TOPGRAPHIC MAP SYMBOLS pdf

1: Topographic Map Symbols

What is a Topographic Map? A map is a representation of the Earth, or part of it. The distinctive character-istic of a topographic map is that the.

Cognitive issues[edit] In cartography , the principles of cognition are important since they explain why certain map symbols work. This behaviorist view treats the human brain like a black box. Modern cartographers are curious why certain symbols are the most effective. This should help develop a theoretical basis for how brains recognize symbols and, in turn, provide a platform for creating new symbols. They are among the most well-known symbols on modern maps as they are self-explanatory and accurately represent their phenomena. They make it possible to the depict height, depth, and even slope. Contour lines will be closer together or spaced apart to show the steepness of the area. If the line is spaced closer together, it means that there is a steeper slope. If they are farther apart, the area has a low slope. An area of low slope generally uses contour intervals of 10 feet or less. Areas that contain mountain or other high slope can use an interval of feet. Features are represented by using point, line, and area symbols. Individual features, such as houses, are shown as point symbols like a small dot or square. However, a cluster of houses or neighborhood can be shown as a shaded area or polygon. Areas of importance or landmarks may receive special symbols that represent what they are. For instance, a church may be symbolized as a picture of a little church or cross or the town hall may have a special color or symbol. Shape and color of topographic symbols[edit] Many of the symbol feature on maps of the earth will be shown by straight, curved, dashed, or solid lines. They may also be colored to represent different classes of information. The typical color standard for topographic maps depicts contours in brown, bodies of water in blue, boundaries in black, and grids and roads in red. Topographic maps may use different colors to represent area features. Most topographic maps will use green for vegetation or national parks and wildlife management areas. They will also use blue for rivers, lakes, or other bodies of water. Red may also be used to represent areas of significant importance. Without symbols, maps would not be possible. A small circle may mean a point of interest, with a brown circle meaning recreation , red circle meaning services, and green circle meaning rest stop. Colors may cover larger areas of a map, such as green representing forested land and blue representing waterways. To ensure that a person can correctly read a map, a map legend[citation needed] is a key to all the symbols used on a map. The representative symbols should always be placed on the left and defined to the right. This allows for the reader to view the symbol first, then its definition, which is customary in English dictionaries. In most cases, representative symbols should be vertically displayed and the symbols should be horizontally centred. The symbols should be vertically centred with the definitions. The definitions are supposed to be horizontally centred to the left. Representing spatial phenomena[edit] Symbols are used to represent geographic phenomena. Most phenomena can be represented by using point, line, or area symbols. Discrete phenomena occur at isolated points, whereas continuous phenomena occur everywhere. Both of these can also be broken down into either smooth or abrupt. For example, rainfall and taxes for states are both continuous in nature, but rainfall is smooth because it does not vary at state boundaries, leaving the tax to be considered abrupt. It is important to distinguish between real world and the data we use to represent it. There are basically five types of spatial dimensions that are used to classify phenomena for map symbolization. Point phenomena are assumed to have no spatial extent and are said to be zero-dimensional. These use point symbols on a map to indicate their location. An example of these would be fire hydrants or trees in a park. Linear phenomena are one-dimensional and have a length. This would include any line feature on a map like roads or sidewalks. Areal phenomena are 2-D that has both a length and a width. The best example of this would be a lake or other body of water. Ranking[edit] An important factor in map symbols is the order in which they are ranked according to their relative importance. This is known as intellectual hierarchy. The most important hierarchy is the thematic symbols and type labels that are directly related to the theme. Next comes the title, subtitle, and legend. Data source and notes should be on all maps. Lastly, the scale, neat lines, and north arrow are the least important of the hierarchy of the map. From this we see that the symbols are the single most important thing to

build a good visual hierarchy that shows proper graphical representation. When producing a map with good visual hierarchy, thematic symbols should be graphically emphasized. The legend of the map also contains important information and all of the thematic symbols of the map. Symbol that need no explanation, or do not coincide with the theme of the map, are normally omitted from the map legend. Thematic symbols directly represent the maps theme and should stand out. Data collected for choropleth maps is usually grouped into separate classes based on attributes or other forms of classification. The classes are given a specific color or shading based on their values and what they are trying to portray. Choropleth maps are most effective when the data or classes change abruptly at each enumerated boundary. A proportional symbols map uses symbols that are proportional to the data that they are representing with point locations. These symbols can be true points or conceptual points. True points represent real objects or the exact location of a tangible object. This could be an oil well or fire hydrant. A conceptual point represents the center of the enumeration unit , such as a corn field. The raw data on proportional symbol maps go hand in hand with the data shown on choropleth maps. A good example of isolines is connecting areas with similar temperatures. As with choropleth maps, Isopleth maps require standardized data to be appropriately contoured. Dot maps[edit] Dot maps use one single dot to represent where a single phenomenon is the most likely to occur. The total amount of dots can cover a single area or multiple areas. The density of the dots is interpreted by the user as areas of high value. This method is more accurate than proportional and Isopleth maps.

