

Reading # 3: Map Skills

There's no getting around it - we need to understand the purpose and role of maps in a geography course. This doesn't mean that we simply memorize names, but also that we understand that maps aren't really accurate. We tend to believe that the way something looks on a map is the way it looks on Earth, but (as you will read), maps lie! They lie in different ways for different reasons (no, Antarctica is not flat, and yes, Alaska is connected to Canada!).

As you read and answer the questions, you should always understand that maps are meant to show something about the world, not to be an accurate representation of everything on Earth.

3. Do Maps Create or Represent Reality? By Laura Hebert

Take the quiz! Compare country size. Which of the images on both sides of this placemat are "area accurate?" How is the Hobo-Dyer projection below different from the one on the reverse side? Answers and details about all the images are at www.edf.org. To the right:
(S) Van San's Geosphere,
(6) Gosker's Toronto-centered projection,
(7) the Delford Globe, and
(8) Goode's Homocline



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“Maps lie to tell the truth. They lie in order to make a point.”

Have you ever stopped and really looked at a map? I'm not talking about consulting the coffee stained map that makes its home in your glove compartment; I'm talking about really looking at a map, exploring it, questioning it. If you were to do so, you would see that maps differ distinctly from the reality that they depict. We all know that the world is round. It is approximately 27,000 miles in circumference and home to billions of people. But on a map, the world is changed from a sphere into a rectangular plane and shrunken down to fit on an 8 ½” by 11” piece of paper, major highways are reduced to measly lines on a page, and the greatest cities in the world are diminished to mere dots. This is not the reality of the world, but rather what the mapmaker and his or her map are telling us is real. The question is: “Do maps create or represent reality?”

The fact that maps distort reality cannot be denied. It is absolutely impossible to depict a round earth on a flat surface without sacrificing at least some accuracy. In fact, a map can only be accurate in one of four domains: shape, area, distance, or direction. And in modifying any of these, our perception of the earth is affected.

There is currently a debate raging over which commonly used map projection is the “best” projection. Among a multitude of options, there are a few that stand out as the most recognized projections; these include the Mercator, the Peters, the Robinson, and the Goode’s, among others. In all fairness, each of these projections has its strong points. The Mercator is used for navigation purposes because great circles appear as straight lines on maps utilizing this projection. In doing so, however, this projection is forced to distort the area of any given landmass relative to other landmasses. The Peters projection combats this area distortion by sacrificing accuracy of shape, distance, and direction. While this projection is less useful than the Mercator in some respects, those who support it say that the Mercator is unfair in that it depicts landmasses in the high latitudes as being much larger than they really are in relation to landmasses in the lower latitudes. They claim that this creates a sense of superiority among people who inhabit North America and Europe, areas that are already among the most powerful in the world. The Robinson and the Goode’s projections, on the other hand, are a compromise between these two extremes and they are commonly used for general reference maps. Both projections sacrifice absolute accuracy in any particular domain in order to be relatively accurate in all domains.

Is this an example of maps “creating reality”? The answer to that question depends on how we choose to define reality. Reality could either be described as the physical actuality of the world, or it could be the perceived truth that exists in peoples’ minds. Despite the concrete, factual basis that can prove the verity or the falsehood of the former, the latter may very well be the more powerful of the two. If it weren’t, those - such as human rights activists and certain religious organizations - who argue in favor of the Peters projection over the Mercator would not be putting up such a fight. They realize that how people understand the truth is often just as important as the truth itself, and they believe that the Peters projection’s areal accuracy is - as the Friendship Press claims - “fair to all peoples.”

Much of the reason that maps so often go unquestioned is that they have become so scientific and “artless.” Modern mapmaking techniques and equipment have served to make maps seem like objective, trustworthy resources, when, in fact, they are as biased and conventional as ever. The conventions - or the symbols that are used on maps and the biases that they promote - that maps make use of have been accepted and utilized to the point that they have become all but invisible to the casual map observer. For example, when we look at maps, we don’t usually have to think too much about what the symbols represent; we know that little black lines represent roads and dots represent towns and cities. This is why maps are so powerful. Mapmakers are able to display what they want how they want and not be questioned.

