



PATTERNS IN 3D

VISUALIZING MICRO-TOPOGRAPHY IN LANE CONDITIONS

Unlike other sports, where the environment is clearly identifiable, the playing field in bowling is nearly invisible to the naked eye. As they compete, bowlers can't see the actual structure or topography of the lane condition used in competition. Rather, elite bowlers must rely on their previous study of lane graphs and knowledge of where to play lanes. To be successful, these bowlers need to watch ball motion closely to determine where to start playing the pattern, as well as when and where to move, make adjustments, as oil depletes, creating transition. With this in mind, accurate mental model constructions would certainly help with lane play and help readers develop a better understanding of lane patterns.

While teaching and coaching, an individual's eyes always light up with excitement and enthusiasm when I reveal three-dimensional graphs. After sharing insight and images, good bowlers begin to understand ball reaction better, from lining up on the fresh, to dealing proactively and confidently with transition. One goal of this article is to help readers visualize

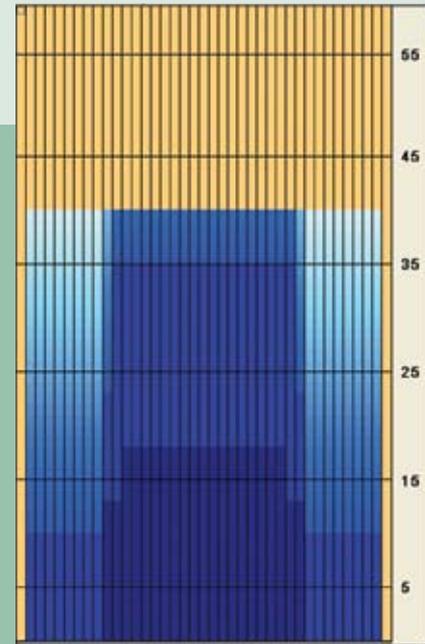
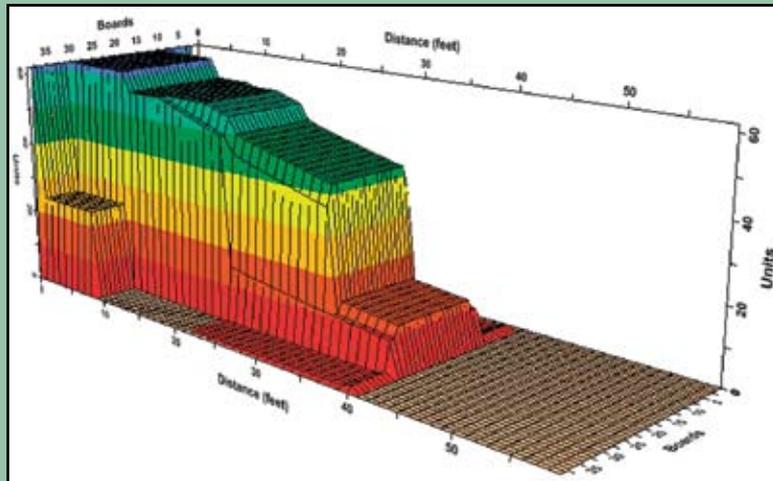
the topography of a three-dimensional pattern when they only have access to two-dimensional information (i.e., overhead and composite). With the review of 3-D images of lane conditions, elite bowlers can develop a general visual sense of the invisible.

Since most individuals have not had the opportunity to see graphs in 3-D, in this month's Slowinski at-large, I present several patterns in three dimensions. No special glasses are needed. It is an opportunity to truly see the contour, shape and topography of the pattern. To illustrate, I share with readers detailed two and three dimensional views of the 2009 "The BTM" Tournament (39 feet), the 2009 USBC Open pattern (40 feet) and a typical house shot (40 feet). Although the pattern lengths are similar, each pattern is very different, from a structural standpoint. Specifically, I want readers to see the differences between a 1-to-1 flat pattern and a typical house condition as well as an easier sport pattern.



Joe Slowinski, ABD, M.Ed. is a full-time coach at the Kegel Training Center, in Lake Wales, Florida, and former Director of Coaching and Coach Certification for the National Sports Council of Malaysia. Joe was named a Top 100 Coach for 2005, 2006, & 2007 by BJI. He can be reached at joe.slowinski@kegel.net Visit his coaching site at www.bowlingknowledge.info

TYPICAL HOUSE SHOT



Since the lane environment is invisible, we must rely on visual constructions of the patterns to give a sense of what the structure is in reality. This article will help you move forward in an area of bowling study that is extremely complex and requires focused reflection and practice in order to become competent. To be the best player you can become requires a deeper understanding of lane patterns.

Overview

The three patterns presented represent a range of difficulty, from the easy house shot to a challenging flat pattern sport shot. As mentioned earlier, the patterns are 39 or 40 feet, but range from a ration of 1-to-1 to 9-to-1.