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2: Map Symbol Legend

Interpreting the colored lines, areas, and other symbols is the first step in using topographic maps. Features are shown as points, lines, or areas, depending on their size and extent. For example, individual houses may be shown as small black squares. For larger buildings, the actual shapes are.

A map is a representation of the Earth, or part of it. Contours are imaginary lines that join points of equal elevation on the surface of the land above or below a reference surface, such as mean sea level. Contours make it possible to measure the height of mountains, depths of the ocean bottom, and steepness of slopes. A topographic map shows more than contours. The map includes symbols that represent such features as streets, buildings, streams, and vegetation. These symbols are constantly refined to better relate to the features they represent, improve the appearance or readability of the map, or reduce production costs. Consequently, within the same series, maps may have slightly different symbols for the same feature. Examples of symbols that have changed include built-up areas, roads, intermittent drainage, and some lettering styles. On one type of large-scale topographic map, called provisional, some symbols and lettering are hand-drawn. Contour maps, while sill maintained by the USGS, are becoming a thing of the past. New presentation of topographic data, enhanced by information from satellites can now be mapped digitally. But the principle remains the same: While readily available online, the new shaded topographic maps are rarely found printed as hard copy. Reading Topographic Maps The contours show elevation differences. Labeled index lines thick and intermediate lines thin allow for approximations of height at a given point. The shaped groups of contours represent hills, valleys, gullies and level land. The contours above illustrate a hill with a meter high summit. Interpreting the colored lines, areas, and other symbols is the first step in using topographic maps. Features are shown as points, lines, or areas, depending on their size and extent. For example, individual houses may be shown as small black squares. For larger buildings, the actual shapes are mapped. In densely built-up areas, most individual buildings are omitted and an area tint is shown. On some maps, post offices, churches, city halls, and other landmark buildings are shown within the tinted area. The first features usually noticed on a topographic map are the area features, such as vegetation green , water blue , and densely built-up areas gray or red. Many features are shown by lines that may be straight, curved, solid, dashed, dotted, or in any combination. The colors of the lines usually indicate similar classes of information: At one time, purple was used as a revision color to show all feature changes. Currently, purple is not used in revisions, but purple features are still present on many existing maps. Various point symbols are used to depict features such as buildings, campgrounds, springs, water tanks, mines, survey control points, and wells. Names of places and features are shown in a color corresponding to the type of feature. Each contour is a line of equal elevation; therefore, contours never cross. They show the general shape of the terrain. To help the user determine elevations, index contours are wider. Elevation values are printed in several places along these lines. The narrower intermediate and supplementary contours found between the index contours help to show more details of the land surface shape. Contours that are very close together represent steep slopes. Widely spaced contours or an absence of contours means that the ground slope is relatively level. The elevation difference between adjacent contour lines, called the contour interval, is selected to best show the general shape of the terrain. A map of a relatively flat area may have a contour interval of 10 feet or less. Maps in mountainous areas may have contour intervals of feet or more. The contour interval is printed in the margin of each U. Bathymetric contours are shown in blue or black, depending on their location. They show the shape and slope of the ocean bottom surface. The bathymetric contour interval may vary on each map and is explained in the map margin. Key to Topographic Map Symbols Boundaries.

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3: Topo Map Symbols and Map Legend

Key to Topographic Maps. Select a category below: Control Data and Monuments; Source: Topographic Map Symbols, US Geological Survey, National Mapping Division.

