Geographic Information, Hobbies, and the Library

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While the original libraries' mission called for its primary function to support pedagogical pursuits, its mission has expanded over time. Educational and even moral support and growth for the people and the states they served, even today still used in many places, were followed by an increasing use for reading and learning for pleasure. (Hartel, 2009) Over time that move to leisure activities has developed even further. With longer lifespans and significant disposable income resources, the western world, in particular, have brought users to the library seeking information for hobbies and activities ranging from coin collecting, genealogy, wargaming, modeling, geo-tracking, hiking, cooking, and baking, gardening, meditation, astronomy, and even needlecraft. (Hartel, 2009) These pursuits require a deep level of commitment and a set of skills and knowledge, almost to the level of a career path, to master successfully. (Lee & Trace, 2009) Libraries should have a place to help people pursue their hobbies and access resources and geographic information.

As well in the last 50 years, and particularly in the last 20, the amount of geographic information available, not only for researchers but the public at large as well, has exploded. We have gone from paper maps and atlases to a world where spatial data use happens on our phones, cars, and even our homes with no formal geographic training needed. (Lü et al., 2019) Historical geographic information is also now available, with historic geographic information study becoming a field unto its own. (Gregory & Healey, 2007)

What libraries now offer for hobbies, especially those that use geographic information, along with available geographic information they can offer, is the focus of the review. How one hobby, Model Railroading, uses geographic information provides a window for how hobbyists use it. The library can support hobbies that use geographic information using a few resources

and some simple information organized so the patrons can find what they need. The library can help those with hobbies and contribute to increasing general awareness of spatial data and all of its uses simultaneously.

Libraries and Hobbies

As noted above, the role of libraries is continually evolving. As libraries move to towards new ways of attracting patrons in an age of instantly available information on computers or even phones, hobbies, games, and other pursuits not traditionally associated with the library world are being used to attract patrons into the facilities. (Nicholson, 2013) Hobbies and geographic information appear to be an area where the library can expand its services. Studies show that 75% to 88% (CivicScience | Spending on Hobbies, 2020) of Americans have a hobby of some sort, and the hobby brings them happiness. (Lesser, 2019) While it is hard to get an exact number on spending due to the various definitions of what is considered a hobby, the estimates range up to $200 billion a year is spent on hobbies in the United States. (Davis, n.d.) Also, due to the pandemic, the number of people with hobbies is expanding as well, one survey saying that 33% of people surveyed tried a new hobby in the last year. (SWNSDiigital.com, 2020)

Libraries are now starting to provide collected resources for the hobbyist in several different ways, including a place for meetings and gatherings, blogs, and portals devoted to hobbies. Like many other groups, Hobbyists look to the library as a place of gathering and knowledge due to the education and literacy environment they promote. (Nicholson, 2013). Libraries have long offered groups a location to meet. The concept of a library as a center of community activities is more common now, and libraries use this as a method of outreach and expansion for their services. (Goulding, 2009) Hobby groups now regularly meet in libraries, and

some, such as Special Collections Library at Penn St University, even host collections from the groups. (Penn State Model Railroad Club Records, 1930-2006 1124, n.d.)

Some libraries have blogs and other material they have created to attract and help specific hobbies. Usually, these promote resources that the library has available, such as online learning and speakers (Livingston Public Library Staff, 2020), or even serve as a general reminder that it has hobby resources. (Omaha Pubilc Library Staff, n.d.)

Many libraries now have portals available, gathering hobby resources in one location. While some are homegrown, like Ohio's OWL (Ohio Web Library), some libraries use ones provided by database providers such as EBSCOHOST. To get a sense of what was available, I reviewed 20 different library websites across the United States. (See Appendix) 6 of the 20 provided a hobby portal of some kind. While these all provided an excellent link to magazine articles and books, only three had geographic information resources listed. The geographic resources always were with another subject, either genealogy or local history, and only one had special collections highlighting maps or other geographic information. None had a section calling out maps or other geographic information as an entirely separate entity.

Hobbies and Geographic Information

There are a number of hobbies that make use of geographic information.   Each has their way of using the data and data needs. The growth and ability to access geographic data online or even on mobile devices has even allowed a few new hobbies to use geographic information systems as their core, such as geocaching. (Schlatter & Hurd, 2005) To understand what hobbies use geographic information, we can review a few hobbies before moving to a more in-depth review of its use in model railroading. Bird watching, fishing, geocaching, hiking, and historical gaming, and model building all have geographic information data needs.

