



ModelingBlast

60 + Modeling Tips in One Hour

Mick Moignard


*With acknowledgements to my friends in the IBM Notes
community for hijacking their title...*

Who me?

- D&RGW & RGS in HOn3 since 1978
- UK prototypes, OO & OO9 before that
- DCC user since 2000
 - Sound since 2005
- Clinic and Course presenter since 1997
- Small business in DCC & sound installs
 - Plus almost anything else that comes my way – weathering, remotoring....
- NMRA AP Certs: Cars, Author, Volunteer.

What this?

- Modeling tips worked out over the years
 - or borrowed from friends
- Roughly grouped together
- I find them useful
- YMMV



Slides at
www.mickmoignard.com

Lesson 1: Rule 1

- **It's my train set!**
- try to make only new mistakes, rather than repeating old ones (Koester)
- Learn from others, regardless of scale, prototype, era, or anything else
- It's a hobby: try to enjoy it as such.

Rule 2: demo-itis

- The larger the audience, or the more important they are, the more likely it is for your demo to fail
 - Applies just as much to layouts as to clinics
- Corollary:
 - Things are most likely to break just as the LHS/Home Depot/B&Q/Screwfix closes for the day/weekend/public holiday



Layout Building

3 Essential Tools

- Electric Screwdriver
- Cordless drill
 - luxury: one for each drill size!
 - if you use Chipboard screws, you only need drill the clearance holes
- Xuron rail nippers
 - Always buy two and keep one spare
 - Because someone* will one day cut hard wire with them
 - Or they break (see rule 2)

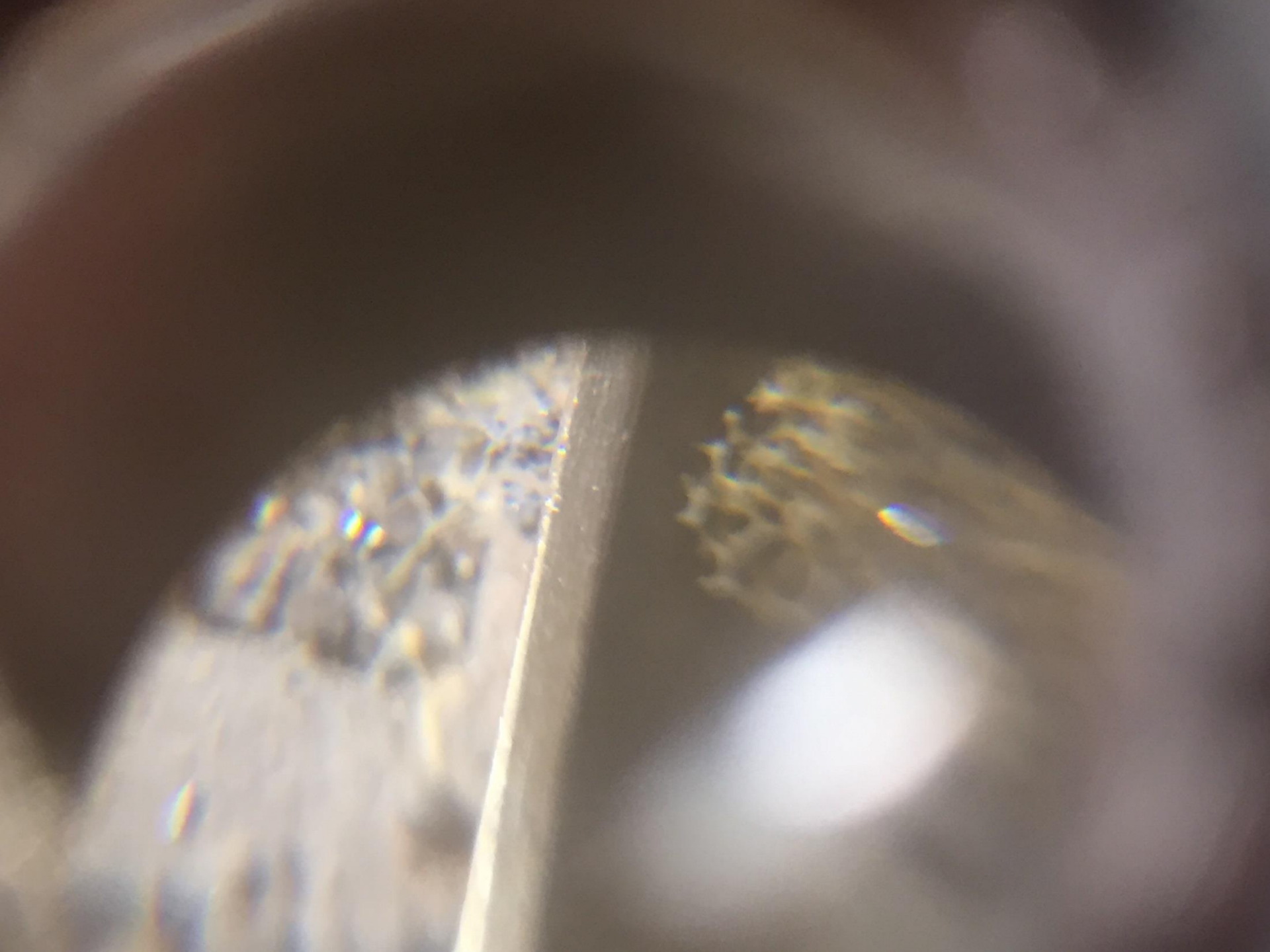
* you?

Test your track – Again and Again and Again

- An unreliable layout is just eye-candy
 - And you'll always hate it
- Get a Loco (2-6-4 tank loco) and 3-4 cars
 - Check wheel gauge and couplers first
- **Push** at medium speed, all over the layout
- Don't stop doing this until they stay on the rails, at all times
- Then increase the speed and the train length!
- In the future, anything that derails is probably the vehicle, not the track.

