About our narrow gauge and branchline columnist

Lew Matt is a published writer, photographer, and illustrator whose work has appeared in many model railroad hobby magazines.

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THE LITE AND NARROW: A Narrow Gauge Modeler Looks at Modules

Ramblings on Narrow Gauge and Branchline Modeling

Bits and Pieces

As I look back over my narrow gauge module railroad experiences of the last 50 years, I see three problems that were always in need of attention to have good experiences with sectional and module layouts: weight to strength ratio, difficulty of assembly and minimum design possibilities. Over the last 5 decades, several satisfactory solutions to each of these problems have presented themselves.

Modular modeling has never been so good. One of the most ingenious module designers I have ever had the privilege to meet is Kevin Hunter of Sykesville, Maryland, an On30 modeler and member of the Mid-Atlantic On30 group. To my thinking, he has found excellent solutions to the problems outlined above to create reliable and easy to use modules.

Before we look at Kevin's state of the art, lightweight modules, let's take a quick look at the scope of information available and some history.

In the old days, portable model railroads needed to be strong enough to avoid torque damage from twisting, withstand rough handling and support the weight of the scenery. They had to be ruggedly built, as the modern, lightweight materials were not an option.

Sectional layouts were constructed of heavy frame members with half-inch plywood tops covered with homasote and terrain frequently formed with plaster and wire. I remember carrying one innovative piece of train layout that was sceniced with concrete over

FIGURE 1: Each of the photographer's light stands (black legs) is supporting a module that is leveled along the rail and across the track. The white legs in the background are of a bipod module support that is only temporary and not nearly as strong.

FIGURE 2: The top table is cut in the lobed shape to offer the best support for straight or curved modules while saving weight. Note the ¼" x 20 insert in the center hole to securely attach the top to the light stand. The light stand may be equipped with friction screw fittings or snap clips for fast height adjustment. Photo by Kevin Hunter

hardware cloth! The old sectional pieces were a bear to transport, so true portability was questionable. When the module concept was becoming popular, I tried that too, but weight was still the constraint.

Assembly of the layout was a problem, particularly in getting the modules together easily with the tracks lined up that did not create automatic derails with bridge tracks where the sections joined. Assembly frequently required several people, some to just hold the sections, others to align the track and still more to clamp or fasten the sections together.

Several people came up with clever end designs for plugging modules together, such as using door hinges on the side of the ends to create horizontal and vertical alignment, then pulling the hinge pins to release the modules, or using milled tongues and grooves in the module ends to assure alignment.

Leveling the modules by adjusting the leveling nuts on the bottom of the legs was, and still is, a tedious and back-breaking operation.

FIGURE 3: This illustration shows several standard, On30 modules, 11-feet-long, that form one end of a three legged point-to-point to loop operation at the Mid Atlantic Narrow Gauge Guild meet. This set of modules was constructed by Geren W. Mortinson, Jr., who carries them to almost every meet. A bystander is admiring the detail of Geren's hand laid track work at the engine house.

FIGURE 4: Kevin Hunter is demonstrating to a bystander the simple techniques needed to assemble his lightweight modules. Although the bystander is assisting with this assembly, Kevin installed the previous three sections, without help, in under 20 minutes. After the entire layout is assembled, the operators will go back over each section with a level and adjust the stands to make sure the trains will run well. Each section is leveled in two directions.

MODELERS TIP

Nate Kline uses a battery-powered drill to adjust the leveling screws on the bottoms of the legs. The devices are made from a piece of "U" channel that is threaded 1/4x20 on the bottom, with a clear hole at the top and four (4) screw holes for #8 wood screws, used to attach the U channel to the 1-1/2" thick module leg. The screw device is threaded 1/4x20 and has a Philips head at one end and a swivel foot at the other.

There have been many improvements to modular railroading since the 1950's, when sectional layouts were the new kid on the block.

Some portable layouts were made up of several sections that only fitted together one way, frequently forming an oval track plan. When the module concept followed the sectional design in the next decade, the same configuration was usually built: the oval.

Several private organizations, like the Sipping and Switching Society of NC (http://www.mindspring.com/~gugliotta/) pioneered standards before the NMRA, NTrack and others.