Bird Watching. One of the oldest hobbies globally, bird watching may not be the first one you think of using technology. But several sites, including Cornell Lab of Ornithology's eBird site, see figure 1, promotes using GIS data to help map and locate good sites to watch and record findings. (Rubenstein, 2018)
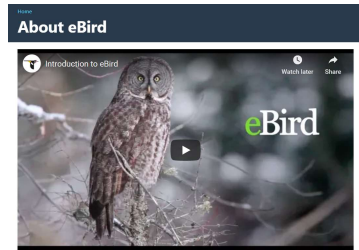

Figure 1- ebird site (https://ebird.org/about)

Fishing – The largest conventional outdoor activity, an estimated $23.6 billion industry in 2019, fishing is a significant user of geographic information. (BEA, 2020) Geographic information is widely used in commercial fishing, bioresearch, and economic research on fishing on a local and national level. (Close & Brent Hall, 2006) For recreational anglers, sites like NOAA Fisheries and Tennessee Wildlife Resources Agency give a spatial view of what can be fished for and where and when. See figure 2 for a look at the TWRA site for trout fishing. Many states have similar interactive maps. (*Fishing In Tennessee*, n.d.)
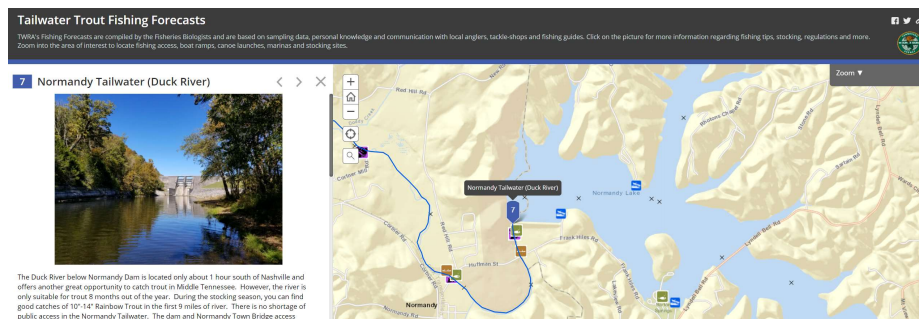

Figure 2 - TWRA Tailwater Trout Fishing Forecast Map

Geocaching – A reasonably new hobby, it was started in 2000 after the DOD was ordered to stop jamming civilian GPS receivers by then-President Clinton, when David Ulmer hid an item and started a site for the "The Great American GPS Stash Hunt" with one rule, take something and leave something. (Schlatter & Hurd, 2005) One of the few hobbies dependent on GPS and geographic information. There are several pages and applications, including those available on the various device stores, of which Geocahing.com is the largest. (Society, 2011)

Hiking – Another hobby that uses geographic information is hiking. While specialized GPS and GIS systems are devoted to hiking, the USGS topo map has long been a standard for the hobby in the United States. Numerous websites, such as AllTrails, TheHikingWebsite, and TheHikingLife, provide custom trail maps and mobile device applications. See figure 3 for an example of what AllTrails.com provides.
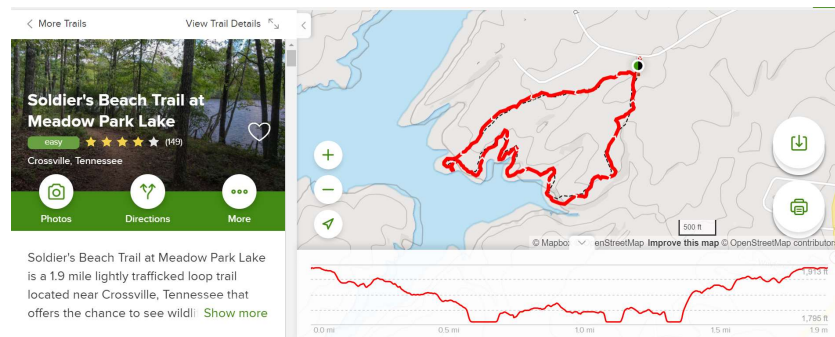

Figure 3- AllTrails.com sample trail page

Historical Gaming and Modeling - Another hobby that uses geographic information is historical gaming and modeling. While modelers use geographic information to provide a setting for a diorama for exhibiting their builds, historic gaming uses the information as a base to play their scenarios out, often while using the models, they have created. While games like Chess and Go have been played for centuries, the modern form of the hobby, with geographic representation, started in 1789. (Kiffer, 2019) but found its legs in the post-World War 2 era, starting in the early