Track doesn't really get dirty, only dusty

- N/S doesn't oxidise much,
 - And the oxide is conductive
- Dust falls on the rails
 - and gets ground in by the trains
- Run trains often!
 - Or just remove the dust
- Avoid liquid cleaners that stay on the rails
 - They just make the dust stick to the rails
 - Which the trains churn into sludge
- Avoid anything that scratches the rails: scratches hold ground-in dirt!
 - Yep, really!
 - Would you clean your car with a Peco Trackrubber?



Try a Track Cleaning Stick

- Cheaper than buying one
- Gets to places that other cleaners can't
- Balsa wood one side
- Peco rubber t'other
 - But avoid using the rubber unless you really have to!



Ballasting Track

- Fine ballast
 - Woodland Scenics works for me
 - Avoids the “green tinge”
- Spread evenly
 - Lots of different spreading methods
- Tap!
 - With brush handle, on rails
 - Clears grains from ties and rails
 - Glue, and tap again!
 - Helps the glue penetrate



General Modeling

Wash your hands frequently

- Especially after working with lead or solder
- Clean hands make for clean models

Gluing Ez-Line

- Don't use ACC, it makes it go wrinkly and wiggly
- Try:
 - White glue
 - Pressure sensitive glue

Don't install lead with White Glue

- Over time, reaction forms lead acetate
- Which swells and breaks the model up from the inside
 - After some years
- Use instead:
 - Contact adhesive (EvoStik, Goo)
 - ACC
 - Double-sided tape

Buy in Bulk

- Scalpel/modelling knife blades
 - Buy from an art shop or tool supplier
 - Avoid model shops! Expensive!
- Drills
 - See Rule 2
- Sugar Cube Speakers
 - We'll come back to this later

Drilling small holes

- Use a piece of masking tape with pencil dot to center the drill
 - Stops it wandering
 - May be easier than making a center-punch mark
- Place small cube of eraser on drill bit
 - Prevents pinvise jaws crushing detail when the drill breaks through

Locomotive Static Rollers

- Great way to find binds in mechanisms
 - Use mirror to see what's going on the other side
 - Run in DC locos
- Great for DCC Programming
 - on the Main, without an actual layout.

Paint Chips on Brass Loco Wheels?

- File rebates on rear of coupling rods
 - Leave a boss at the crankpins
- Smooth off and polish rear edges



Take Photos of Models

- Camera or iPad is fine
- Reveals issues that you might not spot by eye
 - Great progress marker
- Dismantling sequences
- Useful reference for later
 - How the heck did I do that.....
- And may help towards AP Author!

Smartphone Camera?



Save eggcrates and pate dishes

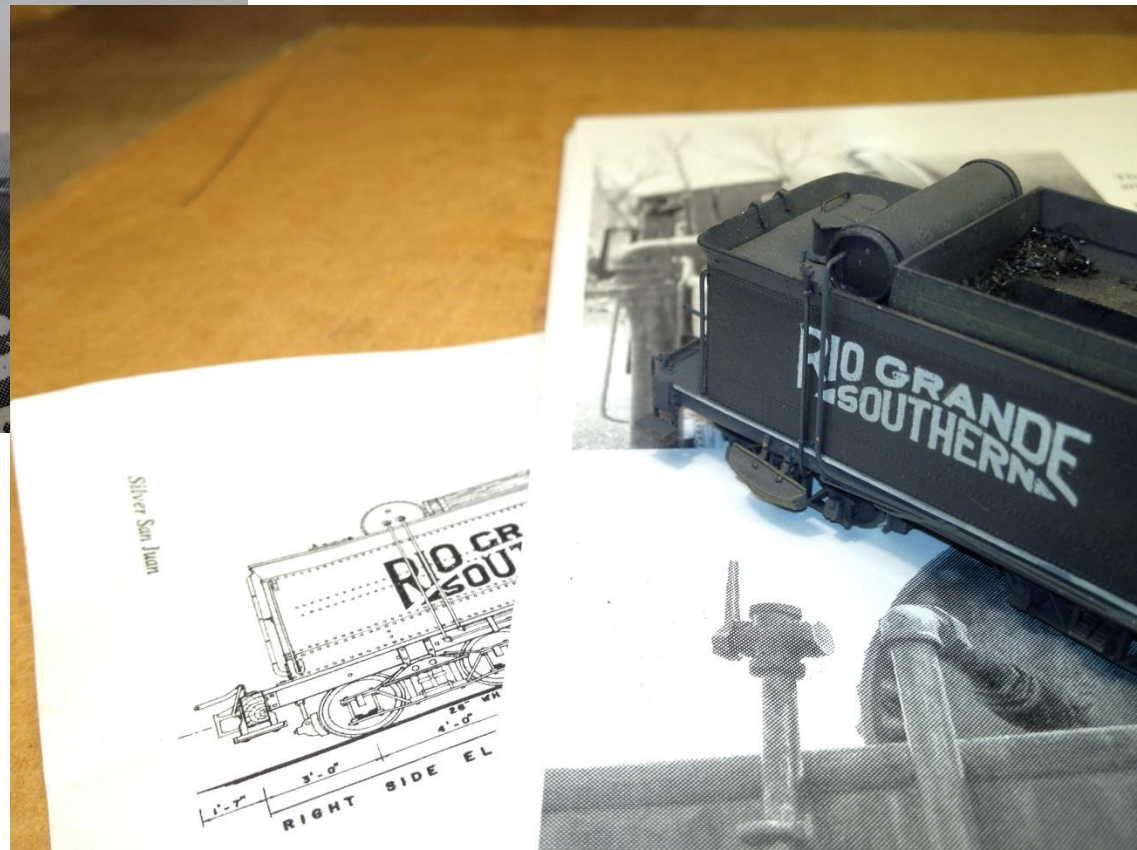
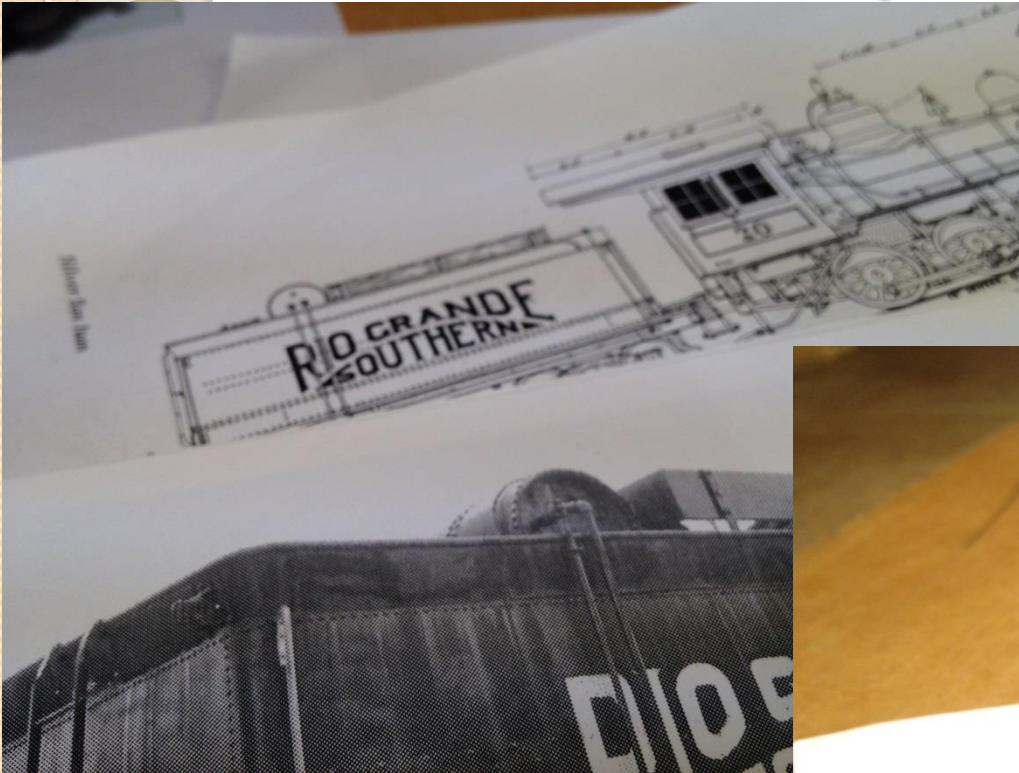
- When dismantling anything, place small parts in a bowl
 - Especially screws
- Keep stuff together
- Prevents loss of parts



