no longer exists in 'professional' cartography." He asks that we question the by now naturalized conventions through which maps have in fact standardized our images and knowledge of the world. He also asks us "to search for the social forces that have structured cartography and to locate the presence of power—and its effects—in all map knowledge." Although Harley's article was aimed at historians, *against* "what cartographers tell us maps are supposed to be," his questions are equally important for professional cartographers and the users of maps.[42]

He asks about the legends and frames of ancient maps, whose creators could only imagine what the globe looked like, as well as the symbols and legends in contemporary maps, which claim the status of objective description of reality. He treats both as texts that need to be read closely so we can start to understand the bias in any map projection. He reminds us that even something as simple and innocent as the mathematical translation of a sphere projected as a so-called undistorted flat plane has a "politics." "In our cartographic workshops we standardize our images of the world," he writes, and the process is complex: "the way maps are compiled and the categories of information selected; the way they are generalized, a set of rules for the abstraction of the landscape; the way the elements in the landscape are formed into hierarchies; and the way various rhetorical styles that also reproduce power are employed to represent the landscape." The standardized cartographic images to which we have grown so accustomed that most of us don't know them as a particular interpretive decision—the Mercator projection—are distinguished from others because they project the spherical globe as a series of apparently undistorted square shapes. This formal, but not only formal, gesture, he points out, "helped to confirm a new myth of Europe's ideological centrality."[43]

Svetlana Alpers attributes these standardized images of the world, or the flattening of the Earth into the mathematical uniformity of longitude and latitude, to a certain disappearance of the subject, or what, following Thomas Nagel, she calls "the view from nowhere."[44] As an art historian, she opposes this flat surface to the equally mathematical formula of the perspectival grid, which is viewed from somewhere—the point of view of the subject who both constructs and is constructed by that view. Perspective, it is well known, freezes a subject in a particular place and time.

Maps do not employ perspective. Although the grid that the Mercator and other such projections impose on the sphere of the Earth may share with perspectival paintings the mathematical uniformity of the frame and the definition of the picture as a window through which an external viewer looks, they do not share the positioning of the viewer. The cartographic projection is, in that sense, viewed from nowhere.[45]

Maps construct a spatial interpretation through their techniques of representation, the "normalized" views that Harley decries.[46] A cartographic projection transforms, mathematically, a sphere into plane.

Yve-Alain Bois arrives at maps, although he does not quite specify that this is where his argument leads, from another type of constructed, measured, and projected view: the "axonometric" projection. An axonometric drawing shows an object in ways that cannot be seen simply by looking at it. To do so, it rotates the object along one or more of its axes such that the surfaces of the top and two sides are in view simultaneously. The horizontal and vertical dimensions are projected to scale, so that their planes are parallel to each other. Unlike in a perspectival drawing, there is no single fixed position from which the object is viewed.

Axonometric drawing originated, argues Bois, in techniques developed by engineers in 1822 to draw carefully the joints of a new material, iron. What distinguishes this technique is that the top and the side views are both drawn to scale, as if one were flying over the joint, but no perspective is generated to distort the scale. The engineers, Bois writes in "Metamorphosis of Axonometry," derived their drawings from French military artists a century and a half earlier, who had used the technique to simulate the trajectory of a cannonball making its way over the walls of a medieval city, in order to compensate for the blindness imposed on them by the walls.[47]

Modern architects reinvented this drawing technique another hundred years later, in 1923, showing an object from the top and the side view in equal measures in order deliberately to generate a decentered modernist aesthetic of ambiguity. "All treatises which precede this event…regardless of their concern with architecture, military art, technical drawing or geometry, emphasize the convenience and accuracy of axonometry, whereas modern artists celebrated its perceptive ambiguity…. The axonometric image is reversible; it tears free of the ground (Malevich's term), facilitating aerial views." After chronicling the various ways in which more and more architects, from Herbert Bayer to the New York Five, used the axonometric view to focus on ambiguous spaces, rather than to reproduce the scientific or factual vision of the engineer, Bois pushes the argument further to propose that the "history of axonometry should include a chapter on aerial views and photogrammetry." And there is no reason to stop there: the history should extend to remote sensing in all its forms…a history precisely, as Bois insists, not only of the logistically and pragmatically military, but also at the same time of instability, abstraction, "ambiguities," and the "vertiginously ambivalent."[48]

"The axonometric drawing hovers or flies above its object," concludes Bois.[49] Denis Cosgrove has written some of the history of this flying image, focusing on Oskar Messter's 1915 invention of the airborne automatic camera, which "allowed