

How the Railroad Made America

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Larry Bernstein:

Welcome to What Happens Next. My name is Larry Bernstein. What Happens Next is a podcast which covers economics, finance, and history.

Today's episode is on How the Railroad Made America.

Our speaker today is Patrick Allitt who is a Professor of History at Emory University, and he is currently writing a new book entitled Keeping Track: A Concise History of American Railroads. The railroad had an enormous impact on the development of the American frontier as it cheaply moved commodities to market and encouraged farming in landlocked areas. As the first major American industrial organizations it redefined labor-management relations.

Patrick teaches at Emory and in addition with the Teaching Company's Great Courses. I have enjoyed five of Patrick's great courses including The Art of Teaching and The American West. After enjoying Patrick's classes, I reached out to him, and he spoke at my book clubs in NY, Chicago, and Miami. Patrick has also participated on this podcast What Happen Next several times on such varied topics as the Cholera epidemic in London and George Orwell.

Let's get started.

Why did you decide to write a history of the American railroad?

Patrick Allitt:

It was partly because until quite recently, books about American railroads assumed that they were in decline. But since about 1980, they have staged an astonishing comeback. They are now once more a healthy and a vital part of the American economy. That turnabout is a fascinating story.

The second is most of the people who have written general histories of American railroads have been railroad enthusiasts or academic historians who are specialists in railroad history. That has led them to focus very closely on certain aspects of railroad history, either the technological or the financial aspects. I am able to contribute something new by looking at many other aspects of American history, particularly things like the social and labor and environmental histories, the spiritual history. What is the impact of railways on the collective psyche of the nation? I have never found the general book on American railroad history, which I wish existed. And so, I have tried to write it.

Larry Bernstein:

In my economics history class at Penn, we were assigned Nobel Prize Winner Robert Fogel's book *Railroads and American Economic Growth*. Fogel makes the argument that railroads were an important contribution to the economy, but it was not a game changer. If the railroad had not been invented, we would have used alternative transportation such as canals. Do you agree with Fogel's analysis that we would have found a substitute transportation system and thus would have had similar growth, and what do you think of economic history as a field that applies economic techniques to historical analysis?

Patrick Allitt:

I am guardedly sympathetic to his approach. It is certainly true that in Britain the first canals were built in the 1760s. And between then and about 1830 when railways came online, the industrial revolution had already got underway and was already roaring along. So clearly you do not have to have railways to have an industrial revolution. The Erie Canal was built by 1825 and proved an incredible boon in opening the interior, particularly of the northern states, to trade from the Atlantic into the interior.

My objection, however, is that in history, it's hard enough to find out what did happen. It seems gratuitously complicated to pretend that some central event did not happen. There might be an abstract technical pleasure in imagining the absence of the railways, but it seems much less rewarding than studying the reality of the existence of the railways and what they did.

It is comparable to asking questions like, what would have happened if the plot against Hitler's life had succeeded? Historians ought to devote the bulk of their energy to finding out what did in fact happen.

Larry Bernstein:

In a previous book club, William Cronon spoke about his book *Nature's Metropolis: Chicago and the Great West*. And what Cronon focuses on is how the railroad increased the value of raw land that was not proximate to a river or waterway.

Before the railroad to get the corn to market, a farmer would feed the corn to pigs and walk the pigs to the market. Now with the railroad, the train picks up the grain and brings it straight to Chicago. This creates enormous value for both the landholder as well as the railroad. Who gets the share of those profits is an economic as well as a political question? How did the government negotiate the split in this economic synergy?

Patrick Allitt:

Larry, you have put your finger on the most intractable question in the entire history of American railroads. When we look at the Midwest, and particularly at the Great Plains, we are looking at an area which was potentially incredibly productive and fertile and lucrative. But those were

resources lay unrealized until railways went into them. Ever since Lewis and Clark, the area had been described as the Great American desert, by which they did not mean that it is desert like the Sahara, they meant it is deserted. It is a place where people cannot live, and the reason they cannot live there is because there is no wood. And if there is no wood, there is nothing to build with and there is no fuel, two of the absolute necessities of life. The railway companies begin building these lines into the Great Plains and the patterns of settlement start to follow the railways where earlier they had followed the rivers. And the railways can be laid out on more logical patterns with a denser network.

Every farmer on the plains was fully aware that his way of life was dependent on the railroad. Because he still had to ship his grain back to market in Chicago or in Minneapolis, the amount charged by the railway for shipping had a vital impact on the overall prosperity of his farm. Between 1870 and 1900 was a period of prolonged deflation. And so that meant that even if the railway company charged the same rate, every year in real terms, it was appreciating. So, productivity was going up, and as the market became more and more abundantly supplied, the price tended to go down so that the farmers felt that they were being squeezed twice over. They could no longer get a high price because what they were producing was plentiful. So, then they applied to the state government for relief saying the state made it possible for this railway to be built in the first place, usually with the grant of a charter, which specified the terms that the railroad company had to fulfill. We the people of the state enabled its creation and therefore it's entirely appropriate that we ought to be able to run it.