Stare long and often at photos

- Only photos show the prototype
- Drawings are useful, essential
- But
 - Don't tell the whole story
 - May well be inaccurate or even wishful thinking
 - The draftsman may also not have understood the photos you're looking at.

Don't trust plans on their own!



Photos: QuickPics
RGS 20

Have a small Vacuum cleaner handy

- Install charger above workstation
- keep it charged up
- No more dusty models after filing and sanding operations

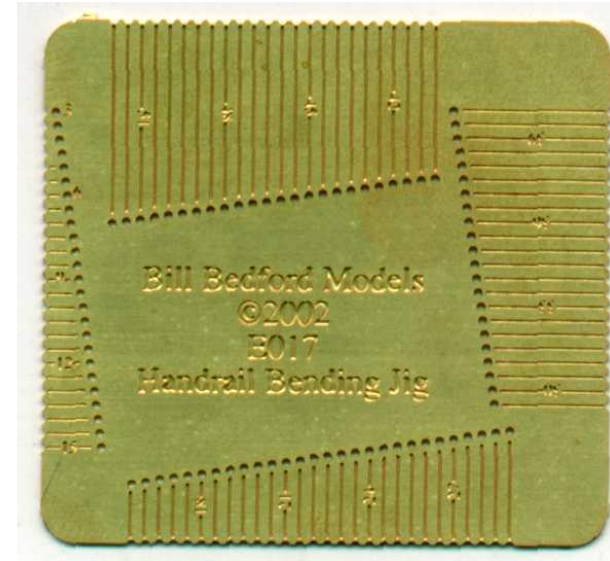


Get a Hand Mirror

- Great aid to tracklaying
 - Eye down the track from different angles
- Tracing derailments
 - when the model derails away from you
- Check different views of a model
 - Be amazed what you see in a mirror!

Instant Grab Iron bender

- Serrated jaw pliers
- Bill Bedford bending jig
 - From Eileens Emporium in the UK
- Make grabs from 10-thou wire (HO)
 - Don't forget to allow for thickness of paint film



Instant partholder idea



Keep a set of files just for Plastic

- Free of metal or solder contamination
 - Avoid scratches on plastic surfaces
- Will stay sharp almost for ever
- Easy to keep clean
- Can be relatively cheap files
- Label carefully



