ISOTROPY VS. ANISOTROPY

The aim is to reflect on isotropic and anisotropic spaces.

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In physics, isotropy, whose etymology has Greek roots ἴσος [isos], equitable or equal, and τρόπος [tropos], medium, direction, is the characteristic of bodies whose physical properties do not depend on the direction in which they are examined. That is, it refers to the fact that certain measurable vector magnitudes give identical results irrespective of the direction chosen for taking such a measurement. When a given quantity is not isotropic, it is said to be anisotropic. Architecture has never or almost never been isotropic due to gravity.

Anisotropy, on the other hand, is the general property of matter according to which its qualities vary according to the direction in which they are examined. Something anisotropic may have different characteristics depending on the direction. The anisotropy of materials is more pronounced in crystalline solids due to their regular atomic and molecular structure. Architecture has always or almost always been anisotropic. Plans and sections are usually very different.

Could we then consider an isotropic architecture, an architecture in which we use isotropy as a spatial mechanism, because isn't the Pantheon in Rome, the most beautiful architecture in the world, a sublime attempt to make a spherical, isotropic space?

Someone will then say that, since the human body is not isotropic, an isotropic architecture cannot be proposed. These are the same people who defend the primacy of symmetry because the human body is symmetrical. However, one could propose a cubic space in which the six faces of the cube have equal value. For although man does not walk upside down on ceilings like flies, he can, with his head, understand that he is in an isotropic space, in this case a cube.

Let's imagine that we are inside a cube in whose six faces we make a circular perforation in the center. The perforation in the roof will let in solid sunlight that will vary in its angulation throughout the day. The perforation on the south face will let the sunlight in especially well at midday and more so if the season makes the sun low. The east-facing perforation will let in the dawn sun. The west-facing perforation will let in the setting sun. And the north face perforation will let the illuminated sky outside. But what about the perforation on the ground plane, what to do with it?

If the six perforations are identical and located in the center of each square, we could think of putting a mirror or a sheet of water in the one on the floor. What architecture has already done more than once. Of course, if instead of in the center, the perforations are made in the corner, one for each face of the cube, and without ever meeting, the space becomes even more interesting.

A well-known German draughtsman of the last century, M. C. Escher, made many drawings of this type that were called impossible drawings. My latest project, a mausoleum in Venice, now under construction, has something of this isotropy that gives a very special tension to the resulting space. You could think of it as an Escher house. Something of what the ramps of the Gugenheim in New York have, on traces of a circular crown.

In short, it is possible to think of isotropic spaces for architecture and achieve interesting spatial qualities with them.