America's an anomalous case because throughout most of Europe, government very early assumed an extremely intrusive role in the running of the railways. Whereas in America, state governments liked the idea that the railways should be independent, but nevertheless found themselves being drawn into more and more regulation, particularly of shipping rates, but then also the hours and conditions under which railroad workers should work because if they ran the trains badly, they would crash them and kill people. Then in the rates to be charged to passengers, then during the crisis of the Civil War in the 1860s, should private companies dictate to the U.S. Army how it was going to move its troops? Or should it be the other way around? It is impossible to build a railway without raising intractable political questions. So, it is certainly no surprise that reluctantly government did become more and more integrally involved and remain so right up to the present.

Larry Bernstein:

The railroads were critical in the American civil war. Both sides wanted to concentrate forces in a battlefield. The Union army had access to the North's superior rail lines, which allowed the movement of troops. What are your thoughts about the role of the railroad in the Union's ultimate victory?

Patrick Allitt:

There is usually a correlation between the degree of urbanization of an area and the density of its railroad network. So, it is no surprise that the Union had many more lines than the Confederacy had. The problem of building lines in rural areas is that they tend to be seasonal. They are busy at harvest time when there is a lot of the crop to be moved, but they tend to be rather quiet at other times. Whereas in the industrial Northeast and Midwest, there's trade going on all the time.

Railways were extremely useful for shipping men and materials quickly to the fighting fronts, exactly as you said. They also realized that they should take advantage of the accumulated expertise of professional railroad managers who understood better than generals or politicians what you must and must not do with the railway.

Early in the war, Union generals would hijack a train and say, I have got to have this train to move my men to the front. But President Lincoln and his Secretary of War realized, no, we have got to leave the running of the railways in the hands of the railways managers. Because if we do not, we are going to find more trains are going up to the front than are coming back, which will jam the lines and take the whole system out of service. So, the Union was better able to organize the smooth and continuous running of its railways than the Confederacy was.

Larry Bernstein:

The rail lines that connected Washington DC with the northern states had to go through the border state of Maryland. Why was that important?

Patrick Allitt:

Maryland was a slave state, but it never seceded. So, the federal government had to walk on eggshells to make sure it did what it could to keep the Marylanders loyal. And railway policy was one of their absolute highest priorities, making sure the trains could continue to run back and forth across that state. That is one of the reasons for the delay in the Emancipation Proclamation.

Larry Bernstein:

Railroads created lots of complicated legal issues related to torts and land use. Tell us about that?

Patrick Allitt:

What happens when a train hits a farmer's animal and kills it? Is the railway liable, does he have to pay damages to the farmer or was it incumbent on the farmer to make sure the animal kept out of the way? What happens when sparks from the locomotive set fire to the barn near the track? Whose fault is that? Abraham Lincoln was one of many lawyers who made his reputation in the 1840s and 50s working for the new railroads. And in one famous case, Lincoln represented the railroad company whose bridge had been damaged by a ship, which sailed into it and knocked

the bridge over. Cases established the right of the railway companies to build bridges across the river so long as the navigation channel was left available, because of the benefits of economic growth.

Larry Bernstein:

The next topic is labor history. Railroads built the first large industrial organizations with thousands of workers spread out across the country. Tell us about the railroad's role in the development of labor/management relations.

Patrick Allitt:

Working conditions in the 19th century were awful, and legal protections for workers were very few. The most vulnerable workers were the brakemen in the days before good brakes were installed along the length of trains. Brakemen had to literally run across the tops of the railroad cars cranking a handle on each car to put its brakes on. They were constantly falling off or being thrown off on the bends. They are having their hands smashed when they were coupling the cars together. The feeling of being treated arbitrarily by the management did lead to the creation of unions.

All the resources of government were put at the disposal of management, at least until the 1890s. And then very gradually, legislation inched towards more consideration for the needs of the working people, more consideration for ensuring safe working conditions, mandating air brakes, which is safer for the workers and safer for the passengers. Mandating a new kind of coupling between the cars, mandating boiler inspections to prevent the explosion of faulty boilers. Interestingly, the railroad unions, particularly among the skilled workers, the drivers and the firemen and the conductors were very un-militant unions. They were not called unions. They were called brotherhoods. The brotherhood of locomotive engineers was not at all the kind of union which uses the rhetoric of militant socialism.