Foolproof glazing install

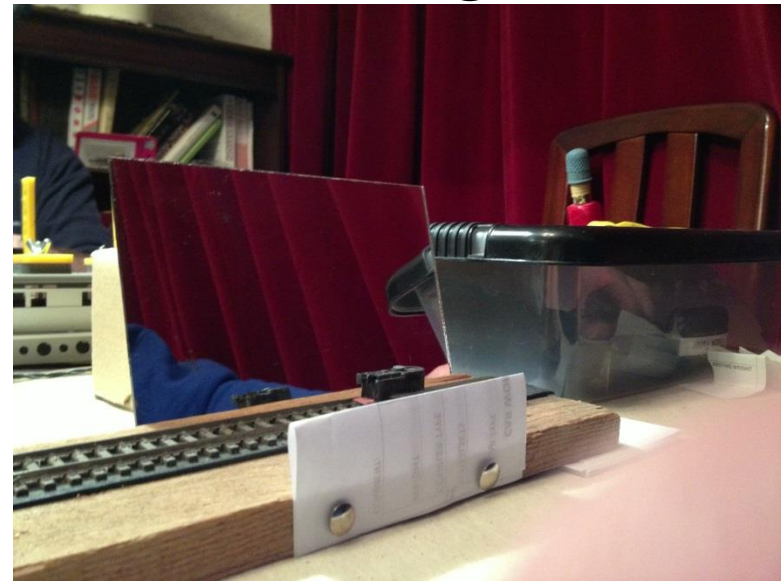
- Micro-Mark Liquid PSA
 - Pressure Sensitive Adhesive
- Small blobs with cocktail stick top/bottom or side to side
 - Or both
 - Wait until dry: important!
- Cut glazing to overlap
- Press in place – don't move sideways

Double-sided tape

- Hold wires in place
- Attach speakers
- Layered siding for walls
 - Better than solvent between the layers
- Attach roofing material to subroof
- Installing weight in models
- Track-laying!
 - Foam stuff useful here.

Checking Coupler Heights Easily

- Tilted mirror behind work track
 - Paper in front
- Avoids stooping/crouching/dropping the model
- Shows couplers against white background



Tip from Bob Perrat

Square bottle for Solvents

- Too easy to knock over solvent bottles
- Too hard to make up a wood holding block
- So: save old Humbrol square bottles and refill them.



Baking Soda as gap filler

- Structures especially
- Fill gap with baking soda
 - sodium bicarb works well too
- Add small drop of runny ACC

Baking Soda for Mortar

- Rub baking soda into brickwork
 - Helps to paint it first with matt paints
- **Spray** with Dullcote or equivalent to fix.
- Actually works with almost any fine powder
 - Talc is a bit too fine, though.

Baking Soda Blasting

- Actually Soda for blasting is a bit different
- But supermarket Baking Soda works well
- Less aggressive than Aluminium Oxide
- Way, way, way cheaper!

Computers in Modelling

- The Internet as a research tool
- CAD:
 - 3d printing
 - Can even make a mesh from iPhone movies!
 - Laser cutting
 - Not only model parts: track sweeps, speaker boxes, layout labels.....
- Make your own decals
 - Ink or laser printer
- Model parts from photos
 - Wallpaper, floor coverings, pictures, even whole model surfaces.



Soldering

Buy a **big** soldering iron

- Big in wattage: 50watts minimum
 - Temperature control is valuable extra
- Why?
 - Brass is 50%(ish) Copper
 - Copper is the second best conductor of heat
 - Small irons require you to heat up the whole model to make a joint
 - Big ones heat the joint fast
- Get in there hot and fast, and get out again

Solder Paste for etched kits

- And for scratchbuilding in metal
- Buy in bulk @ plumbers merchant
 - Cheap: 1lb may well cost < £20.
 - Nealetin is what I currently use
 - Qualitex 818 is also useful: electronic stuff
- Self-fluxing: no need for extra flux
- Almost impossible to apply too much
 - No fillets, no mess all over the model.
- Strong, quick
- Wash up model with hot water after each session
- No lasting impact on paint

Use electrical solder for wiring

- Fluxes for structural soldering will damage wiring in the end
- Always use Rosin cored solder
- No need for extra flux
 - NEVER use Tix or any other structural soldering flux
 - Or solder paste!
- If it doesn't work, either
 - Not hot enough
 - Not clean.

Get an RSU?

- Invaluable for reattaching bits that fall off brass locos
 - Which they do, often!
- Gets the heat in even faster than 50W iron
 - Even less chance of bits falling off
- Works great with solder paint too
- If you take the plunge, take care to learn how to use it properly
 - It can do quite a lot of damage quite quickly!



Painting and Finishing Models

Removing Tampon Pad Printing

- Model/Manufacturer dependant
 - Some come off with enamel thinners
 - Some with Isopropyl Alcohol
 - Some with denatured alcohol (meths)
 - Some with nothing at all!
- Dampen a Q-tip
- Rub, with moderate pressure
- Be careful not to rub off the base paint!

Masking headlights for weathering

- Use a hole punch on masking tape
 - Pick the piece off the die with tip of scalpel.
 - Apply to headlight
- Also:
 - Use Compass Cutters to make windshield wiper masks for diesels and road vehicles
- Use a laser cutter to make headlight lenses.

Quick masking of Windows

- Cut 4 squares of tape, each smaller than the window
- Place one in each corner.
- Check from inside
- Spray

Avoid car spray paint

- Propane often used for propellant,
 - Expectation of outdoors use
 - **Significant Explosion risk!**



- Pigment particles too large for models
 - Designed to fill small surface blemishes

Buy a Compressor

- In the long run, it's a lot cheaper than aerosol cans of propellant
- Will encourage you to use your airbrush more
- And it's more practical than either cans or stored compressed gas - car tyres, bottles, etc
 - Because it can't run out!
- Do fit a water trap and pressure gauge

If you must use Propellant cans

- Buy two at all times
 - Also remember Rule 2!
- Keep in a bucket of warm water when in use
 - Reduces the issue of pressure loss as it cools
- Swap over cans frequently to minimise pressure loss as it cools

Buy a Spray booth

- Beats doing it outdoors in the cold
- Beats breathing paint fumes and **killing yourself**
- Vent to outside if you can
- Cheap foldups available...
 - ModelExpo (no relationship)
 - There are others



