Interlinked Signage on hilly terrains

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Abstract: Signage is used as one-way communication tool between the static landscape and dynamic people. On plains, which are planar by definition, ordinary two-dimensional signage suffices well. Problem arises on hills which are three-dimensional in structure. For hills, two kinds of signage have been designed: the ordinary 2-D ones loaded with more data and mutually transferring dynamic updates & the specialized 3-D signage created from solid modelling of terrains.

Key-Words: Signage on hills, Three-Dimensional Navigation, Solid Terrain Modeling, Interlinked Signage

1. Introduction

Majority of the inhabited regions are geometrically two-dimensional (2-D, in brief) or planar. At least approximately, as we neglect the curvature of the Earth’s spherical shape locally and dismiss any minor irregularities in topography on the surface. Signage designed for this ‘locally 2-D Earth’s landscape’ are in 2-D too; they appear as road signs on pavements, portable city maps that can be folded and carried in shirt pockets, posters on pillars of subway stations displaying modified railway routes and schedules and so on. The phrase ‘you are right here’ is often pointed as an arrowhead on colony true-to-scale maps for convenience of residents and visitors. Mathematically it is an underlined point on a plane surface and physically it is your position on land. Some signages are interlinked and dynamic. The changing and blinking displays on highways regularly update the driver on traffic congestion and weather conditions. Thus having 2-D signage on 2-D topography seems obvious and good.

2 Problem Formulation

In case the region has a three-dimensional nature (3-D, in brief) like a rock island or a city built around and over a hill, the 2-D signage fall short of conveying the complete information. Please see figure (1). At the traffic intersection shown, there are three roads emerging and all three are turning right. ‘U’ goes uphill; ‘D’ comes downhill; while ‘L’ is level. Without words like ‘up’ and ‘down’, it is tough to seek and offer guidance. Even the sophisticated GPRS fitted in modern cars is helpless. Intended for planar movement, it is silent on altitude, unless you use the uncommon Google Earth Altitude software or equivalent. To navigate on hills, third parameter, viz. height above the mean sea level, becomes the primary parameter. A common dialogue amongst locals there is something like: “I have to move down daily morning to market for bread.” Fact is that you are in 3-D domain and any explanation or description of it has to be compulsorily in 3-D lingo. It is mandatory and not optional for communication there. Hence for hill stations, a specialized system of interlinked 3-D signage needs to be envisioned and designed. All hilly terrains globally have common characteristics like cold & foggy weather, frequent precipitation, isolated areas where local people acting as complementary ‘inquiry counters’ for tourists are sparse, sun-lit & sun-shade sides of the same mountain, etc. The system of signage befitting hills has to cater these needs if it is to be consumer friendly. As a side effect, such signage adds to aesthetic sense and hence can be used as tourism boosters by countries which proudly have mountain ranges to boast off.
3 Problem Solution

Two kinds of signage have been designed my research work.

3.1 2-D Interlinked Signage

2-D signage displaying the geographical data such as longitude, latitude and altitude, location of neighboring important places and finally conveying the current and forecasted weather conditions can be posited in an array. Miscellaneous data such as possible avalanches, landslides and power breakdowns can also be conveyed to walkers and drivers alike. This individually anchored signage would be inter-communicative as well as linked to a central control room. The control center would have access to satellites, Internet, radio and even volunteering informers living nearby the stationed signage. Please see Figure 2.

3.2 3-D Modeled Signage

These are 3-D signage useful and usable only for the 3-D terrain. This signage would in effect be downscaled models of the terrain. They could be prepared by computer-aided design (CAD) techniques using altitude maps and graphs. The actual manufacturing could be using computer-aided-manufacturing (CAM) achieved via CNC machines or even skills of a competent artist. Thus the structure could be curved and carved out automatically or be cast manually. A variety of materials are available these days for what seems to be an architectural modeling of Nature. Miniaturized roads, buildings, trees, railway tracks can be added to the structure. Finally the model can be enclosed in a transparent cage and lighted using solar power. It would be an independent signage not requiring an outside and expensive to distribute power supply. Please see Figures 3, 4 and 5.
3 Conclusion

As the plains begin to show bleeding signs of global warming, over-population, noise and air pollution, hill stations would become more important as peaceful weekend recluses for rest, serious study and de-stressing lives. Communication on hills is a specialized science; if not, it should be made one. Customized signage for hills would make living, commuting and trekking simpler on hills.