

# The State of O Scale

2-rail?

3RS? 3-rail?

P48? 1/4" AAR?

What does it all mean?

Michael L. Cougill

# The state of O Scale

While it was the most popular scale in model railroading over a half century ago, today O Scale can look confused and fragmented to the uninitiated. With the growing influence from the 3-rail community and the lack of a coherent vision for the scale, it's no wonder that many contemporary modelers considering a switch from another scale find things confusing and even archaic by the standards of other scales.

As a modeler considering this scale, you need to understand the driving forces behind it. As with the other scales, there are trade-offs that have to be considered based on your objectives, and being informed leads to better choices.

## **One scale, three standards, totally different mindsets.**

Currently, there are three distinct specifications for standard gauge track and wheels in O Scale. The most commonly known 2-rail standard is the oversized 1-1/4" gauge that was adopted as a compromise when the scale migrated to the United States from England in the early part of the twentieth century. Exactly why this occurred has been the subject of much debate. Now, some eighty years removed, the debate is essentially pointless. Suffice it to say that this compromised standard took hold, was codified by the NMRA and became dominant despite numerous attempts –some comical, some not- to correct the problems to accurate scale modeling that it creates.

# 3-rail.

Another variant is the three-rail version that uses the same track gauge. Essentially an outgrowth of toy trains, models designed to run on 3-rail track have even greater compromises that allow them to negotiate the standard train-set tight curves. Within this community there are different camps and approaches. There are those who pursue the nostalgia/toy train/collector approach, while others use the same or similar quality models but pursue more realistic looking layouts, a practice known as hi-rail. A recent development is the "3-rail scale" movement or 3RS, which seeks track and

wheels having a more scale appearance, although keeping the center third rail for power pick-up. More on this later.

Three-rail modelers also tend to use a different vocabulary. For example, curve radius. Where 2-rail modelers express curvature in terms of radius, 3-rail modelers use the diameter of the circle to define the size of their curves. Our convention of saying a curve has a 36" radius would be expressed as an O72 curve in the 3-rail community. Additionally, many 3-railers are focused on aspects most 2-rail modelers would consider toy-like, such as animated features or the nostalgia factor, although even here there are different degrees of approach to the modeling.

Many following this path are fine craftsmen capable of building highly realistic layouts. The curious thing is the dedication to using that center rail for power pick up. No matter how realistic the rest of the layout may be, that middle rail is hard to ignore or disguise.

It doesn't take long to see that the world of 3-rail is very different in many ways. It is also probably safe to say that 3-rail currently represents the greater market share of standard gauge modeling in O Scale.

# P48

Also called finescale or Proto: 48, P48, etc. this movement was started in the 1950s by handful of members at a West coast club who were modeling narrow gauge and wanted to have working dual-gauge turnouts. At the time there was no real defined set of common wheel standards. Narrow gauge modelers were already using an accurately dimensioned wheel standard, while standard gauge wheels of the day were oversized and quite coarse, making the two wheel profiles incompatible. The main issue was designing turnout flangeways that would allow both sets of wheels to track reliably. Because of the functional incompatibility between the two, nothing

worked, so this group developed a new standard gauge wheel profile based on actual prototype dimensions.

Initially known as 1/4" AAR, the new prototype based wheel specifications allowed dual gauge turnouts to be built that both standard and narrow gauge wheels would reliably track through.

To say this created a controversy is an understatement.

To say this new development created a controversy would be an understatement. Problems soon arose, since the new prototype based wheels were much finer in profile and cross section and would not track through the existing turnouts of the club layout

that were built to the coarser NMRA standards. Club members using their conventional standard gauge equipment soon discovered it wouldn't work on track laid to the finer, more accurate specs. A big debate over the new standards ensued which resulted in the narrow gauge modelers leaving the club to pursue their own interests. To this day, some fifty years later, hard feelings are still held by many older, traditional modelers toward those using finescale standards, but this is a moot point now.

Since the pioneers who developed the new profile knew it would work well, and since it was incompatible with the existing turnout dimensions of the day, why not go all the way and create an accurate system throughout, one that

also corrects the wide track gauge and uses the correct flangeway dimensions for frogs and guardrails? That's exactly what they did.

Known as P48 today, the practice utilizes scale wheels that accurately reproduce in 1/4" scale, the dimensions and profile of the prototype. When compared side-by-side, the differences in scale appearance and prototype fidelity are obvious. For most P48 modelers, the concept of a "good enough" level of detail is the starting point to their modeling, not the end. P48 is a natural choice among those for whom the emphasis on accurate modeling plays a greater role.

# Not much has changed

When O scale dominated the hobby market many decades ago, it was very different. Commercial products simply didn't exist in the numbers and quality taken for granted today. To have a completely scenicked and operating layout was a goal only a handful of modelers achieved, simply because of the sheer volume of work involved in building much of it from scratch or crude kits. When you understand this, it's obvious how the blacksmith image and stereotype that surrounds O Scale came into being.

In that era it was an activity centered on building things, and craftsmanship was the admission price for getting in the hobby.

While technology has advanced, progress in O Scale has lagged due to the much smaller segment of the hobby market it represents. The divided nature of the scale severely hinders any cohesive developments due to the fact that the three standards are not compatible or interchangeable. Furthermore, modelers in the different disciplines have

widely varying tastes with regard to what they consider important in a model. This makes product development choices hard for any manufacturer. While 2-rail five-foot gauge cars will run on 3-rail track (mostly), the opposite is not true because of the coarse flanges and the lack of insulation across the wheels due to the differences in electrical pick-up between 2-rail and three; and then you get into the totally inadequate 3-rail carbody bolster design that allows for much wider truck swings to navigate the train-set curve radii.