InterDental brushes

- Great airbrush cleaning tool
 - Can't get pipecleaners in the UK



Painting Wheels the Easy Way

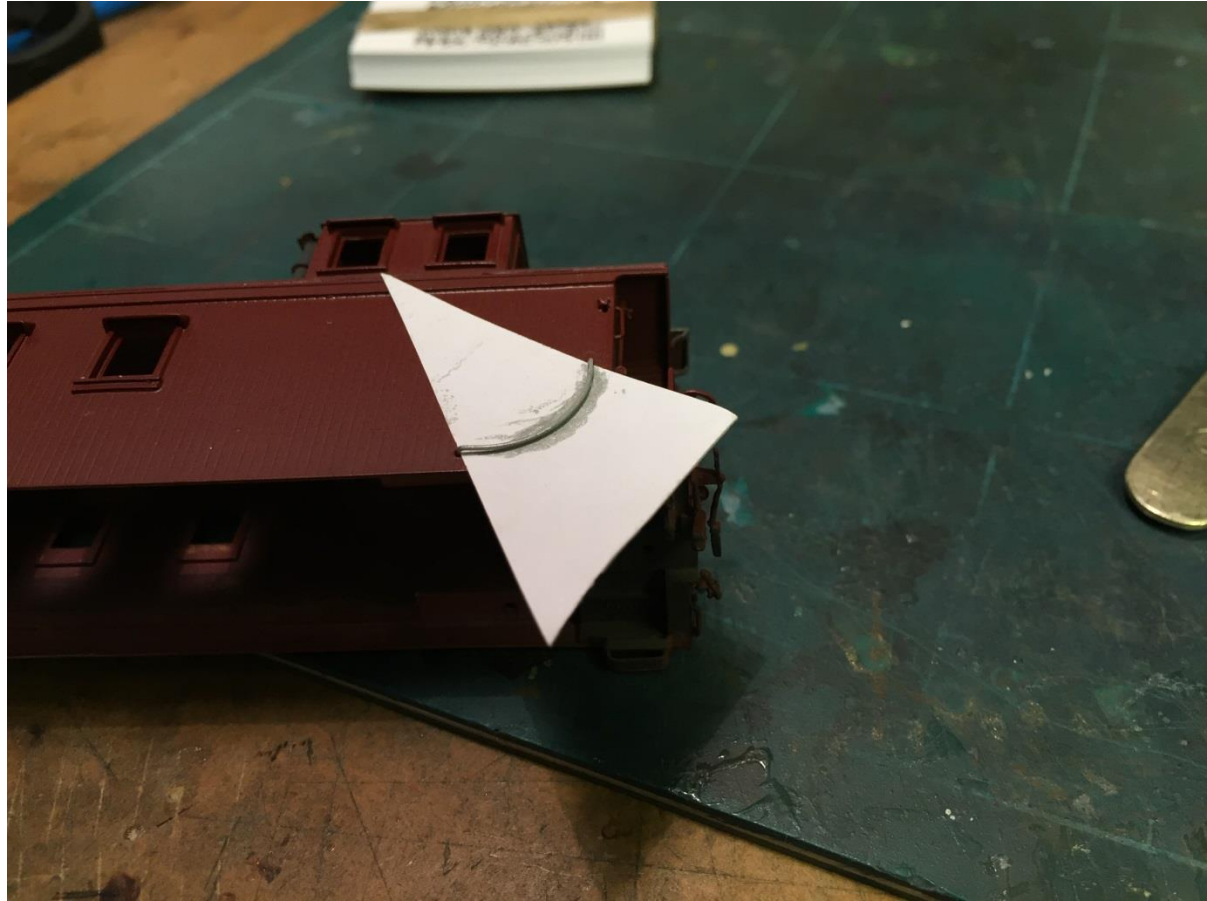
- Hold in tweezers by the axle centre
- Paint the wheel face-on
 - Grey/black
 - Light spray of rust (or heavier for new wheels)
- Use a piece of stripwood pressed against axle end to clean pinpoint
 - Press against axle end & rotate
 - Don't press so hard it splits.
- Reassemble truck & run up and down a piece of track to clean the treads

Drying Paint Fast

- Fan oven
 - **Must** be a fan oven
- 100 C
 - Dries enamel rock-hard in 20 minutes, ready for second coat
- 75 C is OK for most plastic
 - YMMV here of course
- Beware
 - cerrobend,
 - whitemetal,
 - low-melting point solder!

Painting Grab Irons

- Cut triangle of paper
- Push under grabiron
- Paint!



Decals - If all else fails

- Wick styrene cement under the decal with a small brush
 - Check first that the paint will be OK!
- **Do Not:**
 - Brush over the decal
 - Touch it while it dries/sets
- Just touch the brush-tip to the decal edge and let capillary action do the rest.

Artists pastels

- Cheaper than model weathering powders
 - But may not contain “adhesive”
- Huge range of colours
- Scrape with modelling knife
- Apply with brush
- Set with matt spray varnish
 - Which will reduce colour intensity, too

“Running” Lettering

- Trace over decal with white pastel
- Drag downwards with soft brush





Use an Onion to absorb paint smells

- Peel and quarter
- Place near paint
- Wait
- And don't eat it afterwards!!

