Vitruvius in the New World: The Global Legacy of the Scientific Urbanism of the *De architectura*

In *De architectura* (*DA*) 1.6, Vitruvius addresses the question of the proper orientation of a city, in particular, of "the divisions of space within the walls and the orientation of the *plateae* and *angiportus*" (*DA* 1.6.1). The meanings of *plateae* and *angiportus* are somewhat obscure, but it has been shown that we are dealing with a city whose plan is a rectangular grid of thoroughfares or "streets" (*plateae*) running from one edge of the city to the other and smaller cross-streets or "alleys" (*angiportus*) intersecting them at right angles (Hamberg 1965, Fleury 1990: xcix–cii, 146–9). The principal question of *DA* 1.6 is to determine how this orthogonal grid is to be oriented. In order to address this problem, Vitruvius offers an extraordinary argument that integrates classical meteorological, medical, and physical theories. He begins by defining wind as "a flowing wave of air with a chaotic surge of motion" (*DA* 1.6.2). After adducing an experiment to prove this, he goes on to explain why the turbulent nature of the winds is harmful to health, relying on an allopathic theory of medicine. This medical theory turns out to be a special case of a four-element physical theory propounded in an earlier chapter (*DA* 1.4; cf. Courrént 2011: 121–71). Having established the harmfulness of the winds on this basis, Vitruvius argues that the proper orientation of the city is such that gusts are excluded from its "streets" and "alleys." Appealing to Andronicus' "tower of the winds" in Athens (Kienast 2014), Vitruvius maintains that there are eight primary winds, originating from the cardinal and ordinal points of the compass. A city may be protected from these winds if it is rotated such that its orthogonal grid-plan of "streets" and "alleys" are presented obliquely towards them. In this way, the winds will break on the corners of the city walls, rather than

entering into the city streets and damaging the inhabitants' health. Vitruvius finally explains how to use a gnomon to ascertain true north and mark off the eight parts of the heavens from which the winds originate. Overlaying and rotating the grid-plan of the city streets will then produce the salubrious orientation.

Even though there is little evidence that Vitruvius' recommendations for orienting a city were followed in Roman antiquity, the whole episode remains an extraordinary example of the "scientific urbanism" that characterizes his treatise. Even more extraordinary—and so far as I can judge, not well known to classicists—is the influence that Vitruvius' prescriptions on this subject would exert on later generations. When King Philip II of Spain promulgated the so-called "Laws of the Indies" in 1573 ("Ordenanzas de Felipe II sobre descubrimiento, nueva población y pacificación de las Indias"), he included provisions for planning colonial towns that were based in fundamental respects on Vitruvius' system. In particular, the Ordenanzas take over instructions for establishing the grid-plan of a town and determining its orientation from the *De architectura* (Stanislawski 1947; Smith 1955, esp. 3–6, 11; Mundigo and Crouch 1977a, b). Wherever Spaniards established towns in the new world, Vitruvius was with them, from Mexico City (refounded on Tenochtitlan) to Bogotá, Colombia; Santiago, Chile; La Paz, Bolivia; Manila, Philippine Islands; and, in North America, Los Angeles, Santa Fe, and St. Louis. All these cities were laid out and oriented in accordance with the Vitruvian prescriptions recounted above. In following the Ordenanzas, Spanish colonial governors were thus also giving a material afterlife to the classical scientific theories on which Vitruvius' theory was based. In this way, the story of *DA* 1.6 not only sheds light on Vitruvius' own motivations and methods in the *De architectura*, but also reveals a neglected chapter of the global legacy of his urbanism.

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