1950s. Board wargames found their peak in the 1970s and '80s, after which computer-generated simulations have found increasing market share. (Kiffer, 2019)

Board wargames use maps recreating the areas that focus on the scenario and often have a hex grid or marked areas placed over the maps and use cardboard pieces to represent units. The scale can differ by game and focus, from 15m for a game focused on small unit tactics to over 10k for games focusing on grand strategy across many countries. See figure 4 for examples.
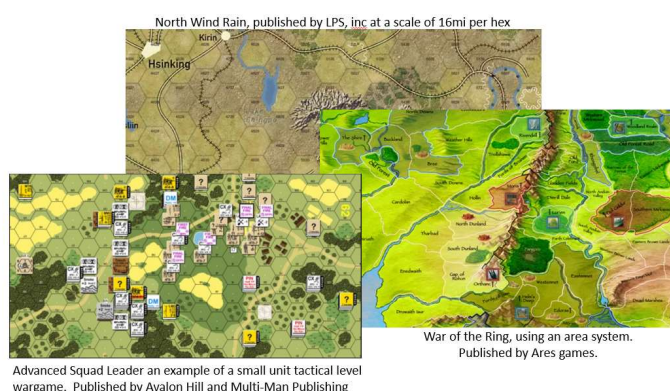

Figure 4-example of board wargame maps

The other main form of wargaming is played with miniatures on a created landscape, uses custom 3d maps made from geographic information, and measures distances with rulers and string instead of hex scale. With miniatures ranging in size from 6mm to 28mm, the maps' size and complexity can take up to 100+ hours of work to complete for a game. (Vandergriff, n.d.) An example of how the maps can look is in figure 5. Several great online resources exist, and one of the best is the United States Military Academy's historic atlas collection a free collection of six atlases and more than one thousand maps showing conflicts from around the globe. (Krasnoborski, n.d.)
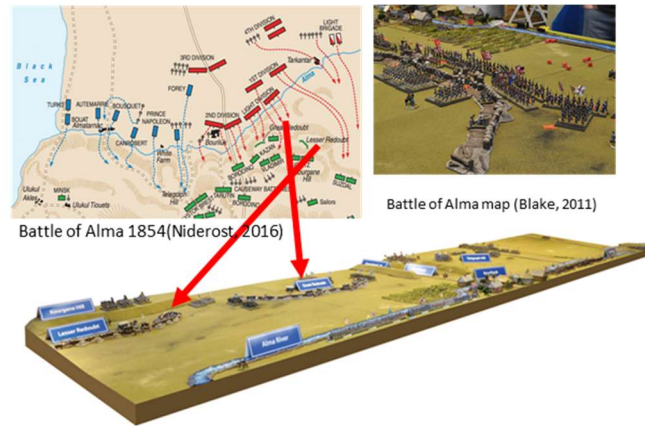
Figure 5 - Example battle map

Model Railroading

The hobby of model railroading first started with the Prince Imperial in 1859. A figure 8 track

with a locomotive powered by a clockwork mechanism it was a gift from Emperor Napoleon III
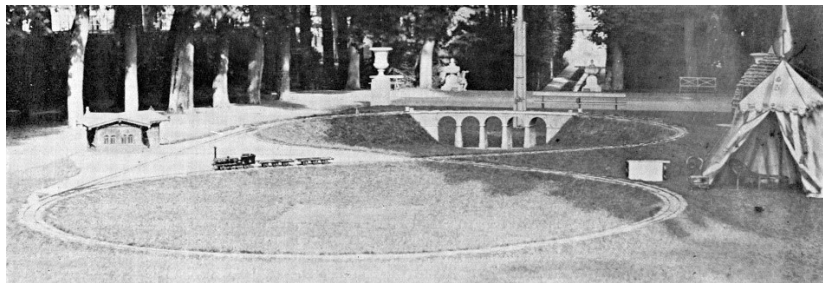
to his 3-year son. (Ellis, 1962) See figure 6.

