3D Printers, Model Railroading, Stages of Love, and You
Dave Ackmann – Gateway NMRA – 26 September 2020

My environment: Creality Ender 3 Pro, Windows 10, TinkerCad, Cura 4.7 slicer
My Observation: Your 3D printer usage will go through stages

3D printers are complex, as complex as DCC; there will be frustration, printing disasters
Don't expect to save money; do hope to build things that are somewhat unique.
Enter only with open eyes and open wallet

How does 3D printing work:
 "Models" are designed in Computer Aided Design (CAD) software
 Models are converted to Stereo Lithography (STL) or other formats
 "Slicer" software converts STL files to "G-code" files for specific printers
 Printer executes G-code, extrudes filament while moving in 3 dimension

3D Printers cost from $140 to $15,000 and costs vary greatly by seller; buy only from someone with a 30 day full refund guarantee.

PLA filament is $18-24/Kilogram per color, and is paintable and glueable. A HO building might weight 25-50 grams. Store filament in air tight bags with desiccant.

Many models are stored in online "libraries", available for free or a fee
 Thingiverse, TurboSquid, 3DWarehouse are several of many libraries

Models can be printed by "Service Bureaus"; turnaround time can be 2 weeks

Models, when shrunk to HO scale, may be too fragile for use.

Visit YouTube before purchase, search for model name and "Unbox", "Setup", "Problems", "Troubleshooting". Check out YouTubers "Just Vlad" and "Tom Tullis".

My Ender 3 Pro has many aftermarket enhancements, but make your printer work first. Buy extra nozzles, geared extruder wheels, bowden tube, hot end fittings.

For Ender 3 Pro, consider purchasing upgrade kits from Amazon (ASIN:B081DN6RM@ and B0872YRHVV). Especially replace bed leveling springs. Upgrade CURA slicer. Upgrade Z-Axis Shim.

Check out Thingiverse.com, and search for "HO scale kabrumble"; Kim has some good ones. Search for your scale and items of interest. Be advised, don't scale down more than 50%.

Designing building interiors? Make walls intersect, not just touch.

Want advanced typefaces? Save from PPT into PDF, convert PDF to STL with ANYCONV.COM, import into CAD, scale factor maybe as high as 10000 in TinkerCAD.

Designing in 2 colors? Remember the M206 trick to raise Z Axis for subsequent layers!

Be Patient. Schtick Happens. Watch YouTube. Keep Your Filament Dry. Have Fun!