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#23 Railroads, Standards, Lock Ins and Conventions

“Lock In” is a concept that is well known to students of standards. Simply stated, it’s the phenomenon of being trapped by success. Less cryptically, it’s what exists from the time that a new standard becomes successful until the limitations of the same standard are found to outweigh the costs and inconveniences of replacing it with something better.

The evolution of conventions, on the other hand, is simply a manifestation of habit. But because the perpetuation of conventions often also results from a lack of vision, it’s sometimes easy to confuse convention and inertia with standards and lock in.

One counterintuitive difference between lock in and convention is that lock in (which is the result of real constraints) is often creatively addressed, while conventional conduct (which is elective) continues unchanged, even though the same conduct is neither mandatory nor often ideal.

For example, various strategies are used to maintain the benefits of standards while minimizing the constraints that the same standards otherwise impose. In the case of Windows (a “de facto”, proprietary operating system standard), maintaining “backwards compatibility” is a high priority in order not to lose the benefits of interoperability, even as the technology itself changes. Microsoft’s corporate commitment to such backwards compatibility reassures customers, making them more willing to buy the software vendor’s products, because they know that Microsoft will ensure that older computers can continue to be used in conjunction with newer ones, and that files and data can easily be moved from one version of a Windows operating system to another one when the customer eventually decides to upgrade.

But maintaining backwards compatibility has its own constraints and costs for vendors, even though customers may be unaware of this fact. For example, when radical improvements in software design become possible, the need to maintain backwards compatibility may prevent a vendor from taking advantage of those advantages. In some cases, this may provide a market opening for a new technology to establish a beachhead, much as a lean and targeted upstart airline with low overhead can discount its fares and seize routes from a large, traditional carrier burdened by an expensive, unionized labor force and a business model that depends on less productive “feeder” routes to keep the planes on its main routes full.

The phenomenon of lock in is as old as standards themselves. For example, one of the earliest standards of the industrial age is still in force and unchanged today: railway gauges. It’s worth taking a moment to trace the history of that standard, to illustrate both the constraints as well as the benefits of being locked into a single standard through the entire lifetime of a technology, and even the extension of those constraints into other allied domains besides.

In the beginning of the railway age, engines were built by multiple shops, and railway lines were of limited length. Consequently, the distance between rails could be set at whatever arbitrary distance pleased the founder of a new railway company. Once railway lines became long enough to permit them to connect, however, it became imperative for all to agree on a standard distance between the rails, so that the rolling stock of one railway line could in fact roll without conversion onto the rails of its neighbor.

Of course, once that gauge was agreed upon (along with its load bearing capacity and various other features), that standard was indeed locked in for good. Within a comparatively short period of time,

virtually all railways that linked into any growing national railway network were utilizing the same gauge (so-called “narrow gauge” railways also continued to exist to fill solely local needs; the popular Durango to Silverton tourist line in Colorado is a rare surviving example of such a railway).

Over time, other aspects of cargo carriage also became “locked in” by the original decisions made by railway engineers. The length and width of railway cars today are what they are in part as a result of stability factors arising from the already-fixed rail gauge. Looking further afield, enter any warehouse and you will see pallets of a standard size, optimized to fit inside railway cars. Head out to sea, and there you will find that the containers carried by cargo ships are built to fit on railway cars. And it's no coincidence that those same cargo containers can be easily transported by tractor trailers, whose flat beds can be appropriately sized to the task.

One reason that lock in is so powerful with respect to interoperability standards like these is due to what economists call the “network effect”. What they mean by this phrase is that the more nodes there are to a network based upon a common standard, the more valuable that network becomes to all of those that use it. For example, if you can load a cargo container, and then place that same container first on a truck, and then a ship, and then onto a railway, and eventually deliver it to its final destination on yet another truck, all without ever having to empty it, then everyone from the original vendor, through each carrier, and then finally the customer that pays the freight, will benefit.

Similarly, if a bank joins a network of ATMs that numbers in the thousands nationwide, that bank will be more attractive than a competitor (all other things being equal) whose customers can only use its proprietary, local ATMs. So, also, with telephone networks (and cell phones, as Americans traveling to Europe have learned to their disappointment).

Of course, once the network effect kicks in, the costs and inconvenience of shifting to a new standard become formidable indeed. Still, at least lock in has the virtue of serving the purpose for which the standard to which it relates was originally intended to address. A railway car today still carries cargo or passengers, the same now as when the Tom Thumb first rolled on the primitive wooden rails.

Non-physical standards, in contrast, can travel very strange roads indeed.