The typical norm for the first established standards was the oval, later in double track or even triple track. Point-to-point wasn't a more viable solution because many of the point-to-point runs were just as tedious as the round and round runs as electronic controls allowed the train to go back and forth forever, without the operator's assistance.

FIGURE 5: The On30 modules were assembled at the Mid Atlantic Narrow Gauge Group meet in Kimberton in May of 2009, for a private showing of the members. The modelers are critiquing the connection of the short, transition module, used to attach the older, conventional 2 X 4 modules to the new, lightweight, FreeMo style modules. There are no supports under the transition pieces; they are supported by the modules on either end. (Left is Nathan Kline, right David Michailof, organizer of the On30 Modules Mid Atlantic Group.)

FIGURE 6: Kevin Hunter's three-piece Wye module forms the center of the FreeMo train layout at the meet. This layout becomes a point to point to loop (or several other configurations) for multiple operational possibilities. Geren W. Mortison Jr. is on the right discussing the upcoming operations with unidentified bystanders.

FIGURE 7: This is one of Kevin Hunter's curved modules. Three modules make a half circle. It is designed with spiraling easements in the 26" radius curve so that when two are assembled back-to-back an "S" curve does not result. Even the longest steam engine can easily negotiate this curve. Photo by Kevin Hunter.

I built a sectional layout that became permanent simply because I couldn't move it easily. It weighed too much! Eventually, my experiments led me to rigid foam and Luan mahogany plywood. Things were getting better for me but too slowly. I gradually swore off carrying modules around for display. Too many weighty experiences, and not enough rigidity.

The first epiphany came from Doug Goodsell and his "Featherlite" concept of layout construction, later reinforced by Joel Bragdon of Bragdon Enterprise, (http://www.bragdonent.com) and his use of lightweight foam material.

I realized the key to the strength and rigidity of lightweight modules was the great thickness of the foam train board coupled with a well-engineered thin plywood frame.