Figure 6 - the only know photo of the Prince Imperial Model Railway 1859 by Charles-Louis Michelez

Despite the Royal beginnings, the hobby spent the next 30 or so years waiting for the

technology to allow for more than clockwork or string pulled trains. That breakthrough came in

1891 when Marklin developed the first electrically powered trains. Followed in 1901 by Joshua

Cowen Lionel's use of electric trains in-store displays, the hobby started to gain popularity, and

by the 1930s, train sets for children and more accurate craftsman models for adults begin to

come to the public. (Weber, 2011) Along with the founding of Model Railroad Magazine in

1934, the hobby had reached mainstream acceptance just in time for the Second World War,

which ended all production for the duration. (Weber, 2011) After the war, however, the hobby exploded.

In the 1950s, the train set was the number one toy for boys, similarly to today's video games. (*Timeline of Model Trains | World's Greatest Hobby*, n.d.) Since the fifties, while the hobby has declined in overall popularity, it has maintained an active group of enthusiasts. Today, since most model train manufacturers are private businesses, estimates are hard to come by, but generally, estimate are for over $400 million in sales (Ingersoll, 2000) and over 500,000 active participants in the US and Canada. (*Timeline of Model Trains | World's Greatest Hobby*, n.d.) Model train shows can draw over 25,000 people over a weekend. (*World's Greatest Hobby on Tour 2018 Update | World's Greatest Hobby*, n.d.)

No matter the numbers, this is a hobby where geographic information is prized and sought after. While most people can recall a train running a continual loop under a Christmas tree, since the mid 60's advances in technology and access to information have allowed the hobby to have a new style, operations. Operations in the model railroading world simply means running trains to simulate a railroad's actual operations, both passenger and freight, as they would occur in the real world. (Popp, 2013) This concept was covered as far back as 1944, with early model railroader Frank Ellison comparing a model to a stage and the trains running on that model the actors. Coming on and off the stage as their schedules in real life dictated. (Ellison, 1944) But it wasn't until the early to mid-60s when John Armstrong started to publish his track plans and works on operations that the shift from simply making a pretty railroad to one that looked and acted like its full-sized counterpart really came into its own. (Armstrong, 1998)

Model Railroaders today have technology that allows everything from locomotives with entirely digitized sound, automatic signaling, the ability to run over 100 engines at once, and

reliable pre-made track, switches, and equipment. (Koester, 2001) This has allowed them to worry less about "how will the train work" and move to a "how realistic I can get" mindset, and geographic information is how they achieve that goal.   Researching how their railroad works and what it transports is part of the planning that goes into an operating model railroad. (Armstrong, 1998)

There are several different geographic information sources that the model railroader now has easy access to thanks to the internet. While this is by no means a full list, these do represent some of the most wildly used types, and they include Google and Bing Maps, system maps, atlases, state transportation maps, valuation maps track and spotting charts, employee timetables, USGS topographic maps and Sanborn maps.

Google and Bing Maps – Free online web mapping services, such as Google Map, Google Earth, and Bing Maps offer a wealth of information to the person that is researching railroads, especially in the modern period.   Clear images and maps allow modelers to see where the current rails are and, in some cases, even identifies the industries served. While, for the most part, these are not terrific resources for prior eras, they do allow for any model railroader to get a good view of their chosen area. (Popp, 2013)

System Maps, Atlases, State Transportation Maps - For the modeler who is starting or one who is making a proto-freelanced layout[1] system maps, atlases and state transportation maps are a good source of inspiration and for getting an overview of the general area to be modeled. Most of these resources don't have the detail needed for track planning but can be used to see where a fictional railroad may go and are widely available. (Armstrong, 1998)

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[1] Proto-Freelance is the term used for making your own non-historic railroad, but with historic practices and operations.

Valuation Maps – As a response to the era of robber barons in the late 1800s, Congress passed measures to limit the power of railroads to artificially set prices and rates that were higher (or lower) than the market could, allowing the railroads to make enormous profits and destabilize the general market (Flewelling, 2014). Out of these reforms, the Bureau of Valuation was established in 1913 and required railroads to make complete maps of their holdings. (Flewelling, 2014) This resulted in an enormous collection of highly detailed maps of the railroads and their holdings. When completed, the Erie railroad alone had over 3600 maps and showing everything from tracks, signals, and structures. (Flewelling, 2014) For a sense of how large an undertaking this was, the Eire was one of 186 Class 1 (major) railroads in 1920, and everyone did a similar project. (Flewelling, 2014)

