**P35 2021-03-29 Why every world map is wrong - Kayla Wolf**

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A bad map is wrose than no map at all

Fourteen Greenlands could fit in Africa, but you wouldn’t guess it from most maps of the world. The fact is, every world map humans have ever made is wrong--~.

Actually, it’s impossible to make a map of the world 100% right. No, not you, globe— we know you’re accurate. Not you, Google Earth, you’re just a digital（DJ tao） globe. We're talking about flat maps, which, let's face it, are way more convenient for a lot of things.

Anyway, as we were saying, it’s impossible to make a 100% accurate flat map of a spherical planet. For a long time, people didn't even try. They just plonked places down in arbitrary locations without any consistent scale. Then in 150 AD, the Greek mathematician and astronomer Ptolemy systematically mapped the Earth on a grid and placed locations on the grid according to coordinates, so maps could be checked against others and replicated. Ptolemy built his grid out of lines we still use today: 180 lines of latitude and 360 lines of longitude. In spite of these advances, people kept getting lost. Part of the problem was a— shall we say— in complete understanding of the world’s geography. But it was also just really difficult to navigate u sing a map. Because the Earth is round, the shortest route from one place to another is a path along a circle. If we draw this route on a flat map, it passes through every line of longitude at a different angle. To follow the route, you’d have to constantly shift the direction you're traveling. Any slight error would land you in the wrong place. In 1569, Gerardus Mercator fixed this problem. He created a world map proportioned so these curved navigational routes would be straight, passing through every line of longitude at the same angleand therefore allowing navigators to(shou) set(si) a constant bearing— in other words, travel in one direction— for a whole journey. Therewas just one ti(tai)ny hitch: to do this, he had to distort land masses and bodies of water so those furthest from the equator got larger and those closest(seisitei) to the equator shrank. In spite of its in accuracies , Mercator’s map was very useful. In fact, it’s still widely used today, including in online maps. But it’s still wrong! In 1925, the Goode Homolosine Projection was created as— get this— an interrupted pseudo-cylindrical equal area projection. What does that mean? Not important. The point was to minimize distortion for the entire world. The map can be land-oriented... or ocean-oriented. Either way, the so-called orange peel map isn’t very easy to read. The Dymaxion Projection by American architect Buckminster Fuller in the 1940s is even better. Sorry, did we say better? It’s not better if you want to understand where things are in the world. It is better in the sense that there are no visibly evident distortions of the land masses. Though if you wanted to know, say, how far Brazil is from Nigeria, you won’t get any sense of that from this map. The most accurate projection to date is the AuthaGraph World Map designed by Japanese architect Hajime Narukawa in 1999. The continents and oceans are almost completely in proportion, and the map is rectangular, just how we like it. Could this be the perfect map? Well... no. Since the Mercator works for navigation and reads clearly, why bother with all these whacky maps? Arno Peters argued that by enlarging European and North American countries, the Mercator projection gives white nations a sense of supremacy over non-white nations closer to the equator. He adapted the Gall-Peters Projection, which counteracts that particular problem, but the continents are still... stretched. Today, we rely on maps less and less for navigation, but they still play a vital role in education. Peters was definitely on to something: no matter what map we’re looking at, it’s a story told from the perspective of the map’s creator that in turn shapes—perhaps unduly— our perception of our world. Simple changes in map design, even changes that have nothing to do with how we transfer a round Earth to a flat surface, can completely shift our point of view.

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非洲可以装下14个格陵兰岛，但是你从多数世界地图上 绝对看不出这一点，实际上，我们所设计的 每一张世界地图都是错的。

其实，世界地图是不可能画得100%准确的。地球仪，我们不是在说你——我们知道你是准确的。谷歌地球，我们也不是在说你，你也只不过是个数字地球仪。我们说的是平面地图。不得不说，在很多事情上，平面地图方便多了。

言归正传，我们刚刚说的是，为球形的行星制作一张 100% 准确的平面地图是天方夜谭。过去很长一段时间里， 人们甚至都没去尝试，他们不过是在地图上草草定下各地位置， 甚至没采用标准比例尺。后来，在公元 150 年， 希腊数学家和天文学家托勒密系统性地在网格上 绘制了地球的地图，然后把各个地方的坐标 标记在网格上，好让地图有据可循，复制共享。托勒密画网格时 所用的线条一直沿用至今：180条纬线和360条经线。尽管有了这些进展，人们还是不断迷路。问题的一部分在于——怎么说呢——人们对世界地理了解得不全面。但用地图来导航， 本来就是一件很困难的事情。由于地球是圆的，两个地点之间的最短路线 会形成圆圈上的轨道。要是把这条路线画在平面地图上，它与每一条经线交叉的角度就会不同。要想沿着这条路线走，你就要时时刻刻调整你前进的方向。只要稍有误差，你就会走错地方。1569 年，杰拉杜斯·墨卡托 （Gerardus Mercator）解决了这个问题。他制作的世界地图的比例让这些弯曲的导航路线都变直了，而且还会以同样的角度 与每一条经线交叉，好让导航设下稳定的线路——换句话说，全程能往一个方向走。但有个小问题：为了这么做， 他必须调整陆地与海域，这样距离赤道最远的 陆地与海洋面积会比实际大，最靠近赤道的陆地 和海域面积会小于实际。尽管存在这些误差， 墨卡托的地图还是很管用。事实上，它目前还在广泛使用中， 包括线上地图。但是它还是存在错误的！1925 年，古蒂等面积投影 问世了——注意——它是一种断续的伪圆柱形等面积投影。什么意思呢？ 其实不重要。其旨在减少世界地图表面误差。这张地图可以只看陆地， 也可以只显示海洋。不管怎样，这张所谓的橙皮地图 也不太容易辨识。美国建筑师巴克敏斯特·福乐 （Buckminster Fuller）上世纪 40 年代的 戴美克森投影都比它好。抱歉，我们是说“更好”吗？如果你想知道某地在地球的位置， 这张地图并没多好，它好的地方是指各陆地在地图上看起来不太变形。但假如你想知道 巴西和尼日利亚之间的距离，你从这张地图上是看不出来的。到目前为止，最准确的投影是日本建筑师鸣川肇在 1999 年设计的 AuthaGraph 世界地图。所有陆地和海洋的比例几乎完全一致，而且地图也是矩形的， 就像我们习惯的一样。这究竟是不是完美的地图呢？嗯……并不是。既然墨卡托投影可以用于导航， 而且清晰易用，为什么还要用这些古怪的地图呢？阿诺·彼得斯（Arno Peters）认为， 墨卡托投影让欧洲和北美洲国家看起来更大，使白种人所在的国家有了优越感，可凌驾于靠近赤道的非白种人国家之上。他对高尔-彼得斯投影进行了调整， 解决了这个问题，但是各大陆还是……被拉长了。而今，我们找路时， 越来越少用地图了，但是它们在教育中 仍起着至关重要的作用。彼得斯确实说得对：不管我们看的是什么地图，地图让我们看到是创作者眼中的世界，这——或许会大大—— 改变我们对世界的看法。当我们把地球转化为平面的地图，哪怕只是设计上无关紧要的改变，也可以彻底地改变我们的想法。