They said, we are fine with capitalism. Terrific, if its fruits are distributed fairly. And if the merits of skilled working men are properly honored by management. They did not need management to tell them they had to be sober. They knew they had to be because they have got hundreds of lives in their hands. On the few occasions when the brotherhoods did strike, especially before the mid-1920s, they nearly always lost. On the other hand, there were some more militant unions, groups like the American Railroad Union of the early 1890s, which went on strike in Pullman, and was defeated partly because it is so much easier to replace relatively unskilled workers with strike breakers.

After World War I, the whole American railroad system was nationalized. It was then de-nationalized by the Esch-Cummins Act of 1920, which put the railways back in the hands of their private owners but made sure that the Interstate Commerce Commission was monitoring

them very closely and was saying to management, “you can't permit strikes to take place because the whole economy will come to a grinding halt.” If you look at American history between the 1920s and the 2020s, the most striking thing is how incredibly unusual railroad strikes are.

Even the threat of one is enough to bring in the full weight of the Federal government. And once the workers realized that the centrality of their position in the nation's economic life was fully appreciated, they were able to get what they wanted without heavy handed tactics. The strongest period of the labor movement was from the 1930s, because under the New Deal of the 1930s, the National Labor Relations Act gave explicit collective bargaining rights to trade unions in all industries.

So, from then until the mid-1940s, they were in an extraordinarily strong position. By 1970, a freight train could be run by one person, a driver, or at most two. But union rules said there has got to be at least one conductor, two drivers, and two brakemen, five men instead of one. And once 12 hours have passed, they have got to stop working. And once they have done a hundred miles, that's a day's work. Even if a hundred miles only took two and a half hours. So, the collective position of labor got stronger until the catastrophes of the 1970s forced more political intervention to relax some of this featherbedding.

Larry Bernstein:

In your preparation to write your new book, you decided to visit the top train museums. When you came to Chicago, I joined your exploration of the town of Pullman Illinois where the Pullman company made their famous sleeper cars. What did you learn?

Patrick Allitt):

George Pullman thought of himself as a model employer. Not only was he going to make an exceptionally good quality sleeping cars and restaurant cars, which were popular for nearly a century. He also said that he was going to build a model community in which his workforce could live so they would be sober and temperate and hardworking, and they would live in respectable conditions. This appeared in the 1880s when many working people were slum dwellers. When you go to Pullman, Illinois, it's a pretty little town with these rows of very neatly laid out workers' houses, which were graded depending on the seniority of the workers. So, the foreman would have the nice corner house, and people lower down the ranks would have smaller ones, and they are a short walk from the factory.

But in 1892, when the depression conditions came on, he laid off some workers and cut the pay of others. But he still expected them to pay the same rent as they had been doing previously, which was literally impossible. When they went on strike with the support of the American Railroad Union, he set out to smash the Union and got the help of the Attorney General. Richard Olney and the railroad owners of Chicago and successfully demolished the strike.

He was absolutely vilified as one of the most hated men in the country and was hurt and astonished to discover that what he thought of as his philanthropic principles were not being respected.

Larry Bernstein:

With Pullman we have an employer who is providing high-quality housing, a library, free schools, medical care, and a safe work and home environment with no tolerance for alcohol. Pullman angers his workers because he is involved with both work and home life. That tension continues to this day because firms want happy and healthy workers, and some employees want a corporate paternal environment as well.

Patrick Allitt:

I do remember, Larry, that when we were there, you consistently took his side <laugh> and I consistently took the side of the striking workers. But it is a reminder that with changing times, we have changing ideas about what is reasonable and what is right. Certainly, one of the great anxieties of the 1890s, particularly the economic crisis of the 1890s, was whether huge numbers of workers would not turn into revolutionaries. The fear of communism, even before there was any communist country in the world. Even more the fear of anarchists in the Haymarket explosion in Chicago a few years before that was so intense that it was easy to discredit workers' discontent.

Larry Bernstein:

Tell us about the leader of the American Railroad Union who was Eugene Debs. He would later run for President of the United States from prison after being jailed by Woodrow Wilson.

Patrick Allitt:

Eugene Debs was a railroad fireman, came from Terre Haute, Indiana. And he would at first been a member of the Brotherhood of Locomotive Firemen, a very non-militant union. He was put in jail according to one of these injunctions, and while he was there, read the works of Karl Marx and emerged from prison a year later as the leader of the New American Socialist Party. So, for him, the Pullman Strike was a very radicalizing experience.

Larry Bernstein:

The strike starts in Pullman. But Debs nationalizes the strike so that all the railroads nationwide with a Pullman sleeper car come to a complete stop. It shuts the economy down. What were the economic and political consequences of that?