Many of these maps are digitized and available online either from private sources, states, or through the National Archives. The National Archives collection contains most of the original valuation series, providing a window into railroading past that was not as accessible before. (*Railroad Maps in the Cartographic Research Room*, 2019)

Detailed and with rail-center lines, these maps are an invaluable resource for the modeler. (Koester, 2009) Copied to the same scale as the modeler is using, they can even be used for a one-to-one ready-to-go track plan, and since the map represented the railroads' actual track used for operations, the modeler knows his layout works just like his prototype. (Koester, 2009) An example valuation map is in Figure 7.
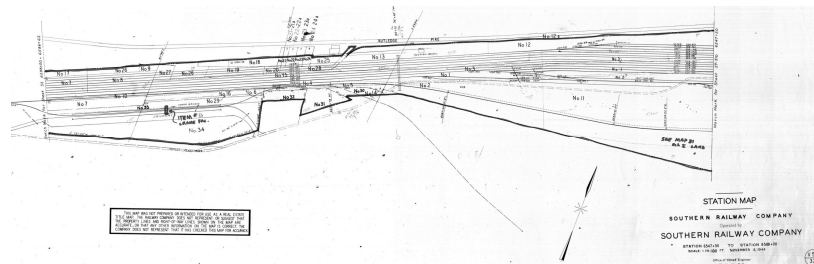

Figure 7 - Valuation Map Sevier Yard Knoxville Tn. Tennessee State Comptroller

Official Railroad Documentation, Employee Timetables, Track and Spotting Charts – The

railroad themselves put out a tremendous amount of geographic information. From employee

timetables to track and spotting maps, these materials provide the railroad's views of its holdings

and contain a variety of information. From the actual times of departure and arrivals on the

employee timetables to signal, speed limits, special area notices, and the industries served on the

railroad in the track and spotting charts. (Koester, 2009) Free online sources like

MultiModelways Railroad Archive and both the National Archive and Library of Congress

contain collections of this type of material. Using this material in developing your model allows

for a level of realism, such as using the correct track names and actual scheduling that would be

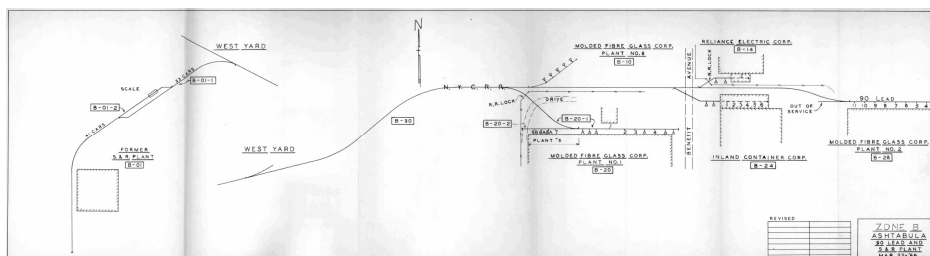not possible otherwise. (Sperandeo, 2012) Figure 8 shows an example.

Figure 8 -Sample track chart from MultiModelways Railroad Archive

USGS Topographic Maps – Another useful resource for the model railroader is the USGS

topographic map. These maps are easy to find and cover the entire US with maps updated and

created at different times, so you can often view the area you model in the era you want.

(Gardiner IV, 2018) USGS topos are also helpful in figuring out elevations and ensuring that

modeling an area far from where you live gives a general concept of the features and land around

it. (Rice, 2000) There are also online video series that shows how to use the maps in your

design. (Deverell, 2014) Figure 9 shows a sample of USGS topographic map, focused on a town
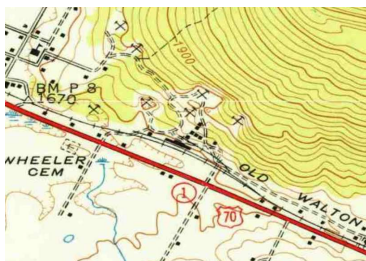
and rail system.

Figure 9 - section of 1949 USGS Topo for the area of Crab Orchard, TN.