Like any map it uses symbols to represent these features. Lets look at a section of a topographic map showing the area around Spruce Knob in West Virginia. Spruce Knob is the highest point in West Virginia. This section of a topographic map illustrates many of the common symbols used on topo maps. The map is repeated below with many of these symbols labeled. Some of the more common and important topographic map symbols have been pointed out by the purple arrows. More details are given in the text below. Symbols in green indicate vegetation, symbols in blue represent water, brown is used for topographic symbols, man made features are shown in black or red. Lets look at the symbols labeled in the map above: Contour Lines Contour lines are lines that indicate elevation. These are the lines that show the topography on the map. They are discussed in more detail in the next section. Contour lines are shown in brown. Two types of contour lines are shown. Regular contour lines are the thinner brown lines, index contour lines are the thicker brown lines. The numbers written in brown along the contour lines indicate elevation of the line. For this map elevation is in feet above sea level. Forests and Clearings Forested areas are represented by areas shaded green; for Spruce Knob this means most of the area. Areas that are not forested are left unshaded white. Note that not all topographic maps show forests. Also note that this information is not always up to date or accurate. I have struggled to walk across densely wooded areas in places that have been mapped as "clearings". Streams Streams and other water features are shown in blue. Roads and Trails Man made features are shown in black or red. Trails are represented as thin single dashed lines. Roads are represented as double lines or thicker red lines. A series of symbols are used for roads to indicate the road quality; from double dashed lines for dirt roads to thick red lines for major highways. In the case of the Spruce Knob area we have two types of road, the thin double black lines and the thin dashed double lines. Buildings Like other man made features buildings are shown in black. Solid squares usually indicate buildings that would be inhabited by people i. Other man made features shown in black on our example include the lookout tower on at the summit of Spruce Knob and the radio tower. Though not seen on our map, larger buildings, such as factories, are shown by larger shapes that outline the shape of the building, and cities with closely spaced houses are shaded pink instead of showing individual houses. Boundaries Even though these are not physical features you can see on the ground, boundaries are shown on topographic maps by black or red lines. Boundaries are usually represented by broken lines combinations of dots and dashes of different sizes. Different patterns are used for different types of boundaries i. On our example the boundary that is shown marks the edge of a National Forest. Bench Marks Bench marks indicate places where the elevation has actually been surveyed. These locations are indicated on the map by a triangle if a marker has been placed in the ground see photo on right , or an "x" if no marker was left behind. Near either symbol are the letters "BM" and a number which represents the elevation of that particular location. Bench marks are shown in black on topographic maps. Some are very common, some very rare. For a more complete list of map symbols visit the USGS web site using the link below.

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4: Map symbolization - Wikipedia

Topographic Map Legend and Symbols. The topographic maps on TopoZone were created by the United States Geological Survey (USGS) and have evolved for more than a century. Over time the maps became more detailed and new symbols were added for the different terrain, natural features, land boundaries, and man-made structures depicted by the surveyors.

In a three-dimensional representation, a third value is added. This system is often refereed to as an x,y,z system. Each position in space is represented by a unique combination of three values. Polar Coordinate System Polar Another coordinate system uses distance and angle from a reference point. For example, two dimensions can be referenced by two numbers, one representing the distance from the point, the other reference the angle degrees. Map making challenges A map is a two dimensional representation of the surface of the earth, which is an odd shaped sphere, with a very irregular surface of mountains, valleys and plains. If we simply pound our earth ball until it is flat, something has got to give. We will be distorting some dimension of the original globe. It might be shape, it might be distance, it might be area, but something has got to give. The technique used to project this globe onto a flat surface determines the compromise strategy. Some maps project as if the paper map is on a plane, some project as if the map is on the surface of a cylinder, and others project as if the map is on the surface of a cone. A topographical map will typically indicate the projection system used. Many USGS maps uses a Lambert Conformal Conic projection, which does a nice job of preserves angles and a good job with distances both important for navigation. Identify and interpret longitude and latitude Longitude and Latitude Perhaps the most common way of dividing up the earth is in degrees of Longitude and Latitude. Longitude lines are the up and down lines that are used to measure east to west. Latitude lines are horizontal lines, used to measure north to south. To increase the precision, degrees are often further broken down into minutes and seconds. A minute is a 60th of a degree, and a second is a 60th of a minute. San Francisco can be represented as: For example San Francisco can also be represented in decimal form as: In this sample map, the right hand longitude is listed as degree, 30 minutes, and 0 seconds zero is assumed and not explicitly printed. The upper left corner not shown lists degrees, 37 minutes, and 30 seconds. If you are correctly doing the math, you will find the difference between the right and left edges of the map is indeed 7 minutes and 30 seconds or 7. Similarly, in the upper right hand corner the latitude is listed as 37 degrees, 37 minutes, and 30 seconds. Can you guess what the lower right had corner lists for latitude? If you guessed 37 degrees, 30 minutes, and 0 seconds, you are correct. Although very popular, there are some challenges to representing this curved system on a two dimensional grid. Degrees north and south represent a relatively consistent distance on the earths surface kilometers per degree. Degrees east and west, however, range from kilometers per degree at the equator to zero 0 kilometers at the poles. The potential inconsistencies in scale, makes it less useful for navigational calculations. Thus, the conterminous 48 States are covered by 10 zones, from Zone 10 on the west coast through Zone 19 in New England.. In each zone, coordinates are measured north and east in meters. One meter equals The northing values are measured continuously from zero at the Equator, in a northerly direction. Grid values to the west of this central meridian are less than ,; to the east, more than , Because UTM represents an actual distance in meters, rather than an expression of degrees representing a varying distances, it is much easier for us to apply this information in the field. For example, it is much easier to understand needing to be meters east, than say needing to be 15 seconds east. This grid system is in thousands of meters, and is indicated by small blue ticks. On this map you will see the numbers , across the top, and and down the side. Because the ticks represent thousands of meters, they therefore represent a distance of 1 kilometer between each mark. Identify and interpret Township and Range Township and Range Many topographical maps also include Township and Range coordinate information. The Township and Range grid is centered relative to a principle meridian running north to south and baseline running west to east. A township is 6 miles north to south. A range is 6 miles east to west. Each 6 mile square intersection of town and range is further divided into 36 square mile sections, whose numbers snake consecutively from the upper right hand corner as 1, across left to 6, down a row as 7 and back across right to