I made a few modules to prove to myself that I had discovered the correct

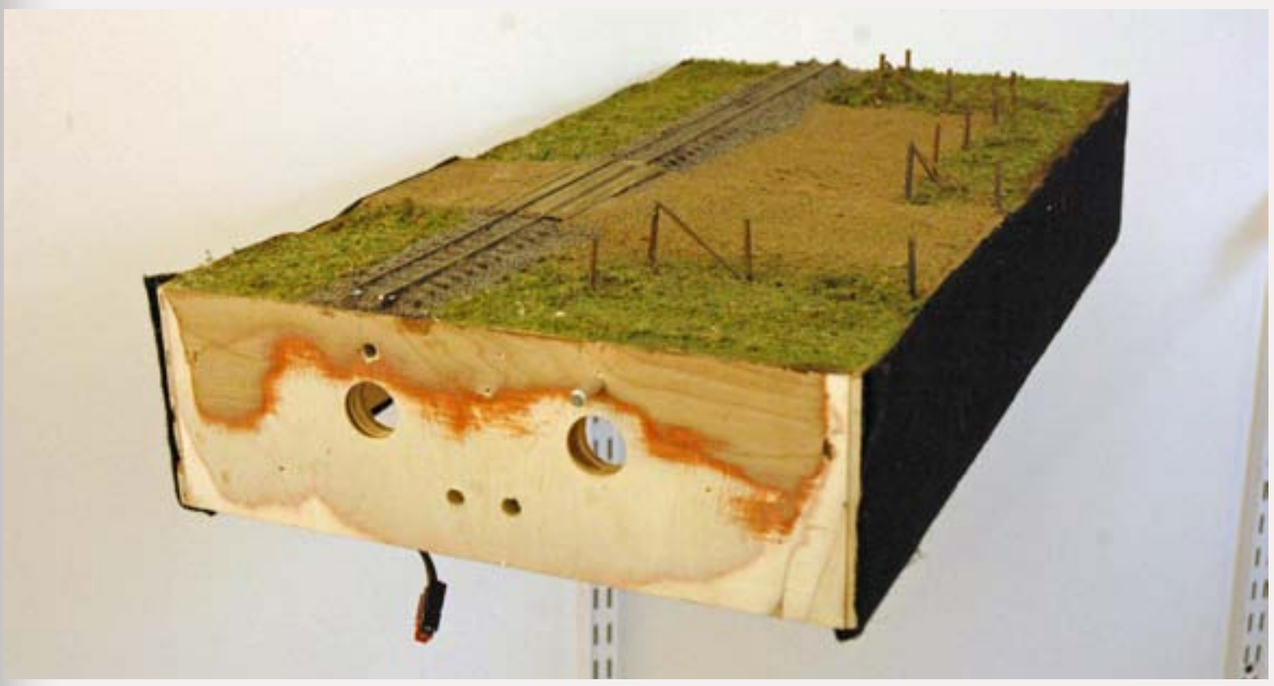

FIGURE 8: This view shows the pin system for connecting module to module. When you face a module, there is always a pin in the right-hand top hole. The lower holes are used for the machine bolts that positively lock the sections together. Spring clamps can also be used. The large holes were for the original pin system based on the Sipping and Switching Society of NC. Unfortunately, the large ¾" diameter holes were "overkill" for the smaller On30 modules and the friction of the pins pulled the ends off the modules when they were disassembled. The wires hanging down are the plugs that carry the main DCC bus power from module to module. Photo by Kevin Hunter.

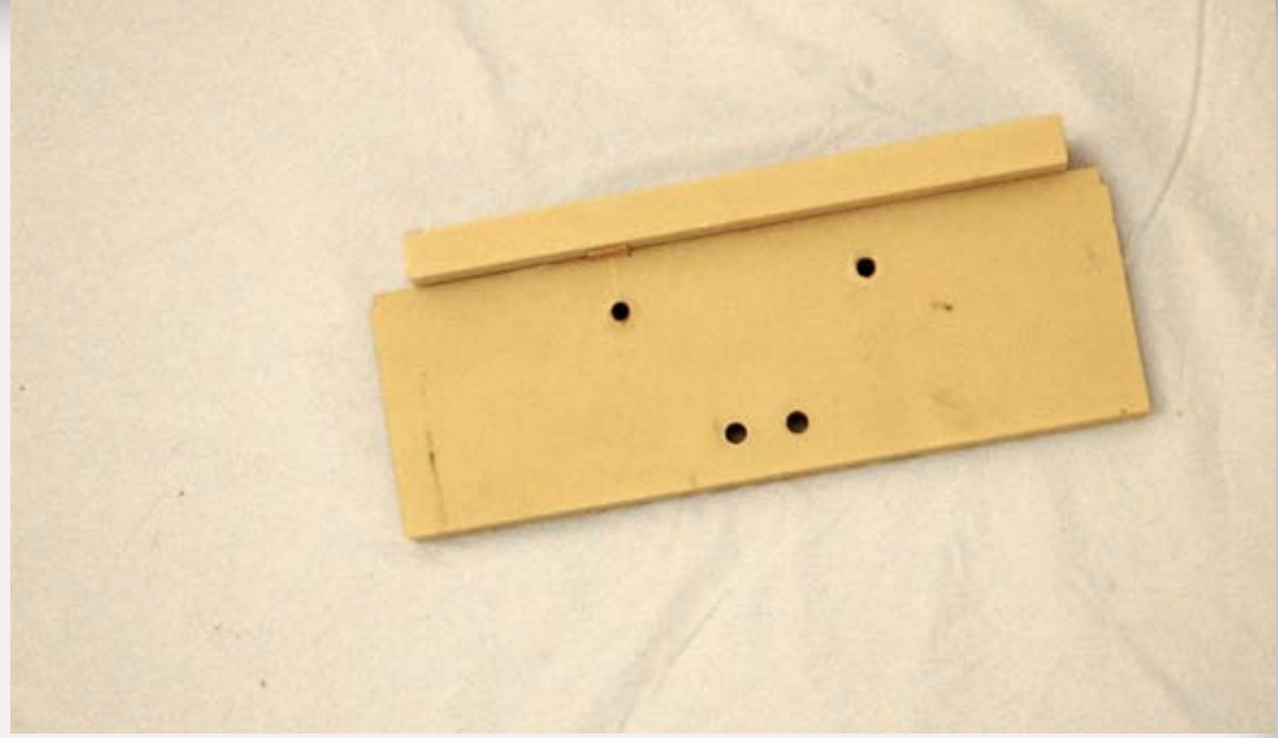

FIGURE 9: The template for drilling the holes for the pins and machine bolts is simple in design and made from MDF. Shims are used to fine-tune the template's accuracy. Very unsophisticated, but extremely accurate. Photo by Kevin Hunter.

combination of ultra lightweight and strong construction, and moved on to other things. I was burned out by transporting modules and all the other negative experiences.