Sanborn Maps – The D. A. Sanborn National Insurance Diagram Bureau was founded in 1866 by civil engineer David Sanborn. Sanborn had been doing some maps of this type for another company but realized this was a market he could help fill. By 1902 they were the largest company of their type and the leader in the field of fire insurance maps for towns and cities. (Hodnefield, 2019) The Sanborn maps covered nearly 12,000 cities, and towns were updated as needed[2] until 1970 when the industry went to other methods. (Arlitsch, 2002)

Several ways exist to gain access to the Sanborn collection. States such as Utah have digitized collections of their state maps. Due to copyright restrictions and the reluctance of the rights holders to allow any others, only maps before 1920 are scanned. (Arlitsch, 2002) The Library of Congress collection, on the other hand, contains maps for every state and plans to scan nearly 1 million maps total after an agreement with the Sanborn company's successor, currently Lightbox. (Krauss, 1999)

The railway modeler can use Sanborn maps to see how towns and the railroads grew, along with the general track plans and locations used by railroads. (Krauss, 1999) While not as useful in a modern layout, they can still give valuable insight into an area. (Popp, 2013) Figure

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[2] Nomally rather then redoing an entire map, Sanborn would issue an overlay to be taped over the area of the map that had changed. (Misra, 2014)

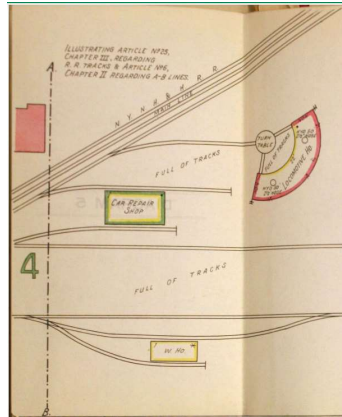10 gives an example of a Sanborn map, focusing on Carlisle's, Michigans railroad infrastructure. (Hodnefield, 2019)

Figure 10 -Carlisle, Mich Sanborn Map, the section around the roundhouse

How a Model Railroad uses Geographic Data in Layout Design

In much the same way that maps are, model railroading is all about scale. In the United States and Canada,[3] the most common modeling scales are (listed from largest to smallest in size) (*Guide to Model Railroading Scales and Gauges | World's Greatest Hobby*, 2016):

- G Scale (or Large Scale, or Garden) – typically 1:35 or 1:24.5, used outdoors mostly[4]

- Scale – (Lionel, or Toy Train) – 1:43.5 or 1.48 The 1:43.5 is often referred to as semi-scale, or O-27 and was the old Lionel toy train size.

- S Scale – (American Flyer) – 1:64, popular in the 1940s and '50s, much less common today.

- HO Scale (Half O) – 1:87 The most popular scale of model trains.

- N Scale – 1:160, second most popular scale and most popular in Japan.

- Z Scale – 1:220, very small; for example, a 50' long locomotive in Z scale is 2 ¾" long.

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[3] In Europe a totally different system of scales and names are used. For example, while N Scale is 1:160 in the US and Canada it is 1:144 in European markets.
[4] Although some very well done G Scale indoor layout exsist, including EnterTRAINment Junction in Cinnicnatti, Ohio, one of the worlds largest layouts. (Home | Entertrainment Junction)

Figure 11- Comparision of Scale Sizes (Guide to Model Railroading Scales and Gauges | World's Greatest Hobby, 2016)

While often dictated by the available models and your interest, the choice of scale also considers the amount of space you have to model and what you want to model. For example, one modeler wanted to do the Pennsylvania Railroad's yard in Harrisburg, PA. Having found a valuation map of the yard, he realized that it would take over 40 feet of straight-line distance to just show one side in HO scale, but if switched to N Scale, it would only require 22 feet and fit into the space he had allocated in his home. (Britton, 2005) Figure 11 shows the valuation map and how it fits into his layout design in N Scale.
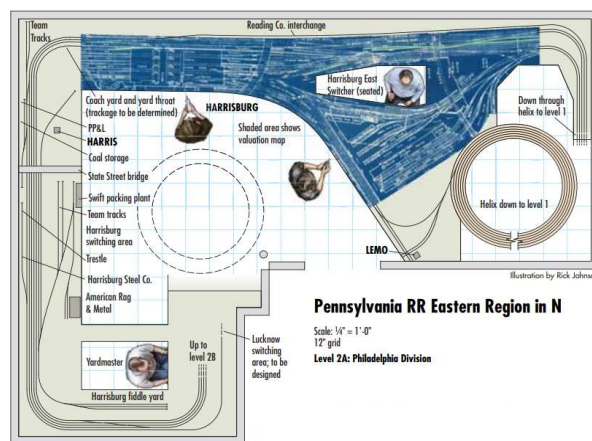

Figure 12 - Jerry Britton's Model Railroad layout (Britton, 2005)

