

Contour Table Instructional Laser Devices

OVERVIEW:

Southern Illinois University's **Contour Table** was invented by Thad Heckman of the Department of Architecture and Interior Design. It was created as a classroom response to student difficulties in visualizing three-dimensional forms. A prototype was first constructed in the Fall of 1999. The geometric modeling and instructional capabilities that this simple unit displays complements lectures in understanding land form descriptions for training in architectural site planning.

DESCRIPTION:

The **Contour Table** was created to address the sometimes difficult aspects of reading, understanding and ultimately "feeling" the shape descriptions of contour topography. This is particularly important as it relates to architectural and civil design and manipulation of landforms at virtually all student levels, particularly secondary through university. This goes directly to the individual's intellectual model building capabilities. The Contour Table allows an instructor and students to interactively model in three dimensions using a variety of mediums, or "stand alone" artifacts, in conjunction with the ability to instantly transform the model into its two dimensional graphic representation. The device also allows for grid and contour plotting within the classroom using actual surveying instruments, or a builder's level with a miniature "scale" surveyor's rod in a tabletop application.

APPLICATION:

The Contour Table has presently been used in a classroom setting with excellent results. Although the prototype is constructed with basic technology at a relatively low cost, it has been extremely well received. Classroom application "testing" by Mr. Heckman occurred in the fall semester of 2000. The Contour Table was integrated with the architectural site-planning lecture on manipulating contours. In anticipation of the lecture, numerous scaled landform "props" were constructed for use within the table. Using an overhead mirror within the lecture the students were able to view into the table from their classroom positions as well as important orthographic aerial views from the more distant seats. The affect was to very clearly show the two-dimensional representation of the actual three dimensional model landscapes. A number of students indicated they didn't understand some of the more difficult concepts (for example, how contours cross crowned and curbed sloping roadways) until the lasers striped the objects. Afterwards, many students benefited from working directly in the laser fields, props, and sand. Mr. Heckman plans to use the Contour Table this fall semester as an ongoing part of site planning coursework. Additional props are being constructed and mathematical values with benchmark reference for more advanced instructional applications are being developed.

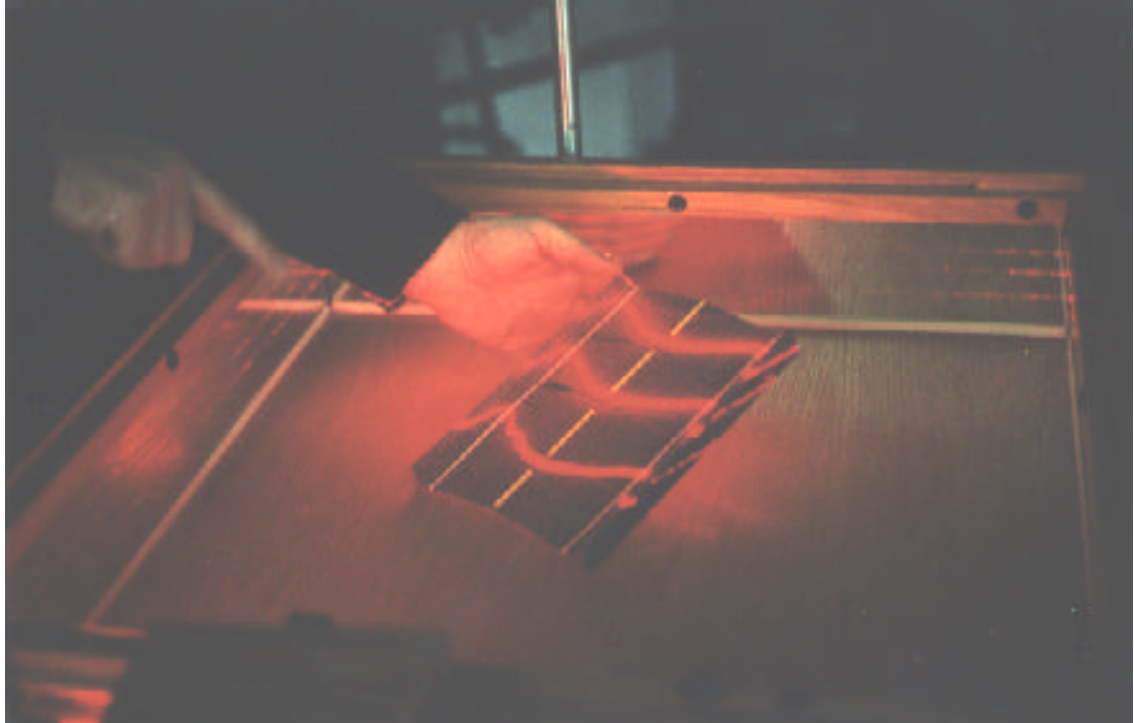


The Contour Table being used under a “cooking mirror” during a classroom demonstration. An excellent method for displaying contours from a skyward view looking down into model landscapes. However, actually working in the stacked “laser fields” that create the contour imaging most quickly informs and instructs the user about the two dimensional representation of actual three-dimensional forms.

ACCEPTANCE:

A presentation at the Carbondale Science Center confirmed that the concept is readily understood and of value to elementary and secondary students. In addition, a fully functional prototype of the Contour Table was presented at the 2000 Design Communication Association National Conference in Tucson, Arizona. Recommendations from those who have used or witnessed the Contour Table including Frank Ching, internationally renowned architectural author and illustrator, are available.

Although conceived for architectural instruction, many training and professional crossover applications are possible including civil engineering, land surveying, cartography, and especially high school and elementary school instruction to mention a few. Contour Table units manufactured for mass-market appeal or more extravagant units incorporated into the large number of science centers found throughout the United States could be an especially important outlet. Mathematical instruction in surface topology also appears to be an application as well as artistic and architectural studies in shades and shadows.



Contour lines in red laser light being portrayed by the Laser Table during an actual classroom demonstration. The image above illustrates a difficult concept for the beginner in “reading” the two dimensional representation of a crowned and curbed sloping roadway. Shifting and tilting the model roadway quickly illustrates in real time how the relationship between contours change with varying landforms on a topographic map.

COMMERCIALIZATION:

Photographs as well as a video highlighting aspects of the Contour Table are available. In addition, the unit is portable and can be set up and displayed readily for classroom or other demonstration purposes. Presently the invention has a patent pending and is positioned for more advanced applications and development. The University seeks licensees to effectively commercialize this invention. Product development companies, manufacturers, and/or distributors may take advantage of this opportunity either exclusively or nonexclusively in various fields of use and territories.

Feel free to contact inventor Thad Heckman directly or Jeff Myers at Southern Illinois University’s Office of Research Development with questions regarding the Contour Table.

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