THE PROBLEM OF THE ONE AND THE MANY

If there are many things, it is necessary that they are just as many as they are, and neither more nor less than that. But if they are as many as they are, they will be limited.

If there are many things, the things that are are unlimited; for there are always others between the things that are, and again others between those. And thus the things that are are unlimited.

Zeno of Elea (ca. 450 BCE)

I do not conceive of any reality at all as without genuine unity.

Gottfried von Leibniz (1687)

I myself have come, by long brooding over it, to consider it the most central of all philosophic problems, central because so pregnant.

William James (1906)

I must confess that I was not able to find a way to explain the atomistic character of nature. My opinion is that … one has to find a possibility to avoid the continuum (together with space and time) altogether. But I have not the slightest idea what kind of elementary concepts could be used in such a theory.

Albert Einstein (1954)

Zeno's paradoxes are very controversial.

Jay Kennedy (2003)

The sum of many hours of my so-called research comes down to this: Physics needs a restoration. From inception physics is concerned with taking things apart to see what makes them tick. It takes a while to take apart the atom but it works; physicists find lots of little bits. More than anybody really wants. As they say, be careful what you wish. Meantime astrophysicists dissect the cosmos; they find lots of big bits.

The two theories, QM and GR, lay claim to these two realms, the small and large—a fragmented framework for the fragments. Recent decades have seen new concern with putting it all back together.

Thus modern physics meshes with an ancient problem: the one and the many. How can there be real unity in a universe that seems so multiple? Two thousand years of thinkers grapple with the thought of Zeno's paradox. White-

head and Russell call it 'immeasurably subtle and profound.'

Zeno has no monopoly on the problem of the one and the many. For example, it lies at the heart of Taoist philosophy: Its focus is the principle that unifies the universe, *tai chi*. It proceeds from recognizing that the universe is one thing. Do I hear an echo here of physics' Theory of Everything?

Physics now finds many manys in the universe—many miles and many seconds, many atoms, many suns. But it says the universe, when it begins, is small. For me this makes it easier to think of it as one. What if my detective sees it this way? Could this give him a new version of the problem: How could many manys result from the one?

My thoughts keep turning back to Zeno. What if there were *not* always things between the things that are? Would that mean Zeno's right—the things that are *are* limited?