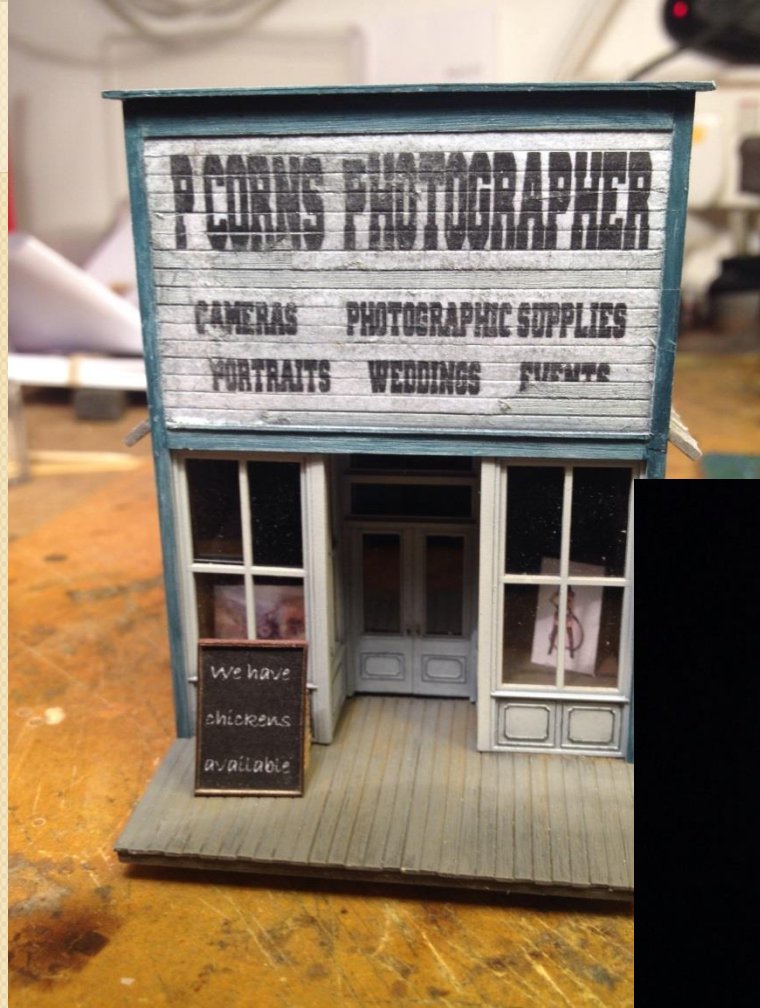
Thanks to Mark Kasproicz for this tip.

Paint structures black first

- Old theatre set trick
- Works best for Plastic and Resin
- Use airbrush to apply just enough black
- Then apply final colours
 - Drybrush or airbrush
- Helps keep paint layer thin
 - Avoid obscuring surface detail
- Also works on rolling stock!

Pictures on the wall of structures

- Photo pics on your own wall
 - Phone camera is fine
- Browse the web for pictures
 - Download them
- Insert photos into a Word doc
 - Reduce to taste – need to be quite small
- Print, cut out and stick to wall
 - May already include frames!





DCC & Sound Installs

Finding Space inside Models

- How do you know that speaker or decoder will fit?
 - Use a chunk of Blu-Tak
 - Place on chassis
 - Install Body, press down
 - Remove body
 - Inspect squashed Blu-Tak for size
- Repeat as required

Conductive epoxy made easy

- Just add brass filings to regular epoxy before you mix
 - Not much required
- Great for installing GME chuff cams
 - Smear a little inside the cam
 - Press on to axle
 - Turn to line up with crankpins
 - Add the filler piece with a little more epoxy
 - Test with a meter when hard.

Wires the right way round?

- Simple check on program track
- Read address
- Wheels should turn “Forward”
 - Exceptions: ESU Loksound, some Zimo
- Model will then run correctly on DC
- Correct connections:
 - Red to right rail
 - Orange to motor connector that was connected to right rail for DC

Use LEDs rather than bulbs

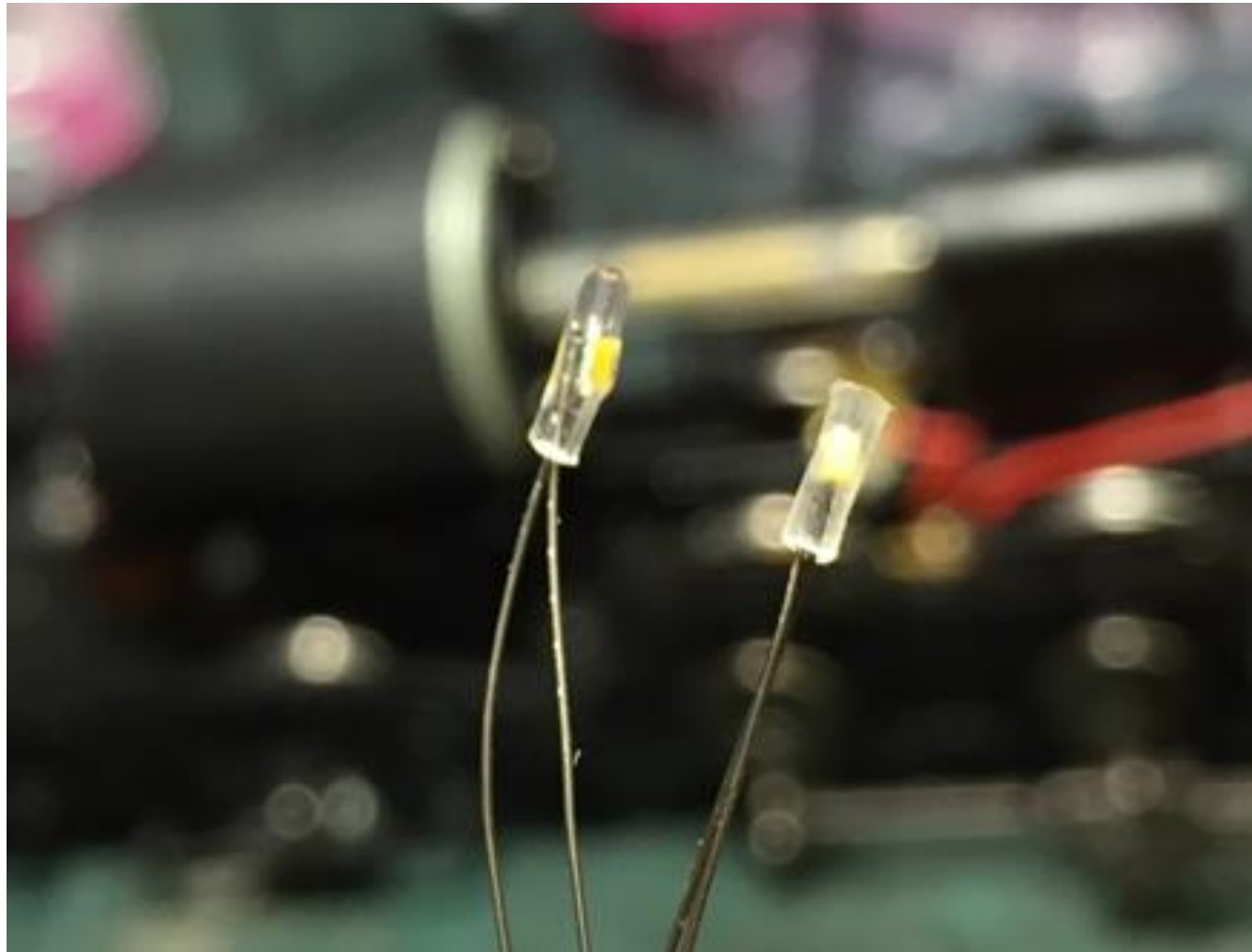
- Lower current draw
- No heat output
- Far longer life
- Smaller
 - Ever seen an 0401?
- Less sensitive to resistor values
- Properly resistored, are impervious to track voltage