Patrick Allitt:

What the American Railroad Union tried to do was to take the Pullman cars off each train and carry on and let all the other trains continue to run as a way of specifying that it was against

Pullman. But many railroad companies responded by attaching a Pullman car to every train and often putting it in the middle of the train. So, it was extremely hard to detach both sides and obviously from the owner's point of view, it was intolerable to be dictated to by their workers. They thought, we have got a permanent interest in these railroads, whereas our workers' interest is a transitory one, just the matter of their employment. Each side was certainly fully convinced of its own righteousness, but the owners had all the advantages.

They had got political influence. They could speak to congressmen and judges whom they knew. They knew the commanders of the National Guard, they knew the civic leaders in the cities, and they had got the money to outlast the workers. A working person in the 1890s lived on a knife edge of economic uncertainty, often with just enough money to get to the end of the next week, to the next payday. That is why suddenly being laid off was such a catastrophe for them.

A historian's job is to avoid taking sides. Each side is fully persuaded that it understands the situation it is looking at. And when it realizes that the other side does not share that view, they assume that the other side is acting in bad faith. Historians are people, we do have preferences and we cannot help taking sides even when we try not to.

Larry Bernstein:

The next topic is race and railroad unions. The Brotherhood of Sleeping Car Porters was a black union but nearly all the others were exclusively white. Why did the unions separate by race?

Patrick Allitt:

One of the unlovely characteristics of humanity is xenophobia and racism. In the 19th century, there were far more categories. For a while, the Census Bureau even regarded as different races people from Northern Italy and from Southern Italy. They had dozens of racial classifications. That alone is reminded to us that race is an invented category rather than a biological category. The locomotive engineers, the train drivers, the firemen and the people with skilled jobs in the workshops were nearly all white Anglo-Saxon Protestants, or in some cases white Irish Catholics. The Irish had also been the victims of severe discrimination. If you were an employer, an obvious tactic would be to hire people of different ethnicities to make it much less likely that they'd make common cause in going on strike against you.

Marx and Engels, when they had theorized revolution back in the 1840s, had predicted that the members of the working class would quickly come to appreciate their solidarity. And because they were numerically so strong would rise-up and overthrow capitalism. The capitalists knew that and did everything they possibly could to prevent it from happening. And one of the techniques they used was to play off ethnic groups against each other, which they often did with a high degree of success. Now, if you were a white train engineer, you would take the view that you were part of the privileged population, which was the life and soul of the American

Republic, and that there was something distinctly inferior and retrograde about these latecomers, particularly if they were Catholics, because part of American identity in the early republic had been political and religious freedom.

But if you are a Catholic, you cannot have religious freedom because you are mentally enthralled by the Pope, you're prevented from thinking for yourself on important issues. And it was true that Catholic immigrants mainly came from places which did not have a tradition of political liberty. So, there was a close association of Protestantism with liberty and democracy and Catholicism with autocracy and tyranny and backwardness.

Larry Bernstein:

The railroad is invented, manufactured, and used first in England and then in America afterwards. American geography and topography are quite different than in the United Kingdom. Tell us about how railroad innovation and implementation differed in the US versus Britain.

Patrick Allitt:

The world's first functioning steam railway was the Stockton and Darlington railway, which opened in 1825, and then the much more sophisticated Liverpool and Manchester railway of 1830. By then the Baltimore and Ohio Railroad had been founded. At first, they were quite heavily dependent on imported British technology. But the Americans found that British locomotives would not run very well on American tracks because the Americans had tighter curves and steeper gradients. Because the distances were so great in America, most American railroads had to be built on a single track with just occasional passing places for train to pass each other.

If you do that, you will once make operations much, much more difficult. Think about this. If there is two trains going each way every day, that means there's going to be a total of four meetings. When the trains have got to stop, they have got to make sure they are at the right place at the right time. But if you have got 10 trains going each day, there is a hundred meetings. So, it gets much, much harder. It was not until the mid-20th century that many railways were double tracked along their whole length. Once you have got double track, each train can go nonstop both ways. So double tracking is a massive advantage, but it is expensive, especially if you are building over thousands of miles.

And the American mountains are much bigger than the British mountains. Even the Appalachians are taller than the tallest mountain in Britain, and the Rockies are much, much taller. So, there are some hair-raising technical challenges to overcome. Steam locomotives, which we used almost completely until the 1930s, require not just coal, but also water. What happens when you are running the train across the California and Nevada desert? Where does the water come from to make steam?

And so already by the 1850s, new technology for railways was coming from America and being exported back to Britain. As the British Empire started building railways in its Indian empire, in Australia, American experience proved to be especially useful indeed.

Larry Bernstein:

Why did the American railroad system go into decline in the 1960s and 1970s?