12, down a row to 13, and so on until it ends with 36 in the lower right hand corner. And for even more fun, each section quarter is divided yet again in to quarters. Luckily, UTM and Longitude and Latitude are really the only ones used by wilderness navigators, so you might want to forget I even brought it up. Map Reading Review You should now be able to: Identify common topographical map symbols Read and interpret contour lines Orient a map based on local topography Identify and explain the basics of coordinate systems Identify and interpret longitude and latitude coordinates Identify and interpret UTM coordinates Identify and interpret Township and Range coordinates Select the review quiz icon to take the Map Skills Quiz.

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5: Key to Topographic Map Symbols

Topographic Map Keys. In cartography, symbols are everything. The very nature of a map as an abstracted representation of the Earth requires symbols to perform the abstraction.

Performed at large scales, these surveys are called topographical in the old sense of topography , showing a variety of elevations and landforms. As such, elevation information was of vital importance. In the United States, the national map-making function which had been shared by both the Army Corps of Engineers and the Department of the Interior migrated to the newly created United States Geological Survey in , where it has remained since. Although the project eventually foundered, it left an indexing system that remains in use. By the s, centralized printing of standardized topographic maps began to be superseded by databases of coordinates that could be used on computers by moderately skilled end users to view or print maps with arbitrary contents, coverage and scale. TIGER was developed in the s and used in the and subsequent decennial censuses. Digital elevation models DEM were also compiled, initially from topographic maps and stereographic interpretation of aerial photographs and then from satellite photography and radar data. Since all these were government projects funded with taxes and not classified for national security reasons, the datasets were in the public domain and freely usable without fees or licensing. TIGER and DEM datasets greatly facilitated Geographic information systems and made the Global Positioning System much more useful by providing context around locations given by the technology as coordinates. Initial applications were mostly professionalized forms such as innovative surveying instruments and agency-level GIS systems tended by experts. By the mids, increasingly user-friendly resources such as online mapping in two and three dimensions, integration of GPS with mobile phones and automotive navigation systems appeared. As of , the future of standardized, centrally printed topographical maps is left somewhat in doubt. For example, colors can be used to indicate a classification of roads. These signs are usually explained in the margin of the map, or on a separately published characteristic sheet. In the United States, where the primary national series is organized by a strict 7. Topographic maps conventionally show topography , or land contours, by means of contour lines. Contour lines are curves that connect contiguous points of the same altitude isohypse. These maps usually show not only the contours, but also any significant streams or other bodies of water , forest cover, built-up areas or individual buildings depending on scale , and other features and points of interest. Today, topographic maps are prepared using photogrammetric interpretation of aerial photography , lidar and other Remote sensing techniques. Older topographic maps were prepared using traditional surveying instruments. The cartographic style content and appearance of topographic maps is highly variable between national mapping organizations and aesthetic traditions and conventions persist, particularly amongst European countries at medium map scales. National Mapping Agency and Map series Although virtually the entire terrestrial surface of Earth has been mapped at scale 1: Several commercial vendors supply international topographic map series. It provides topographic maps and data to meet the needs of the sustainable development of the nation. The maps are published at scales 1: Maps can also be viewed online. It is reported that these maps are accurate and attractively printed in seven colors, and that successive editions show progressive improvement in accuracy. Maps at scales 1:

6: Contour Map Line Quiz

People use topographic maps for engineering, conservation, environmental management, public works design, urban planning and outdoor activities like fishing, hiking or camping. The first step in learning how to read a topographic map is to understand how to interpret the lines, colors and symbols.

7: Map Quiz To Test Your Knowledge On Simple Map Symbols! - ProProfs Quiz

Interpreting the colored lines, areas, and other symbols is the first step in using topographic maps. Features are shown

as points, lines, or areas, depending on their size and extent.

8: US Topo: Maps for America

Common symbols on a Topo map: A topographic map is a map that shows topography and features found on the earth's surface. Like any map it uses symbols to represent these features.

9: Map Symbols â€” 4H Forestry Invitational

In modern mapping, a topographic map is a type of map characterized by large-scale detail and quantitative representation of relief, usually using contour lines, but historically using a variety of methods.

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