LEDs

- Buy in bulk
 - Way cheaper
- I use LEDBaron on eBay
- Huge range
 - ready wired SMD, down to 0401!
 - Dunk in Superglue to insulate before installing
- Also sells fine wire in NMRA DCC decoder colours.

LED replacement for 1.5v microbulbs:

- 0603 wired LED inside clear 1.2mm HeatShrink tube



What size resistor for LEDS

- LEDs need between 2.7 and 3.5V to fire
 - Some 3mm LEDS are 12V ready
- Most model LED lights are way too bright
 - I use 9000 ohm (9k) for Diesel lights
 - 15000 (15k) for Steam
 - 50K for marker lights, etc.

What colour LEDs?

- Avoid pure white
 - unrealistic blue tinge
- Sunny white good for modern lights
 - Sealed beam, halogens for Diesels
- Golden white for Steam
- Use appropriate resistors
- You can always paint them with yellowish paint.
 - Do that while they're lit!

Soldering leads to SMD LEDs

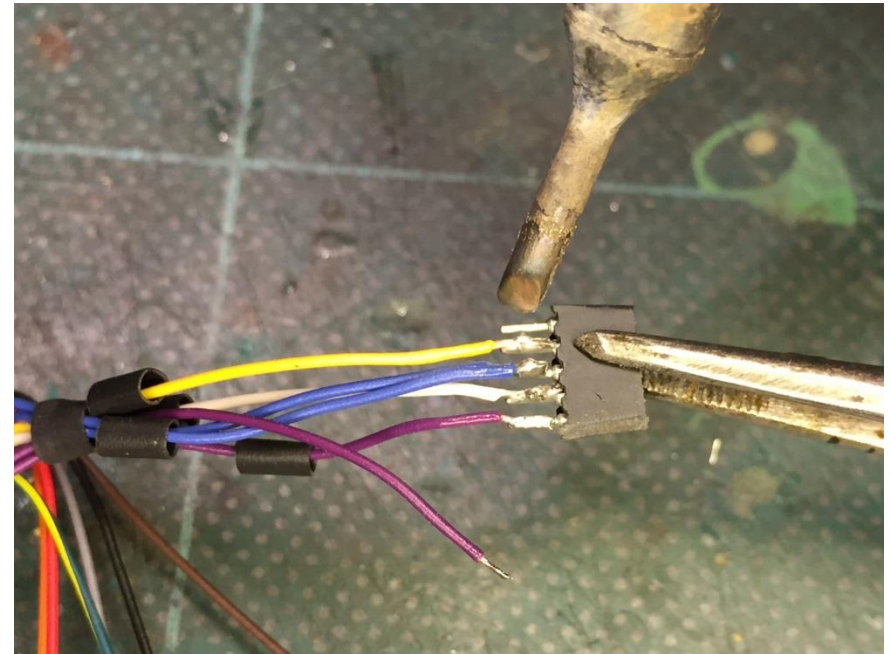
- Pre-tinned wire
- Hot soldering iron
- Hold LED in self-closing tweezers
- Hold wire in fingers
- One-second touch to solder
- Test when both leads are connected.
- Dunk in SuperGlue and let set to insulate

Internal plugs and sockets

- Socket side to Power, pins to accessory
 - No damage if it comes apart
- Wire so that if assembled wrong way round, no damage results
 - 6-pin between loco and tender:
 - Outer two: motor
 - Inner two: headlight wires
 - Middle set: track power
 - Plugged in the wrong way: loco goes backwards and light doesn't work
 - But no damage done.

Soldering Plugs & Sockets

- Hold socket in self-closing tweezers
- Work from front to back
 - Then you won't unsolder previous work
- Wires oriented for safety
- Don't forget the heatshrink!



Buy connectors in bulk

- Mouser SKU in 50s:
 - Plugs
 - Mouser #: 575-500101
Mfr. #: 850-10-050-10-001000
Desc.: Single Row Headers .05 50 POS
 - Sockets
 - Mouser #: 575-501101
Mfr. #: 851-93-050-10-001000
Desc.: SIP Sockets 50P SIP SOCKET
 - Same as the TCS mid-size ones.
- Cut off what you need with rail nippers