(I know the last modules I experimented with were light, rigid, strong and worked because when I prepared my move all the way across the state of Pennsylvania in 1993, I chucked my modules out the third floor window rather than take them down three flights of stairs to the truck. The modules bounce-landed in the lawn, with no harm done. They ran well, too, when I got around to testing them 8 years later.)

Finally, there was the problem of designing a layout that was more than an oval for round and round operation. FreeMO changed two of the paradigms: connecting modules and allowing unlimited design possibilities. (http://www.free-mo.org/)

The old constraints were gone and form followed function for almost the first time. The, now world famous, Sipping and Switching Society of NC showed what could be done under the old aegis and the new one too.

Today we accept the freeform design without batting an eye. The S&SS of NC introduced the pin and template concept for building module ends that were self aligning, allowing the modules to mate from any module to any other module without using bridge tracks or even rail joiners.

The time needed to accurately connect modules went from hours to minutes and track plans could be as intricate as needed. Without stronger, lighter building materials, the FreeMo design probably would not have developed as efficiently as it did.

The last epiphany came when I saw Kevin Hunter setting up his On30 modules at a train show in Timonium Maryland. The modules, which were his professional product: Berrett Hill Trains, were lightweight and rigid, used machine screws and alignment pins for quick and easy connection for perfect track alignment.

Additionally, Kevin had cleverly solved the leveling problem of the individual modules, the last drawback to creating an extraordinary module layout, by using photographer's light stands. He had an easy, one-handed method of leveling the module with the light stand.

FIGURE 10: Kevin uses simple scenery for the display modules, designed to take a beating in transit and still look good when set up. The figures are RTR painted ones of unknown manufacture, easy to replace if damaged or missing. The rolling stock is Bachman RTR with minimal detailing and weathering, designed to travel well and be handled by spectators who compulsively like to "touch" the trains at shows.

FIGURE 11: Green plywood endplates are used to hold two modules face to face for transportation. You can see the pins in their respective holes and the machine bolts holding everything together. This helps to avoid undue wear and tear on the modules viewing surface during the many hours spent in transit. No problems have been encountered with the loose electrical connectors during travel. These modules can be stacked like cordwood in a trailer or truck bed with little fear of damage. They are rugged, light and simple. Photo by Kevin Hunter.

This was the first time I had seen a modular layout go together rapidly, with great ease and accuracy and needing few workers.

Kevin uses photo light stands with a thin, flat, amoeba or clover shaped plywood top on which to place the module. The light stands are easy to adjust up or down and one can quickly level the modules, even with one hand. Altogether a magnificent bit of engineering.

These Berrett Hill Train modules were loosely based on the FreeMo concept to allow unlimited design possibilities. The ends of the modules were template engineered to accurately and quickly attach to any other module in any configuration.

Kevin built a three-sided "wye" module incorporated into the On30 train layout at Timonium that created a three legged point-to-point and loop operation. Couple this with the multiple

train control capabilities offered by DCC, and the operational choices are legion.

Kevin has integrated a new dimension to his modules: sound. The addition of quality on-board sound has changed the parameters of what running trains at shows is all about.

In the days of silent operations, modules had to have a bigger scenic setting because the total scene was about "eye candy."

In this new sound era, sound, motion and scene combine to create a gestalt (think animated "puppet" show) causing modules to be more like stage sets in their nature than extensive scale models. This, more than anything, is the primary influence on the way Kevin sees his modules, and the reason the viewers are satisfied with such a lean look to his module scenery.

More of Kevin's module details, modeling information and philosophy are available at his web site www.berretthill.com.

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