

## Pascal's Sphere

Perhaps universal history is the history of a few metaphors. To outline a chapter of that history is the purpose of this note.

Six centuries before the Christian era, the rhapsodist Xenophanes of Colophon, tired of the Homeric verses he recited from city to city, denounced the poets for giving the gods anthropomorphic traits and proposed to the Greeks a single God who was an eternal sphere. In Plato's *Timaeus* we read that the sphere is the most perfect and most uniform shape, because all points on its surface are equidistant from the center; Olof Gigon (*Ursprung der griechischen Philosophie*, 183) understands Xenophanes as speaking analogically; God is spherical, because that form is the best, or the least bad, for representing divinity. Parmenides, forty years later, repeated the image: "Being is like the mass of a well-rounded sphere, whose force is constant from the center in any direction." Calogero and Mondolfo argue that he envisioned an infinite, or infinitely growing sphere, and that those words have a dynamic meaning (Albertelli, *Gli Eleati*, 148). Parmenides taught in Italy; a few years after he died, the Sicilian Empedocles of Agrigento devised a laborious cosmogony; there is one stage in which the particles of earth, air, fire, and water form an endless sphere, "the round *Sphairos*, which rejoices in its circular solitude."

Universal history followed its course, the too-human gods that Xenophanes attacked were reduced to poetic fictions or to demons, but it was said that one of them, Hermes Trismegistus, had dictated a variable number of books (42, according to Clement of Alexandria; 20,000, according to Iamblichus; 36,525, according to the priests of Thoth, who is also Hermes) on whose pages all things were written. Fragments of that illusory library, compiled or forged since the third century, form what is called the *Corpus Hermeticum*; in one of the books, or in one part of the *Asclepius*, which was also attributed to Trismegistus, the French theologian Alain de Lille—

Alanus de Insulis—discovered, at the end of the twelfth century, this formula which the ages to come would not forget: “God is an intelligible sphere, whose center is everywhere and whose circumference is nowhere.” The Pre-Socratics spoke of an endless sphere; Albertelli (like Aristotle before him) thinks that such a statement is a *contradictio in adjecto*, for the subject and predicate negate each other; this may be so, but the formula in the Hermetic books enables us, almost, to envision that sphere. In the thirteenth century, the image reappeared in the symbolic *Roman de la Rose*, which attributed it to Plato, and in the encyclopedia *Speculum Triplex*; in the sixteenth, the last chapter of the last book of *Pantagruel* referred to “that intellectual sphere, whose center is everywhere and whose circumference nowhere, which we call God.” For the medieval mind, the meaning was clear: God is in each one of his creatures, but is not limited by any one of them. “Behold, the heaven and heaven of heavens cannot contain thee,” said Solomon (I Kings 8:27); the geometrical metaphor of the sphere must have seemed like a gloss on those words.

Dante’s poem has preserved Ptolemaic astronomy, which ruled mankind’s imagination for fourteen hundred years. The earth is the center of the universe. It is an immobile sphere; around it nine concentric spheres revolve. The first seven are the planetary heavens (the heavens of the Moon, Mercury, Venus, the Sun, Mars, Jupiter, and Saturn); the eighth, the Heaven of Fixed Stars; the ninth, the Crystalline Heaven, also called the Primum Mobile. This in turn is surrounded by the empyrean, which is made of light. This whole laborious apparatus of hollow, transparent, and revolving spheres (one system required fifty-five) had come to be a mental necessity; *De hypothesibus motuum coelestium commentariolus* [Commentary on the Hypothesis of Heavenly Motions] was the timid title that Copernicus, the disputer of Aristotle, gave to the manuscript that transformed our vision of the cosmos. For one man, Giordano Bruno, the breaking of the stellar vaults was a liberation. In *La cena de le ceneri* [The Feast of the Ashes] he proclaimed that the world is the infinite effect of an infinite cause and that the divinity is near, “because it is in us even more than we are in ourselves.” He searched for the words that would explain Copernican space to mankind, and on one famous page he wrote: “We can state with certainty that the universe is all center, or that the center of the universe is everywhere and the circumference nowhere” (*De la causa, principio e urco*, V).

That was written exultantly in 1584, still in the light of the Renaissance; seventy years later not even a glimmer of that fervor remained, and men felt lost in time and space. In time, because if the future and the past are infi-

nite, there cannot really be a when; in space, because if every being is equidistant from the infinite and the infinitesimal, there cannot be a where. No one exists on a certain day, in a certain place; no one knows the size of his own face. In the Renaissance, humanity thought it had reached adulthood, and it said as much through the mouths of Bruno, Campanella, and Bacon. In the seventeenth century, humanity was discouraged by a feeling of old age; to justify itself, it exhumed the belief in a slow and fatal degeneration of all creatures because of Adam's sin. (In the fifth chapter of Genesis, we read that "all the days of Methuselah were nine hundred sixty and nine years"; in the sixth, that "there were giants in the earth in those days.") The First Anniversary of John Donne's elegy "Anatomy of the World" lamented the brief life and the small stature of contemporary men, who were like fairies and dwarfs. Milton, according to Johnson's biography, feared that the genre of the epic had become impossible on earth; Glanvill thought that Adam, "the medallion of God," enjoyed both a telescopic and microscopic vision; Robert South notably wrote: "An Aristotle was but the fragment of an Adam, and Athens, the rudiments of Paradise." In that dejected century, the absolute space that inspired the hexameters of Lucretius, the absolute space that had been a liberation for Bruno was a labyrinth and an abyss for Pascal. He hated the universe and yearned to adore God, but God was less real to him than the hated universe. He lamented that the firmament did not speak; he compared our lives to the shipwrecked on a desert island. He felt the incessant weight of the physical world; he felt confusion, fear, and solitude; and he expressed it in other words: "Nature is an infinite sphere, the center of which is everywhere, the circumference nowhere." That is the text of the Brunschvieg edition, but the critical edition of Tourneur (Paris, 1941), which reproduces the cancellations and hesitations in the manuscript, reveals that Pascal started to write the word *effroyable*: "a frightful sphere, the center of which is everywhere, and the circumference nowhere."

Perhaps universal history is the history of the various intonations of a few metaphors.

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