Patrick Allitt:

The biggest bankruptcy in American history up to that time came in 1970 when the Penn Central Railroad went bankrupt. It had only existed for two years because of the merger in 1968 of the New York Central and the Pennsylvania Railroad. Three things contributed to this. One was that labor costs were much too high, that they got far too many people working because the unions had been able to enforce these featherbedding rules where every new technology did not lead to people being laid off. So, unions were one thing.

Second was running passenger trains. Once automobiles and aircrafts had been perfected, and once there was a good nationwide system of airports and of highways, trains cost more to run than they could take in from the passengers.

The third thing was regulation. The Interstate Commerce Commission was set up in 1887 in response to a wide perception that railroads were throwing their weight around and that they were bullies. What the Interstate Commerce Commission did was lay down more and more stringent rules and regulations limiting railroads' latitude of action. By the early 20th century, railroads, if they wanted to change the rates, they were charging would have to apply to the ICC for permission to do so. So, it meant that the railroads were locked into more and more inflexible conditions.

Whereas when trucking companies came along in the 1920s, truckers were free to charge whatever they liked. That meant that the truckers were at a huge advantage.

Larry Bernstein:

What happened after the Penn Central bankruptcy?

Patrick Allitt:

Government took over the running of the Penn Central Railroad, it turned it into Conrail, which was a kind of quasi-public corporation. And that put the Interstate Commerce Commission rules in obedience. And that enabled Conrail to start reducing its workforce, giving strong protections to the workers it kept, but stripping down its workforce by a huge percentage. Second, the government agreed to take over passenger railways in 1970 by founding Amtrak. But it has never

been good enough to revive the old profitability of passenger railways because the essential conditions remain unchanged.

Larry Bernstein:

My son went to camp near Eagle River Wisconsin, and I went to the train museum there. The Chicago Northwestern had a passenger line that left Chicago at 5 pm on Friday and arrived at Eagle River at 7 am the next day 14 hours later. In 1960 the interstate highway opened cutting the travel time to 5 hours by car. Six months later, it was game over, the passenger train line was terminated because everyone drove.

Patrick Allitt:

Cars and aircraft are simply better for what they can do.

Larry Bernstein:

In the late 1970s most of the major American railroads went bankrupt. Today railroads are profitable and are a growth industry. What happened?

Patrick Allitt:

Deregulation. The governments of the late seventies and early eighties all agreed, we have got too much regulation and it does have a strangling effect on economic initiative. The Staggers Act, under President Carter, finally released the railroads from the smothering grip of the Interstate Commerce Commission. They gained the right to change shipping rates. We are going to decline this cargo. We are going to make this a variable rate according to the season, or even according to the direction in which the cargo is being taken.

And they went into another period of very intense mergers. By the early 2000's what emerged in America was just five huge companies taking on only the freight they wanted with extraordinary efficiencies of scale. Fantastic new technologies like containerization and no need to worry about passengers anymore with a much-shrunk workforce, with astonishingly efficient locomotives. And with some incredibly talented management, put them back in the black and they have remained there since then.

Larry Bernstein:

Europe has greater population density that makes it ideal for intercity passenger trains. Other than Amtrak from Boston to DC, why does the US not have more passenger trains.

Patrick Allitt:

It is almost entirely a question of distances. If you are going from Frankfurt to Berlin or Paris to Rome or Paris to London, now that the channel tunnel is in operation, it is as quick on the train as it is by plane. Once you factor in the trip to the airport, parking, security waiting around. And

the fact that airports are a long way out of town. The train ride from Paris to Berlin is great. It is quick. You go 200 kilometers an hour nearly all the way, and you end up right in the center of the city where you want to be. It's not surprising that the most successful passenger route in America is the one which where the distances are comparable. Boston, New Haven, New York, Philadelphia, Baltimore and Washington, those places are at the same kind of intervals as European cities.

And that is the most successful Amtrak line. And it has got the Acela train, it's got the best of everything. But going from Atlanta where I live to Chicago, in a train, it is three days. So, unless trains can become much faster and much more frequent, air travel is going to dominate the long-distance route.

Now there is a fascinating real-world experiment going on. Since the year 2000, China has built a lot of very high-speed lines. And they have annihilated domestic air flights in China. The reason why it was possible to do in China, and it is not possible to do it here in America, is because China's got a very autocratic government. There is no delay from the environmental impact reports, the things which hold up railway building projects here.

There is no question that high speed rail can be made to work, but ironically it works best with autocracy.

Larry Bernstein:

The railroad in literature and film is our next topic. The railroad was central to American life, and so it is not surprising it plays a major part in American culture. Can you give us a few examples?