THS (Typical House Shot)

The typical house shot is literally a wall of oil. Extreme differences from the outside to the inside create a huge margin of error. In this case, I present the aptly named Kegel Navigation Recreation pattern, Wall Street. Wall Street is 40 feet with a volume of 19.7 mL (8.8mL forward and 10.9 mL reverse). The ratio of boards 18L-18-R:7R-3R is 9 to 1.

As you see from the three-dimensional view, this THS is literally a wall of oil. A large friction zone to the outside of the pattern and the large volume of oil to the inside increases margin of error, both left and right.

USBC Open

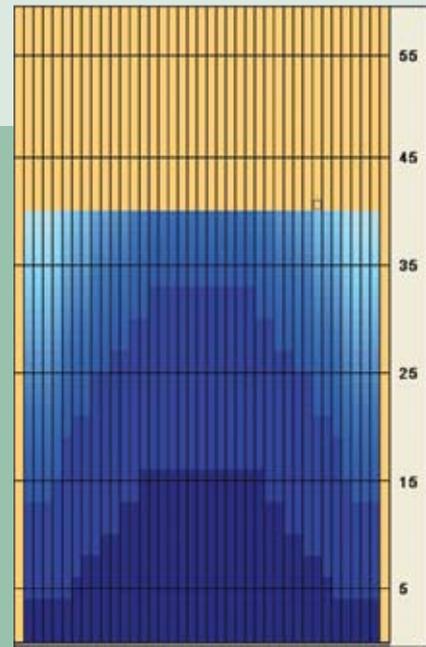
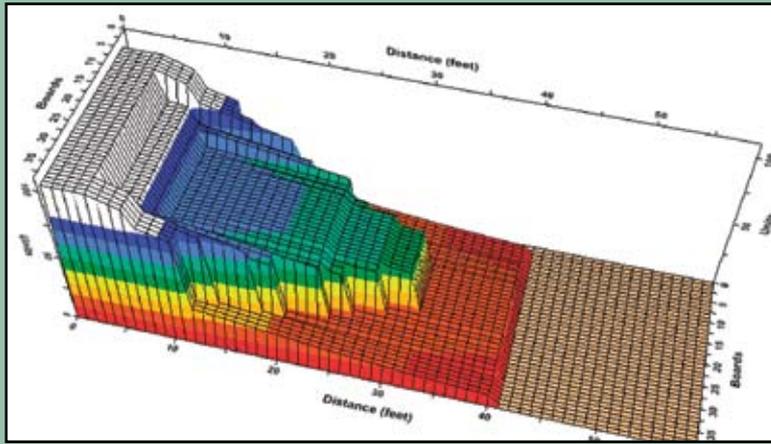
The 2009 USBC Open shot is 40 feet with a volume of 26.6 ml (12.55 ml forward and 14.05 ml reverse). The ratio of boards 18L-18-R: 7R-3R is 2.56 to 1. A visual inspection of this pattern illustrates a significantly flatter pattern than the THS. But, the pattern has more texture and has more friction built-in, compared with “The BTM” pattern.

“The BTM” Tournament

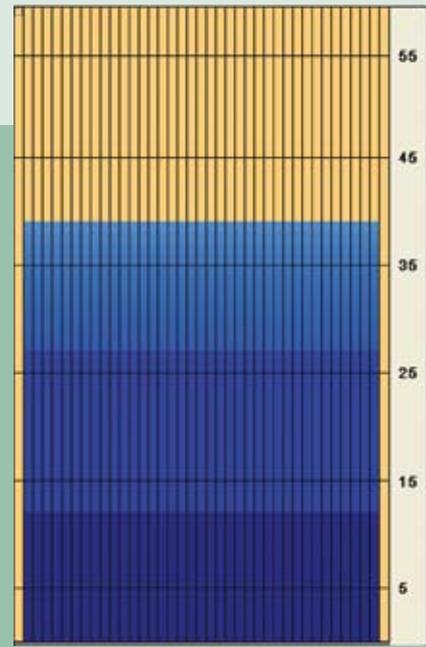
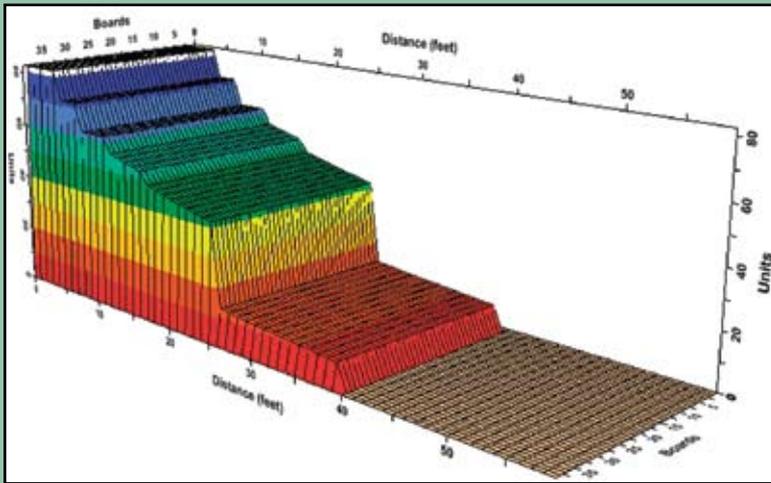
The 2009 “The BTM” shot is 39 feet with a volume of 24.05 mL (11.1 mL forward and 12.95mL reverse). The ratio of boards 18L-18-R: 7R-3R is 1 to 1.