The best way to see how mapmakers and their maps are forced to alter the image of the world – and therefore our perceived reality - is to try and imagine a map that shows the world exactly as it is, a map that employs no human conventions. Try to envision a map that doesn't show the world oriented in a particular manner. North is not up or down, east isn't to the right or left. This map has not been scaled to make anything bigger or smaller than it is in reality; it is exactly the size and shape of the land that it depicts. There are no lines that have been drawn on this map to show the location and course of roads or rivers. The landmasses are not all green, and the water is not all blue. Oceans, lakes, countries, towns, and cities are unlabeled. All distances, shapes, areas, and directions are correct. There is no grid showing latitude or longitude.

This is an impossible task. The only representation of the earth that fits all of these criteria is the earth itself. No map can do all of these things. And because they must lie, they are forced to create a sense of reality that is different from the tangible, physical actuality of the earth. It's strange to think that nobody will ever be able to see the entire earth at any given moment in time. Even an astronaut looking at the earth from space will only be able to see half of the earth's surface at any particular instant. Because maps are the only way that most of us will ever be able to see the earth before our eyes - and that any of us will ever see the entire world before our eyes – they play an immensely important part in shaping our views of the world. Although the lies that a map tells may be unavoidable, they are lies nonetheless, each one influencing the way that we think about the world. They do not create or alter the physical reality of the earth, but our perceived reality is shaped - in large part - by maps.

The second, and just as valid, answer to our question is that maps represent reality. According to Dr. Klaus Bayr, a geography professor at Keene State College in Keene, NH, a map is “a symbolized representation of the earth, parts of the earth, or a planet, drawn to scale...on a flat surface.” This definition states clearly that a map represents the reality of the earth. But merely stating this viewpoint means nothing if we can't back it up.

It can be said that maps represent reality for several reasons. First, the fact is that no matter how much credit we give maps, they really mean nothing if there isn't a reality to back it up; the reality is more important than the depiction. Second, although maps portray things that we can't necessarily see on the face of the earth (e.g. political boundaries), these things do in fact exist apart from the map. The map is simply illustrating what exists in the world. Third and last is the fact that every map portrays the earth in a different way. Not every map can be a totally faithful representation of the earth, since each of them shows something different.

Maps - as we are examining them - are “symbolized representation[s] of the earth.” They depict characteristics of the earth that are real and that are - in most cases - tangible. If we wanted to, we could find the area of the earth that any given map depicts. If I were to choose to do so, I could pick up a USGS topographic map at the bookstore down the street and then I could go out and find the actual hill that the wavy lines in the northeast corner of the map represent. I can find the reality behind the map.

All maps represent some component of the reality of the earth. This is what gives them such authority; this is why we trust them. We trust that they are faithful, objective depictions of some place on the earth. And we trust that there is a reality that will back up that depiction. If we did not believe that there was some verity and legitimacy behind the map - in the form of an actual place on the earth - would we trust them? Would we place value in them? Of course not. The sole reason behind the trust that humans place in maps is the belief that that map is a faithful representation of some part of the earth.

There are, however, certain things that exist on maps but that don't physically exist on the surface of the earth. Take New Hampshire, for example. What is New Hampshire? Why is it where it is? The truth is that New Hampshire isn't some natural phenomenon; humans didn't stumble across it and recognize that this was New Hampshire. It is a human idea. In a way, it may be just as accurate to call New Hampshire a state of mind as it is to call it a political state.

So how can we show New Hampshire as a physically real thing on a map? How are we able to draw a line following the course of the Connecticut River and categorically state that the land to the west of this line is Vermont but the land on the east is New Hampshire? This border isn't a tangible feature of the earth; it's an idea. But even in spite of this, we can find New Hampshire on maps.