While the above example shows how sometimes things work out perfectly, more often than not, model railroaders use geographic information to help fit their available space and provide the realism they crave. As David Popp relates in his account of designing a layout based on his home town in Illinois, "Unless I was building the layout in an open field there was no way everything in my sketch would ever make it into the final design" (Popp, 2020 p24)

Since a mile of HO scale track would mean you would need over 60 feet of space to model it at full scale, modelers over the years have used selective compression to take the valuation map that might need two of their basements and create Layout Design Elements (LDE). The LDE lets you build a model railroad sized for the space reserved for it and gives the realism and features wanted. (Koester, 2009)

Creating an LDE with Geographic Information – For the sake of an example, let's say a modeler wanted to model Bryson City, North Carolina, in the late 1940s early 1950s.[5]

After searching for various sources, we have found a few excellent sources of GI, including:

- Sanborn Map of Bryson City, in the Library of Congress collection and updated in 1937 and the railroad elements then stitched together to show the railroad areas displayed in figure 13
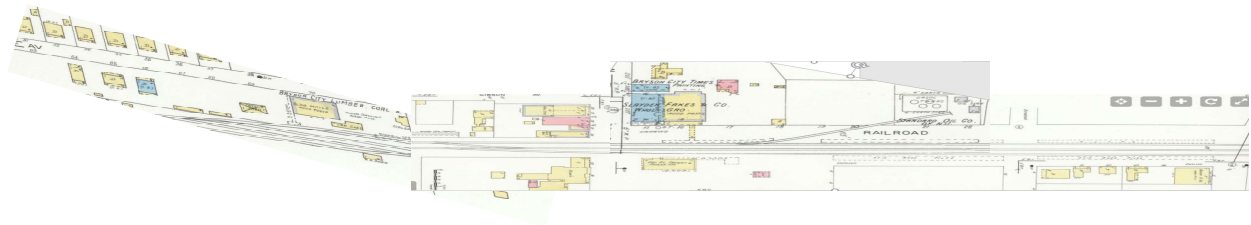

Figure 13 -combined Sanborn Map of Bryson City NC

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[5] Current the tourist line, Great Smokey Mountain Railroad is using this track, historicly it was Southern Railroad, followed by Norfolk Southern Railraoad. (George, 1996)

- USGS Topo's for the area from 1957, again cropped for a view of only the downtown rail corridor. As shown in figure 14

Figure 14 - USGS Topo 1957 Bryson City, NC

- North Carolina Railroad Valuation Map, cropped again to show downtown, figure 15.
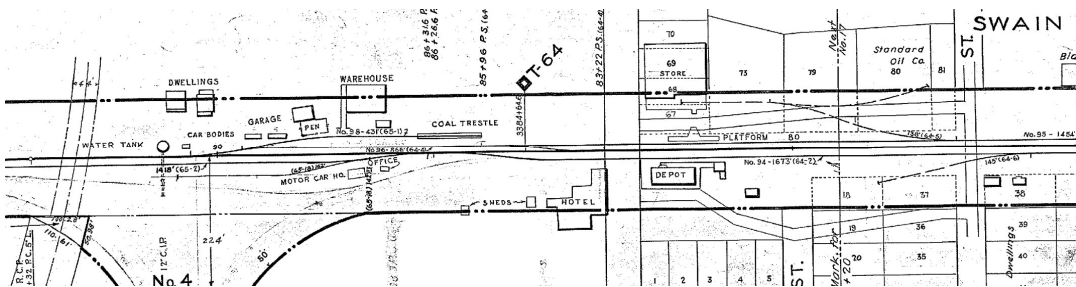

Figure 15 -NC Valuation Map

- Google Maps image of downtown Bryson City, note turntable installed after in the last 10 years by the successor line. Figure 16

Figure 16 - Google Earth Current view

With all of this information and, a design for a layout using LDE for Bryon City might look like layout designers Dan Bourque (Bourque, 2013) and G. Warren Reed (Reed, 1984) came up with for an idea shown in Figure 17.
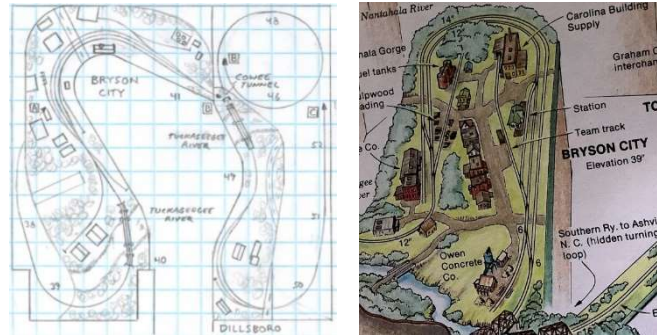