Buy Speakers in Bulk

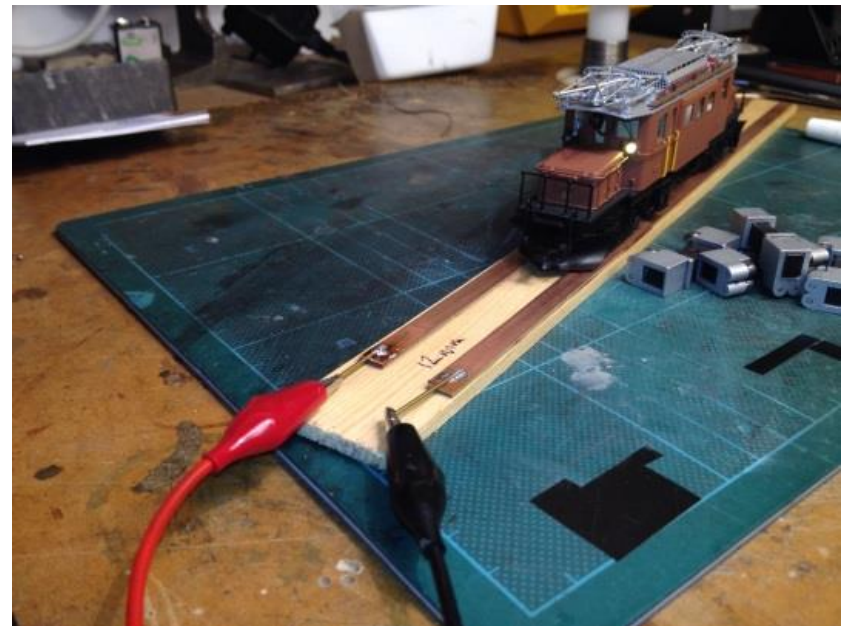
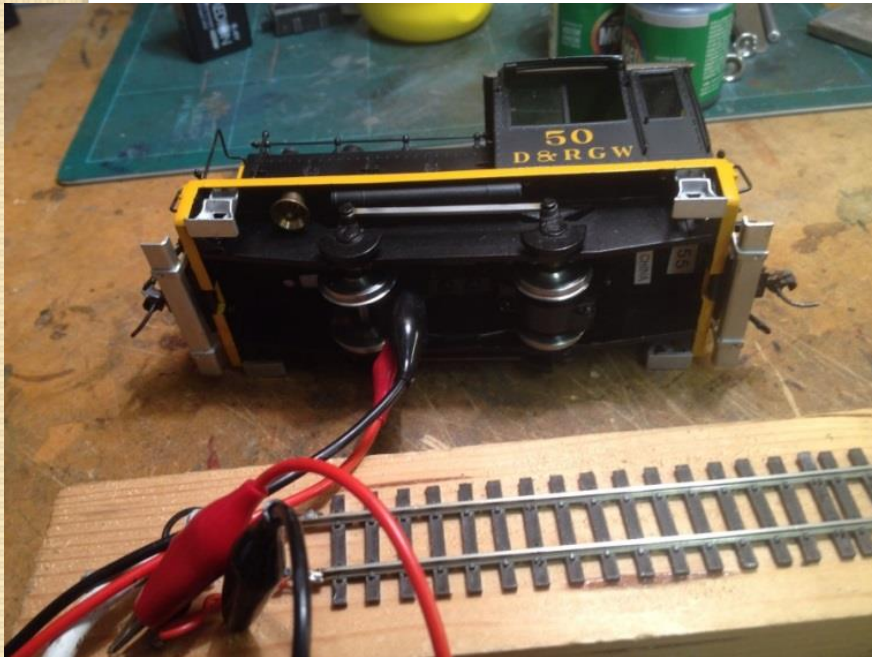
- Mouser SKUs for popular “Sugar Cubes”
 - Made by Knowles
 - 15mm * 11mm
 - 721-240326000107
 - 18mm * 13mm
 - 721-240326000071
- There are others available
 - Including a neat oval that goes down to 200Hz!

Setting Heatshrink tubing

- Side of soldering iron element
- Distance 1-2mm
- No need for heat gun!

Program track need not be track

- Croc clips work just as well
 - As do strips of PCB
 - Or even a programming “Plate”





The DCC layout

Buying a DCC System

- Always play with the throttle/handset
 - Preferably more than one system
 - Don't buy unseen or untried
 - Try all operations:
 - run trains
 - move switches
 - programming
- Buy the system for the layout you aspire to
 - Which may not be the layout you have now
 - It will, in the long run, be cheaper

Consider using DCC to control switches (points)

- Get the layout running quicker
- No control panel build required just to get it working
 - And easier to make changes
- Does it really cost that much more anyway?
 - When spread over the life of the layout
- Tip: try accessory decoders that accept local inputs.

Laying Flex Track for DCC

- Lay and wire with track power ON
- Find faults and shorts instantly
- Quarter test
- Run loco straight on to it.

Sound and the 6-foot rule

- Set sound volumes so that at 6 feet (HO) you hear what you'd hear at 500 feet from the prototype
 - Whistle
 - Bell
 - Chuff
 - And not much else
- Most people have the sound **way** too loud
 - And horribly unbalanced

Stop decoders getting too hot

- Especially Sound decoders
- Keep track voltage to 12-13v max
 - Consult your system's documentation
- Turn the volume down
 - see 6-foot rule tip
- Use LEDs for lights
 - Reduces load on decoder
 - Brightness unaffected by track voltage



Getting Stale? Need a change?

Try another scale

- Camp 93
 - On30 freelance logging
 - Still DCC And Sound
 - Seven years on the show circuit
 - 50+ shows
 - Different set of experiences to a home layout
 - Lots of learnable lessons



Try another prototype

- I volunteer at Pendon Museum
- 4mm scale GWR theme in 1930s
- Another, different, set of learning opportunities

Photos: Pendon Museum



Share what you've learned

- We all have stories to tell, so
- Look at what you learned along the journey
- Write a magazine article...
 - Editors are always looking for new material and new authors
 - Talk to them about the story and your angle on it
 - Several here in Portland now!
- Write a clinic...
 - Offer it to the clinic chair at a regional or National conference

Questions?

- E: mick@mickmoignard.com
- Skype: mickmoignard
- Also find me on various Groups.IO lists (US NG or DCC oriented, mostly)