This is not as good a performance as that of the celebrated lady in the limerick about another sort of relativism, but it is sufficiently impressive.

But there is more. The arriver who arrives not only possesses the property of arriving that actually arrives; he possesses also the property of arriving that realizes him as an arriver. So there are two arrivings; therefore there are two arrivers. Two Nāgārjunas appear at Penelope's house, and she will be able to conduct a small *svayaṃvara*. As Murti says, Nāgārjuna is the master dialectician. He has it all over Zeno.

NOTES

1. This dialogue is inspired in part by the one by A. Shimony in W. C. Salmon, ed., *Zeno's Paradoxes* (Indianapolis, Indiana: Bobbs-Merrill, 1970), pp. 1–3, in which Zeno is eaten by an escaped menagerie lion. "A real lion, perhaps; but really running, impossible; and really arriving here, absurd!"

2. H. Jacobi, "The Dates of the Philosophical Sūtras of the Brahmans," *Journal of the American Oriental Society* 31 (1911): 1–29.

3. Theodore Stcherbatsky, *The Conception of Buddhist Nirvāṇa*, ed. J. Singh (Delhi: Motilal Banarsidass, 1968), p. 147, n. 4.

4. Kajiyama Yūichi, *Kū no ronri* (Tokyo: Kadokawa Shoten, 1970), cited in Mark Siderits and J. Dervin O'Brien, "Zeno and Nāgārjuna on Motion," *Philosophy East and West* 26, no. 3 (1976): 281–299; hereafter cited as Siderits and O'Brien, "Zeno and Nāgārjuna."

5. T. R. V. Murti, *The Central Philosophy of Buddhism* (London: George Allen and Unwin, 1955/1980), pp. 178–184; hereafter cited as Murti, *Central Philosophy*.

6. Siderits and O'Brien, "Zeno and Nāgārjuna.

7. Richard H. Robinson, "Did Nāgārjuna really Refute All Philosophical Views?" *Philosophy East and West* 22, no. 3 (1972): 325–331.

8. See Edward Conze, *Buddhist Thought in India* (London: Allen and Unwin, 1962), pp. 241–244; J. W. de Jong, "Emptiness," *Journal of Indian Philosophy* 2 (1972): 7–15.

9. Cited by Jonathan Barnes, *The Presocratic Philosophers*, vol. 1 (London: Routledge and Kegan Paul, 1979), p. 239.

10. Ibid., p. 286.

11. Ibid., pp. 291–294.

12. Ibid., pp. 276–278.

13. The last sentence represents the conclusion argued in ibid., pp. 245–252.

14. W. C. Salmon, ed., *Zeno's Paradoxes* (Indianapolis, Indiana: Bobbs-Merrill, 1970), p. 43.

15. Except where otherwise specified, quotations are from the text edited by J. W. de Jong, *Mūlamādhyamakakārikāḥ* (Adyar: The Adyar Library and Research Centre, 1977).

16. Nāgārjuna, *A Translation of His Mūlamadhyamakakarikā*, Kenneth K. Inada, ed. (Tokyo: The Hokuseido Press, 1970), p. 44; hereafter cited as Inada, ed., *A Translation*.

17. Ibid.

18. Frederick Streng, *Emptiness: A Study in Religious Meaning* (Nashville, Tennessee; Abingdon Press, 1967), p. 184.

19. Candrakīrti, *Lucid Exposition of the Middle Way: The Essential Chapters from the Prasannapadā of Candrakīrti*, M. Sprung, trans. and ed. (London and Henley: Routledge and Kegan Paul, 1979), p. 76; hereafter cited as Sprung, trans., *Lucid Exposition*.

20. Siderits and O'Brien, "Zeno and Nāgārjuna," p. 289.

21. Candrakīrti, *Prasannapadā Madhyamakavṛtti*, trans. J. May (Paris: Adrien Maisonneuve, 1959), p. 52; hereafter cited as May, trans., *Prasannapadā*.

22. Sir Monier-Williams, *A Sanskrit-English Dictionary* (Oxford, 1899/1976), s. v. *gam*.

23. Ibid.

24. Candrakīrti, *Prasannapadā nāma madhyamikavṛtti*, ed. L. de la Vallée Poussin (St. Petersburg: Bibliotheca Buddhica, no. 4, 1903–1913), p. 93, lines 7, 8; hereafter cited as Poussin, ed., *Prasannapadā*.

25. Candrakīrti p. 94 line 4; cp. May, trans., *Prasannapadā*, p. 57, and J. Hopkins, trans., *Analysis of Going and Coming. The Second Chapter of Candrakīrti's 'Clear Words', a commentary on Nagarjuna's 'Treatise on the Middle Way'* (Dharamsala: Library of Tibetan Works and Archives, 1974), from p. 26, no. 10.

26. Hopkins, trans., *Analysis*, p. 25, no. 4.

27. "The same interpretation about 'na gamyate' is also found in Akutobhayā, Buddhapālita, and Prajñāpradīpa, which Tibetan translators correctly rendered into Tibetan: śes par mi ḥgyur ro [ABH D Tsa 35a7, BP D Tsa 168b5, PP D Tsha 64a7] in accordance with the commentators' understanding" (A. Saito, personal communication).

28. May, trans., *Prasannapadā*, p. 55, no. 17.

29. *Taishō Tripiṭaka*, vol. 30, no. 1564, 3c.

30. May, trans., *Prasannapadā*, p. 55, no. 17.

31. Cp. Kenneth K. Inada, ed., *A Translation*, p. 43, which also points out that *agata* is not necessarily 'future' and cites Kumārajīva's accurate Chinese translation.

32. Siderits and O'Brien, "Zeno and Nāgārjuna," from p. 289; Sprung, trans., *Lucid Exposition*, p. 77.

33. Poussin, ed., *Prasannapadā*, p. 94. Cp. J. W. de Jong, "Textcritical Notes on the Prasannapadā," *Indo-Iranian Journal* 20 (1978): 25–59 at p. 36.

34. Siderits and O'Brien, "Zeno and Nāgārjuna," from p. 290.
35. Murti, *Central Philosophy*, p. 179.
36. Sprung, trans., *Lucid Exposition*, p. 79.
37. This follows de Jong's reading, *cājyate*, not the alternative, *cocyate*.
38. E.g., Murti, *Central Philosophy*, from p. 179.
39. Siderits and O'Brien, "Zeno and Nāgārjuna," from p. 295.
40. Ibid., p. 296.
41. Poussin, ed., *Prasannapadā*, p. 100.
42. Siderits and O'Brien, "Zeno and Nāgārjuna," p. 296.
43. H. Monro, *The Sonneteer's History of Philosophy* (Clayton: Ancora Press, 1981), p. 8.