Patrick Allitt:

Railways were assimilated into American writing and read any American novel written between 1850 and 1950. One of the conventions of American literature is that cities are wicked, and the countryside is pure. Look at *Sister Carrie* by Theodore Dreiser, it starts with Carrie, a young girl who has come from a very boring farm in Wisconsin, and she is longing to go to the big city, to Chicago. And she gets on the train, and no sooner has she done so, then she meets a man who is superficially attractive who seduces her. So, you have the idea that the train carries people from the country to the city. And in doing so, it morally corrupts them.

On the other hand, when Sinclair Lewis came to write *Main Street* about 20 years after *Sister Carrie*, he does a very clever inversion of that trick. He shows the characters going on a train across rural Minnesota. And a woman who has been well-bred in the city is now going to live with her new husband, a country doctor out in the countryside, and looks at the people on the train. She shrinks with distaste from what a grubby and dirty and intemperate and uncultivated

population they are. Trains are wonderful from the point of view of bringing together people who otherwise would not meet. There is an inherent drama in railway stations where people say farewells.

Similarly, right from the beginning, film and railways got on great together, partly because to film a moving train, there is lots to see. One of the early Hollywood tropes is the beautiful young girl chained to the railway track and the great Expresses coming and can her boyfriend save her in time? There are lots of those from the Max Sennett era of Hollywood comedies.

One of the early Hitchcock movies is called *The Lady Vanishes*, and it is about a group of people on a train, including a nice old lady. And suddenly she disappears, but the train has not stopped. So, she has got to be on the train. And yet everyone who must previously have seen her suddenly says they did not see her. The mystery depends upon that paradox. And similarly, in Agatha Christi's book, *Murder on the Orient Express*, the great detective thinks one of the people on this train must have committed the murder, and he investigates and thinks, it cannot possibly have been any of them, and yet it must have been all of them. And so that is the paradox he must deal with.

Larry, the use of railways in both fiction and films has been astonishing and wonderful.

Larry Bernstein:

After getting accepted to the University of Pennsylvania in the summer of 1984, Amtrak was running a special where you buy one ticket and your wife travels for free. So, I called a classmate of mine Maria Bosco from high school and asked her to marry me. I told her the opportunity and that Amtrak was also offering unlimited luggage at no additional expense. So, our families had a big dinner together and we took an early evening Amtrak train from Chicago's Union Station to Penn Station in Philadelphia. I think it took 20 hours and it was three hours late. Some honeymoon.

Patrick Allitt:

One of the things which took a long time to learn was that sometimes there's merit in going slowly. For example, just as railroads suffered from the rise of aircraft, so did the transatlantic shipping industry suffer from the rise of aircraft? A transatlantic crossing would take four or five days and a plane could do it in less than one day. But eventually the shipping people came up with the concept of the cruise, where the whole point is to go on a ship and to do it slowly. And now the cruise industry is thriving as never before.

In the same way the railways have realized slow rail travel when you want to get somewhere is terrible. But slow rail travel when the whole point is the journey is great. And so, the growth of luxury trains has proliferated. America's a little bit behind on this. The Canadians have got much

better ones with trains like the Rocky Mountaineer, the revival of the Orient Express in Europe. In Britain there are trains from London to Scotland and you have a sleeping car and incredible dining cars, and there is a scotch whiskey tasting along the way. And the whole point is to be a moving vacation. That is never going to revive ordinary passenger travel because things like this tend to be awfully expensive.

Larry Bernstein:

My favorite rail film is Runaway Train. It is a Jon Voigt movie that was released in 1985. Two convicts who have escaped from a maximum-security prison, get onto a freight train, and the train engineer has had a cardiac arrest and is dead. The locomotive is going full speed ahead with nothing to stop it.

The movie is all action, how are the convicts going to stop that train? Meanwhile, the railroad is also in a panic. There are environmental concerns and internal squabbles about how this would have been solved the old days when there were other workers aboard that train to apply the brakes.

Patrick Allitt:

Runaway train is an illustration for the point the trade unions have been making that the railroad companies have taken it too far in stripping down the staff. Recent accidents in places like East Palestine, Ohio where the train carrying toxic wagons set fire, it ought not to have derailed, it ought not to have caught fire. There ought to have been all kinds of safeguards in place. So, it may be true that the understaffing has gone too far.

Larry Bernstein:

My understanding is that the East Palestine derailment was caused by a wheel that got too hot and failed when making a turn. There is always a tension between economics and additional safety procedures. Tell us about that challenge.

Patrick Allitt:

The history of railroad safety is with the railroad companies kicking and screaming every inch of the way, claiming that they cannot afford to do it. It is also true that some safety devices are much more cost effective than others. That some cost hundreds of millions of dollars to install, and the total number of lives saved per year is one or two. Reasonable people can disagree about the safety measures are the best ones to install.

The most common source of railroad accidents today is drivers going across, even though the gates are coming down and people just literally wandering on the railroad and being hit.