As you can see visually, in the three-dimensional image, there are no friction zones to the outside. As with all flat patterns, the only friction is down lane after the pattern ends. Consequently, a shot that is missed angularly will not have any recovery. Launch angle consistency is vitally important to scoring success and consistency. Thus, these patterns require bet-

USBC OPEN



THE BTM



ter shotmaking. The pattern will open up if bowlers collectively break down the end of the pattern, where the reduced volume is located.

Visualizing the depth through color

To better enable yourself to visualize microtopography in a pattern, study each of the patterns in both versions, the 2-D overhead and 3-D image.

Notice the relationship between the darkness of color in the two-dimensional graph and the depth and contour of the three-dimensional graphs. As you see, with a comparison of the 3-D and 2-D overhead images, very light colors in the 2-D represent lower volumes in the pattern. These areas will transition more quickly. Use this visual information to help you anticipate how quickly the patterns will transition, as well as what friction zones exist. Friction zones will

provide information on how much margin of error is built into the pattern; in other words, how much “bump” is embedded within the pattern.

With some practice and reflection, you will begin to “see” the depth and contour of each pattern better. Start with a review of the images of “The BTM” and the USBC Open patterns. The depth at the end of the pattern on the USBC Open pattern is lower than the volume at the end of “The BTM”. This USBC Open pattern is likely to transition much more quickly than “The BTM”. This is often the case with longer patterns versus medium patterns.

You can also use this visual approach to determine friction zones, right and left. To improve your skills, use the composite 2-D graphs to help gauge the depth of the pattern and how much wall or cliff is embedded in the pattern. After studying these three patterns in both 3-D and 2-D, you will be able to visualize the micro-topography, depth and shape, of patterns with simply a 2-D image.

Review 2-D overhead images of lane patterns at <http://www.pba.com/resources/oilpatterns/laneconditions.asp> To review 2-D overhead and composite images of many more lane conditions, visit the Kegel lane pattern database at <http://www.kegel.net/pattern-library/default.asp>

See the edge, use the edge

One benefit of improved visualization of a specific lane pattern is the ability to use this information to guide your lane play. Look for the cliffs embedded in the pattern, where the pattern drops off to the outside. These locations will offer the most margin of error built into the pattern. In this location, miss-in gets more hold and a miss-right provides more friction.

In most cases, as discussed in many of my articles, pattern length—31—will provide a close approximation for this margin of error sweet spot on the pattern. Add plus or minus one to the exit point and you have three boards at the end of the pattern. In the case of the USBC pattern, see the color difference between red and orange. This illustrates the small cliff down lane at 8-9-10. And, with the lower volume down the lane, the pattern will transition, creating more margin of error as the oil depletes.

With “The BTM” pattern, there are no cliffs to take advantage of in the lane condition structure. But, the flatter the pattern, the more the PL-31 will guide you into the pocket with increased margin of error.

As you can see from the end of the pattern, it has less margin of error and will continue to be more difficult for a longer time. And, the winning scores confirm this and indicate the scoreability of each pattern. Scott Pohl shot 958 (239 average) to win the Regular Singles event at “The BTM”. At the USBC Open, Ron Vokes shot a record setting score of 2321 for all events (257 average) which included 30 consecutive strikes. Many records were broken at the 2009 USBC Open tournament including All Events, Singles and Doubles. Reviewing the 3-D image of the pattern provides some better understanding why scoring was so high this year.

Applying the visualization: matching the 3-D pattern with ball motion

With the pre-visualization, you will have a sense of where the friction is located within the pattern, as well as the margin of error built into the pattern. This will provide you with an indication of the probable scoring pace as well as a level of difficulty. And, it will prepare you with a mental model of the pattern... a pattern which is invisible to your eye.

Prepare before arriving at the tournament. Know where the friction zones are located. Feel these out as you are throwing during the practice sessions. The goal is to match the mental model in your mind with the practical reality of the pattern on that day, on that surface in that environment of the tournament. As you throw, test your mental model with the reality you “see” and “feel” on that day.

This is an acquired skill that takes a purposeful focus and disciplined reflection. With more challenging conditions, such as your PBA experience league, make an effort to construct a 3-D visualization from the 2-D image. Construct a mental model of the depth and shape of the pattern. The more often that you do this, the more success you will have in playing lane condition and preparing for both playing the lane on the fresh as well as being proactive with transition.

Closing note

These 3-D lane pattern images were constructed using KOSI. These images are three-dimensional interpretations of the lane pattern based on the load structures of the lane patterns. It is intended to be illustrative of three different levels of difficulty and to assist in visualizing these differences. 