

Tracks Across Continents  
Paths Through History  
The Economic Dynamics of Standardization in Railway Gauge  
by  
Douglas J. Puffert  
The University of Chicago Press, Chicago, IL, 2009

Review  
by  
Ken Krechmer

Finally, a comprehensive and detailed view of the world-wide history of railway gauge standardization is available. This book is the long awaited and significant refinement of the author's Stanford University doctoral thesis, "The economics of spatial network externalities and the dynamics of railway standardization," 1991.

The original thesis was the first long term (300+ years) review of a world-wide path dependent system: the standardization of railroad gauges. By path dependent, the author means a process where early choices impact later results and outcomes may be less than optimum. Puffert's expansion into a full length book makes this extensive history of a path dependent process accessible to the public for the first time.

The British and US railway gauge standardization history is explored in the greatest detail, but almost all railroads in the world are addressed. All the invention, innovation, shortsightedness and greed that takes place as a commercially important standard develops is explored. In so many cases, the participants in the gauge selection process lacked the foresight to see the long term value of a common standard. The history of gauge selection makes clear the path dependent nature of a standardization process, where the rare foresight often appears as just conjecture.

The book is divided into four sections: The Introduction (Chapters 1&2), which includes background information helpful to understanding the story; The History of Gauge Selection (Chapters 3-8); The Economics of Gauge Selection (Chapters 9&10); and The Conclusion (Chapter 11).

This reviewer is pleased that Puffert completely debunks an Internet rumor . The standard gauge of railroads is not related to the width of two horses' asses. This unfortunate rumor seemed to cast aspersions on the value of a standardization process. The history presented makes clear that standardization processes often begin by an accident, becoming an assumption, later a convention, before emerging as a standard. But these processes are driven by people who, most often, work hard to achieve both gain for themselves and a better value for the public.

The Economics of Gauge Selection chapters offer a cellular automata model (calculated using computer simulation) of the gauge selection process and develops how this model

accounts for the various behavior that occurred. The model is explained in non-mathematical terms. A web site (<http://trackgauge.net>) noted in the book for the mathematical model and other information was not found by this reviewer. However, the model is available in a mathematical form in an earlier paper by the author. The author describes most of the simplifications used in the model. Chapter 10 looks at some of these simplifications to see how modifying them impacts the results (not dramatically). This econometric model is certainly useful in considering the impact of different actions on how standards develop, but the model is much too simple, as the author recognizes, for direct extrapolation to current standardization issues.

Puffert's economic analysis is built on the concept that efficiency is the most significant driving force. However, the most common path dependent system seems to be an evolutionary system. This suggests an evolutionary view of a standardization process as an alternative approach. When foresight is limited, all the possible paths will not be understood. Given path dependency (the possibility of non-optimum outcomes), it may be most desirable, in an evolutionary sense, to follow multiple paths. Stated simply, when future goals are not fully understood, is it best to maximize efficiency, or minimize risk (the evolutionary approach)? Puffert's economic analysis addresses only the efficiency side of this issue.

Perhaps there are no common answers to these questions, but this book gives the reader much to ponder:

- Is there an optimum standard?
- What makes a winning standard?
- Who loses a standards war?
- Are governments or commercial organizations better at standardization?

Following this history of railroad gauge standardization and all the "mistakes" is a very powerful learning tool for anyone who is interested in any standardization process either from a participatory or an academic view point.