There is no easy fix to that. Railroad track beds themselves take an enormous pounding. Coal trains, which weigh 20,000 tons, and they are rolling along at 40 miles an hour. The track has got to be in incredibly good shape to absorb the battering that that gives.

The railroad companies correctly say far more tanker trucks have accidents on the roads than railroad tankers. But when there is a railroad disaster like this one, and there is an apocalyptic fire, it feels much worse. Getting the safety regulations exactly right is an exceedingly difficult matter of balancing expense against actual improvement in safety.

Larry Bernstein:

Nature is inhospitable in many places. Snowfall in the Rockies is severe and prevents trains from getting through the mountains. When we visited the rail museum in Union Illinois together, they had a rotary snowplow which was an engineering marvel. This plow would break up a ten-foot snowbank with ease. Watching it work is mindboggling. When the train is moving the snow explodes. Tell us about it.

Watch a video of rotary snow plows here: [!\[\]\(c3d993ca47bfe2a953c700506ce31fa0_img.jpg\) Rotary Snow Plow Returns to Donner Pass](#)

Patrick Allitt:

Because of American geography and climate, snow removal has always been a problem, particularly in the north and in the mountains. The earliest railroads on the East Coast, if you were a male passenger, when you bought a ticket, you were often agreeing either implicitly or explicitly to shovel snow if necessary. If the train came to a standstill, the women huddled around the stove inside the car, and the men got out and shoveled snow until the train was clear. Now, you could usually manage like that in the eastern states, but once railroads were built out into the Great Plains, and particularly up into the Rocky Mountains, where temperatures often go down to minus 20 or 30 sometimes for long periods, and where you have very severe blizzards, it simply was not good enough. So, one of the inventions was called a bucker plow, and this is a shaped blade as high as the locomotive.

Sometimes a special cooper was placed onto the locomotive cab so that somebody could see above the plow and then relying on momentum, the locomotive pushing this plow would just blast its way into the snow face in the hope of being able to push it to one side. Sometimes it works, sometimes it did not.

The decisive technological breakthrough was the invention of the rotary snowplow invented in the early 1880s by a Canadian man called Orange Jull. And the great thing about the rotary snowplow is that it did not rely on momentum. Instead of going as fast as possible in the hope you could shower the snow away, it could go very slowly.

It's got an engine of its own, it's pushed by a locomotive and it's powered. What the power is doing in the rotary snowplow is it's turning a massive rotating blade at the front of the device, which is like an aircraft propeller with angled blades, and you push it against the face of snow. There have been some terrible accidents in the snow. The worst accident in American railroad history took place in about 1910 at a place called Wellington in Washington state. This is up in the Cascade Mountains extremely high up, and the line was built across a slope. It snowed very heavily, and the train could not move forward. Another train came up then it snowed so heavily behind it that neither train could get either up or down. So, two trains were stuck there in the little town of Wellington. And in the previous year, the whole of the slope above them had been logged, been clear cut. So long as the snow was falling and so long as it was cold enough, everything was okay.

But when it warmed a little bit and the snow turned to rain, a great avalanche began and it came down right in the middle of a night, swept away these two trains and carried them down into the valley below, killing just about everyone on board. The accident took place in early March. They could not finally dig out the bodies until July. That really had apocalyptic consequences. The railroad company responded first by building snow shelters over the line and then by building a tunnel at a much lower altitude so they would not even have to go that high. But it's remained a problem in American railroading right up to the present.

Larry Bernstein:

Why did the railroads abandon steam locomotives for diesel?

Patrick Allitt:

One of the sad things of learning more about railways is that you realize just how hopeless steam locomotives were. Well, let me qualify that for an invention of the early 1800s. It was absolutely cutting edge because it was the first time that a human device had ever gone faster than a human person can move or even that a running horse can go. So, they were wonderfully sophisticated by comparison with what had gone before. By now when we look at them, we think, is that how they had to manage? With one guy shoveling coal for all his worth, <laugh> and then heating it, turning it into steam, and then converting the steam to such a pressure that it can move not just a hundred-ton locomotive, but the hundreds more tons of the train itself.

That is a signal of how energetic steam can be. But they were dirty, they were slow. They took a huge amount of maintenance. You needed two or three hours in the morning to get them started from cold to operating pressure that spent as long in the workshop as they spent out on the lines. They constantly needed comprehensive overhauls in every way. Diesel locomotives were superior. It breaks my heart to admit it because of my love of steam trains. They produce massive quantities of smoke and ash. If you look at photographs of American industrial cities, anytime

between 1850 and 1960, they are covered in a pool of dirty smoke and the buildings are covered in soot, everything is filthy.