Figure 17 Dan Bourque's Bryson City on left and Warren Reed's on right

As you can see, model railroading uses geographic information in several ways, and everything, in our example, was free to use online. In a hobby where engines can run to over $300, that is a plus! Geographic information not only provides baseline information for the hobby but allows for users to take that data and modify it into a form that can fit in the space they have, all why maintaining the level of realism they wish to convey.

Grand Central Terminal, last stop?

The amount of freely available geographic data accessible to anyone with a device capable of retrieving it has changed our world. From GPS systems in our phones, allowing for updated traffic data, instant weather alerts, and even targeted marketing, geographic information is a part of our lives as never before in ways both good and bad. (Miller, 2020) Understanding how geographic information works and is used has become a skill needed by everyone to understand the uses of the data we have at our fingertips today and the uncertainty that data sometimes presents. (Goodchild, 2020) As shown by the current COVID-19 pandemic, privacy, reliability,

and response issues are now all issues that geographic information is involved, and in ways not fully understood by the public or those using them to solve the issue. (Smith & Mennis, 2020)

Hobbies using geographic information allow their groups to get exposure to the latest and greatest geographic information and a sense of historical geographic information and its uses. It also allows users to find and explore even more if they wish to contribute to the individual's geographic awareness and knowledge. Libraries should embrace this by providing geographic resources just as they do for books and magazines. If, as Buttenfield wrote, libraries are to be where the public gets its geospatial data, the need to start moving in that direction has started. (Buttenfield, 1998)

Some simple and low cost to cost-neutral options for supporting hobbies and geographic information could be as follows:

- Developing a guide for sites that contain geographic information for hobbies that can be either used as a hand-out or even a web page on the library's sites. This can be used in addition to the hobby links to magazines and books already provided by many systems. (see appendix B for an example)
- Bring in experts in the hobby that are local (or host online events) that can teach about the resources available.
- Set aside a single pc workstation and load it with tools for various hobbies, such as track planning software for model railroaders, opensource GIS tools, genealogy sites, and set it aside for use as a geographic information workstation.
- Host a geocaching event in the library or town.

To just support the goal of more knowledge about geographic information, libraries can also:

- Promote geographic events, such as GIS day.

- Showcase maps and other on-hand geographic resources

- If a book or children's story is being promoted and set in another country, add a map and geographic information to add the next layer of information.

Hobbies are a great way to use and understand geographic information. While every hobby has its ways of using geographic data, many of the sources they use are the same.   The amount a library can do to support their local hobbyist is only limited by their staff's imagination and creativity. By realizing how hobbies use geographic information, libraries can better serve their patron's needs. It allows for a greater understanding of the ever-growing amount of geographic information at our fingertips, benefiting both the library and its patrons.

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Appendix A – Libraries Websites Visited For Review of Hobby or GI Resouces

Library Name	State	Hobby Center Online?	Blogs about Hobbies or GI/	GI Specific resources page	If Gi, what form?
Richmond Public Library	VA	No	No	No	
Athens Co	OH	Yes	No	No	
Wake Co	NC	Yes	No	No	
Mineral County	MT	No	No	No	
Berks County	PA	Yes	Yes	No	
Omaha Public Library	NE	No	No	Yes	Small local collection of maps
Newburgh	IN	Yes	No	No	
Multnomah County	OR	Yes	No	Some	Sanborn map link in Genology Section
Louisville	KY	No	No	sOME	Sanborn map link in Genology Section
Santa Fe	NM	No	No	No	
Fargo	ND	No	No	Some	Sanborn map link in local history section
Milwaukee	WI	No	No	No	
Scott City	KS	No	No	no	
Providence	RI	No	No	no	
Boise	ID	No	No	no	
Savannah	GA	No	No	No	
Charles Town	WV	No	No	No	
Kirkwood	MO	Yes (Crafts)	No	no	
Rockwall Co	TX	No	No	No	
Rawlins Municipal(Pierre)	SD	No	No	No	

Appendix B – Example Guide to Geographic Resources