This would seem like a hole in the theory that maps represent reality, but in fact it is just the opposite. The thing about maps is that they not only show that land simply exists, they also represent the relationship between any given place and the world around it. In the case of New Hampshire, nobody is going to argue that there is land in the state that we know as New Hampshire; nobody will argue with the fact that the land exists. What the maps are telling us is that this particular piece of land is New Hampshire, in the same way that certain places on the earth are hills, others are oceans, and still others are open fields, rivers, or glaciers. Maps tell us how a certain place on the earth fits into the bigger picture. They show us which part of the puzzle a particular place is. New Hampshire exists. It isn't tangible; we can't touch it. But it exists. There are similarities among all of the places that fit together to form what we know as New Hampshire. There are laws that apply in the state of New Hampshire. Cars have license plates from New Hampshire. Maps don't define that New Hampshire exists, but they do give us a representation of New Hampshire's place in the world. The way that maps are able to do this is through conventions. These are the human imposed ideas that are evident on maps but which cannot be found on the land itself. Examples of conventions include orientation, projection, and symbolization and generalization. Each of these must be utilized in order to create a map of the world, but - at the same time - they are each human constructs.

For example, on every map of the world, there will be a compass that tells which direction on the map is north, south, east, or west. On most maps made in the northern hemisphere, these compasses show that north is at the top of the map. In contrast to this, some maps made in the southern hemisphere show south at the top of the map. The truth is that both of these ideas are totally arbitrary. I could make a map that shows north being in the lower left-hand corner of the page and be just as correct as if I said north was at the top or bottom. The earth itself has no real

orientation. It simply exists in space. The idea of orientation is one that had been imposed on the world by humans and humans alone.

Similar to being able to orient a map however they choose to, mapmakers can also utilize any one of a vast array of projections to make a map of the world, and none of these projections is any better than the next one; as we have already seen, each projection has its strong points and its weak points. But for each projection, this strong point - this accuracy - is slightly different. For example, the Mercator portrays directions accurately, the Peters portrays area accurately, and azimuthal equidistant maps display distance from any given point accurately. Yet maps made using each of these projections are considered to be accurate representations of the earth. The reason for this is that maps are not expected to represent every characteristic of the world with 100% accuracy. It is understood that every map is going to have to dismiss or ignore some truths in order to tell others.

In the case of projections, some are forced to ignore areal accuracy in order to show directional accuracy, and vice versa. Which truths are chosen to be told depends solely on the intended use of the map. As mapmakers have to utilize orientation and projection in order to represent the surface of the earth on a map, so they must also use symbols. It would be impossible to put the actual characteristics of the earth (e.g. highways, rivers, thriving cities, etc.) on a map, so mapmakers utilize symbols in order to represent those characteristics.

For example, on a map of the world, Washington D.C., Moscow, and Cairo all appear as small, identical stars, as each is the capital of its respective country. Now, we all know that these cities are not, in fact, small red stars. And we know that these cities are not all identical. But on a map, they are depicted as such. As is true with projection, we must be willing to accept that maps cannot be completely accurate depictions of the land that is being represented on the map. As we saw earlier, the only thing that can be a totally accurate representation of the earth is the earth itself.

Throughout our examination of maps as both creators and representations of reality, the underlying theme has been this: maps are only able to represent truth and fact by lying. It is impossible to depict the huge, round earth on a flat and relatively small surface without sacrificing at least some accuracy. And though this is often seen as a drawback of maps, I would argue that it is one of the benefits.

The earth, as a physical entity, simply exists. Any purpose that we see in the world through a map is one that has been imposed by humans. This is the sole reason for maps' existence. They exist to show us something about the world, not to simply show us the world. They can illustrate any multitude of things, from migration patterns of Canadian geese to fluctuations in the earth's gravitational field, but every map must show us something about the earth upon which we live. Maps lie to tell the truth. They lie in order to make a point.

Questions:

1. Why does Hebert argue that maps **have to** distort reality?
2. List and describe some of the different types of map projections that the article describes, and what each is meant to show the viewer
3. Hebert argues that contemporary (modern) maps are "...as biased and conventional as ever." – How does she justify this point of view?
4. When Hebert describes the borders of New Hampshire as "...an idea." – what does she mean?
5. What specific things about maps did this article teach, explain, or reveal to you that you didn't know before (or didn't bother to think about)