That leads to a huge rise in respiratory diseases. It means you can never really be clean. People who worked on the railway said you would get so dirty that even if you had a week's holiday every morning when he woke up, there would be soot on the pillow because it's got into your eye socket, and it gradually works its way out of your eye sockets over the next few days. And you are inhaling this stuff all the time. This is another of the paradoxes where we are nostalgic for these which were life threatening in every respect.

Larry Bernstein:

Railroads have gotten exponentially more productive over time. And to do that they needed to be more productive in every way. The quality of the steel, the improvements in engines and brakes. Tell us about the incredible productivity to this complex system.

Patrick Allitt:

They have become steadily better. One of the most amazing aspects of railroading today is how long the trains can be. They're now often more than a mile long. You can imagine the enormous amount of strain that is on the couplers between the cars and sometimes the couplers separate. So how do you prevent that from happening? Well, instead of having just locomotives at the front of the train, you have a push locomotive at the back.

And you often have ones in the middle as well. It's called distributed power and they're all operated by the driver in the front cab. He can increase the power being delivered from each of the units back in the train. So that, for example, if a train is going over a rise, it means that when the driver of the front is already going downhill, but part of the train is still coming uphill, he can increase the thrust on the engines at the back to reduce the pressure on the couplers.

Larry Bernstein:

Trains operate in conjunction with ships and trucks. Tell us about the integration of these transportation systems.

Patrick Allitt:

Another huge technological jump of the last few decades has been the revolution in containers. Double stacked containers began in the 1950s and were invented by a North Carolina trucking guy who was sick of the fact that he would drive his truck to the dockyard and then everything in the truck would have to be unloaded by hand and put into cranes and swung onto a ship, and organized crime dominated the dockyard. So, a lot of this stuff got stolen. And so, he bought an old-World War II tanker ship and experimented with standard size containers. The first voyage took place in 1957. It took decades after that for it to catch on widely.

But once it has had the improvements in productivity and speed of shipment were immense. product can be made in Central China and put in a container, then a train brings it to the Chinese port, A container ship brings it to Long Beach. Then it gets put on a Santa Fe Train and it is carried all the way to Chicago. And then it's taken in a truck from Chicago to Glencoe, Illinois, and no one's touched the stuff inside it. It has been continuously in movement. Nobody's touched it. It's quicker than it's ever been. The improvement over the old dockyard technique is phenomenal.

Larry Bernstein:

What are you optimistic about with regard to our national rail system?

Patrick Allitt:

Railroads have already got a 200-year history and they have got plenty of life left in them because no one's found a more efficient way of moving heavy solid objects across ground. There are miracles of efficiency by comparison with any other alternative. The number of accidents will decrease, the regulation will become more stringent. They'll become adaptable to renewable energy sources. And they will continue to become less and less noticeable to people who aren't directly involved with them. They have become progressively more invisible.

Atlanta began its life as a railroad center. That is why it is there. But when you go into downtown Atlanta now you do not see trains because they are all underground. The whole of the urban infrastructure has been built over them, which makes the city safer and quieter.

I have only got one grandchild in Europe. He will travel regularly by train because the distances he has got to travel make trains appropriate. Americans will continue to not travel by train, I expect, unless some technological breakthrough happens, such as the building of a high-speed network, which would make railways possible comparable to China, although it's very hard to see how that might happen.

Or possibly some even more revolutionary technology like magnetic levitation. One set of magnets lift a train slightly off the track, so it does not have wheels at all. And another set of magnets causes it to go along very rapidly. There is a train in operation between Shanghai Airport and Shanghai which goes at about 260 miles per hour. It's the fastest vehicle of its kind in the world. So, they can be built, and they can operate, but whether we can create a nationwide network of them in this nation or any other remains a little bit hard to believe. Japan's working hard on it. But I think were we to have the privilege of coming back in a hundred years to see what the railways were doing; we would find that they were still there and that they've still got wheels.

Larry Bernstein:

Thanks to Patrick for joining us today.

If you missed last week's show, check it out. The topic was Remembering the Waco Inferno. It has been 30 years since the Waco catastrophe and there are many lessons to learn from that disaster. We discussed the FBI's decision to lead assault that resulted in the death of 78 people including 25 children. The FBI had run out of patience with the Branch Davidian's religious leader David Koresh.

The speakers were Kevin Cook who is the author of the book Waco Rising. Our friend Patrick Allitt, and my buddy Darren Schwartz who is the What Happens Next TV and Movie Critic. I now want to make a plug for next week's show with Ohio University Professor Ingo Trauschweizer who wrote a biography entitled Maxwell Taylor's Cold War: From Berlin to Vietnam. The discussion will focus on the dangers of relying on the advice of generals in political decision making. Generals often see military solutions to foreign policy problems and that can be catastrophic.

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Thank you for your continued engagement, good-bye.