To convert 2-rail equipment to P48 also requires some occasional head scratching. Most freight cars are fairly easy to convert with a simple exchange of trucks or wheelsets. Locomotives, especially steam, typically involve a significant rebuilding of the chassis regardless of what standard they were made to originally. Diesels are often a simple drop-in new wheels conversion, though if you're looking to convert a 3-rail model into one suitable for P48, you will have your work cut out for you.

# Legacy thinking and a trend

Coming to this scale from one with a unified set of standards like HO or N, the situation looks archaic in lots of ways. A question many wonder about is why this fragmented situation still exists after so many years? The answer, simply put, is legacy thinking.

I define legacy thinking as the mentality that says it's easier to keep doing what you've always done rather than try something new, even if the new option is an obvious improvement over the status quo. There is a ton of 1-1/4" equipment out there and will be for a very long time. Modelers find it hard to justify scrapping many decades worth of loco and rolling stock acquisitions, not to mention the typically large layouts built to this gauge, and start over from scratch at a late stage in life. The more stuff you acquire, the more it exerts a pressure to maintain the status quo, which in turn leads to legacy thinking.

## A linear trend

If you look at the broad sweep of the hobby as a whole over the last fifty-plus years, one trend stands out: The models have gotten more realistic. Place a commercial model from 50 years ago next to a state-of-the-art model from today and there is no comparison. What we accepted as state-of-the-art back then is a far cry from what we accept today. It doesn't stop with the models either. Our layouts have gotten much better in quality too. Scenery, control systems and overall reliability have dramatically improved across the board. Yet in spite of this consistent linear trend over the years, O Scale lags behind the rest of the hobby because of the tripartite nature of the scale and the legacy thinking produced by it. Consider the following.

Traditional 3-rail wheels and track is grossly over scale in appearance. The wheel treads are very wide and the flanges are just massive and crude. As mentioned earlier, there is a movement in the 3-rail community known as 3-rail scale (3RS) that is seeking a finer, more scale appearance for the wheels and track. Everything they are seeking already exists in 2-rail, yet the weight of that third rail legacy and all the equipment designed to utilize it essentially prevents many from seeing the obvious and converting to 2-rail. Therefore this debate

over more faithful, prototypical looking wheels that will be compatible with existing track and layouts comes and goes in the 3-rail community and little is apt to change as a result. Manufacturers won't know how to proceed until a clear consensus emerges, which is unlikely. The same situation exists between 1-1/4" gauge and the growing P48 movement. I've lost track of the number of times someone has told me they would convert to P48 if they didn't have all this other stuff.

The five-foot gauge standard creates a number of design problems for manufacturers, especially for steam engines. The extra width pushes the drive wheels and their counterweights out on each side and this has an affect on everything else such as valve gear, drive rods and the cylinder block. It gets worse when a manufacturer markets two and 3-rail versions of the same product. Due to the gross flange profile of 3-rail wheels, the driver diameter and the driver wheelbase usually have to be altered or the whole locomotive is thrown out of proportion. It can (and usually does) turn into a mess, all because of legacy thinking that seeks to preserve the status quo.

P48, on the other hand, skips these issues entirely because it is a cohesive system of standards, developing from the start as a vision of 1/4" scale modeling from

the perspective of being as faithful to the prototype as possible rather than to arbitrary manufacturing standards. P48 starts with a clean slate by applying scale dimensions consistently throughout the model. It's a no-brainer choice to my way of thinking.

## Getting started

Because ¼" scale represents a small segment of the overall hobby market, many hobby shops do not carry any inventory unless there is a strong presence of modelers working in the scale. Additionally, the larger number of 3-rail modelers shows up in the fact that when a shop does carry any inventory, it is likely to be in the form of Lionel, MTH or Weaver products geared to this market.

The scale also lacks a strong visible presence in the popular magazines, although there are publications dedicated to both two and 3-rail modeling interests. For those interested in scale modeling, one has to search diligently for sources of products and information. Subscribing to a publication like *O Scale Trains Magazine* will give a sense of where the scale is at and what's available.

There are few major manufacturers in the

scale and, as mentioned, most are serving the 3-rail market. The vast majority of products for 2-rail and P48 are produced by smaller firms, which are often just one or two person operations. Service levels and quality are all over the map, with some having an Internet presence and e-commerce capabilities, while others do not. Also, many products come and go quite quickly since they are often made in very limited quantities. Admittedly, finding a desired product can be very frustrating at times. There is a good selection of products available, but there is also a lot of legacy equipment that is not up to current standards. A modeler really does need to do their homework and consider hobby objectives carefully before taking the plunge.

It isn't as gloomy and hopeless as it sounds though. Good sources of information are available and once you get plugged into the community, finding things becomes easier.

Quarter-inch scale does have much to offer to the modeler determined to overcome the obstacles to entry in the scale. As with many things, a strong desire and a willingness to pursue a specific vision of the hobby makes the goal of modeling in ¼" scale possible.

## **Publications 2-rail:**

### ***O Scale Trains Magazine***

Covers 2-rail modeling subjects in NMRA gauge, P48 and On30 narrow gauge.

Online at:

<http://www.oscalemag.com/>

### **P48 Yahoo Group**

[http://groups.yahoo.com/group/p48\\_modeler/](http://groups.yahoo.com/group/p48_modeler/)

A discussion group covering all aspects of P48 modeling. Membership is free and is required to access all the resources of the group.

### ***Proto 48 Modeler***

<http://www.proto48.org/>

An online e-zine that is a good source of basic information and suppliers for P48.

This work is published by Michael L.Cougill under a Creative Commons License.