To find an example, let's go back to the early days of the canal systems that preceded the railways. One of the primary enablers of the rapid creation of this system was the (then) recent development of what some have called the greatest innovation in business history – the “joint stock corporation.” While this innovation may be traced to an earlier date, it first became widely implemented in England in the 18th century. Its most revolutionary feature was its ability to permit the pooling of capital without the imposition of any risk on investors other than the loss of that capital.

Using this new technique of financing, England soon became interconnected by a vast web of freight and passenger carrying canals, each one launched by a group of entrepreneurs, financed by avid shareholders, most or all of whom were often local. In the years to come in the New World as well as the Old, railways, mines and other commercial ventures benefited from vast infusions of cash, all concentrated through the use of this new and innovative capital aggregation technique.

In the beginning, the relation between a stockholder and a corporation was fairly direct. Successful corporations distributed profits (in the form of dividends) much as they would in a traditional family owned business. And trading in the stock issued might be extremely limited.

Eventually, of course, everything changed. Consider, for example, a share of AOL stock issued in 1992. That share has now been circulating for over 12 years, without a dividend ever being paid to any of the holders of that share, or a benefit being reaped by its issuer after the net issue price was paid to AOL by the underwriter.

Instead, that share of AOL stock became a legally saleable poker chip that can be traded by anyone anywhere in the world on NASDAQ, the largest purely speculative casino in existence. Why a casino? Because very few companies listed on that index pay dividends, and few shareholders vote their shares with conviction, if they vote them at all. What's left is just the hope of appreciation, and the risk of depreciation. In other words, a bet.

As a result, even corporate strategies intended to maximize profits have nothing to do with distributions to a company's nominal owners, but everything to do with driving the value of the underlying security upwards. In non-dividend paying companies, profits therefore become an abstraction, rather than a legitimate end unto themselves. When announced at the end of a quarter, the existence and magnitude of a company's profit margin is less significant to an "owner" (at least in the short term) than is how it compared to the performance of its competitors, and whether or not that margin exceeded or lagged the expectations of analysts.

In short, a stockholder of most shares today no longer really has any reason to think like an owner at all. When such a stockholder is thinking most rationally, he is instead trying to act as a skillful gambler, counting the cards and watching every sign that may give a reliable clue on when to hold, and when to fold. If smoke can drive the price of a stock as high as substance, then there is no real difference to the shareholder, so long as she is savvy enough to sell before the smoke clears.

At this point, let us return to the distinction between a standard and a convention. Is the venerable joint stock company more like a business standard, whose limitations have been creatively mitigated through evolution, or merely a convention gone adrift?

One could easily make the case that the continuing issuance of common stock as the "standard" method of capital formation in public markets is not only a convention that could be abandoned without concern, but that there is little lock in to impede experimentation with more useful and novel approaches. The comparative success of the recent Google public stock auction is one indication that this is so.

Another way to test the hypothesis in the breach would be to formerly abandon the traditional concept of stock as an ownership interest entirely, and to make the most of corporate shares as the poker chips that (in large part) they have already functionally become.

For example, why should a corporation continue to work hard to benefit shareholders that hold shares that were issued decades, or even a century ago, especially where these same shareholders have contributed nothing to the current growth potential of the business? Why not instead charge a transfer fee every time a share changes hands, so that "the House" makes something every time someone new takes a stockholder's place at the blackjack table? And if buying and selling stock truly is a gamblers game and management always wins the votes, why bother with the charade of stockholder voting at all?

One could easily imagine creating a whole new system entirely, given a clean sheet of paper.

For example: A corporation could have two classes of stock – a voting, preferred class that represents a true ownership interest, and a non-voting common stock (with a transfer fee) that not only does not represent ownership, but is optimized to fluctuate in price, the better to attract the gamblers. The same SEC regulations, of course, could still control the disclosure and dissemination of corporate information and the trading of shares.

Ridiculous, you say, and you'd put money on it – we're dealing with a business standard here, and not a convention.

Well, maybe yes, but more likely no. One can think of other supposed "standards" that turned out to be conventions rather than standards, and that were subject to less lock in than anyone would have expected.

Such a revolutionary new regime has already been introduced in the world of software "ownership" and licensing. It's called open source Linux.

Still want to place that bet? I'll give you good odds.

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Useful Links and Information:

For a brief but informative history of how railway gauges ended up where they did and an interesting analysis of whether it would have made any difference if a different gauge had been used (not to mention a similar history of model train gauges), see:

“Standard Gauge” (Wikipedia: November 22, 2004 [most recent edit])
<http://infobluemountains.net.au/rail/horse-ass.htm>

For an alternative (and dubious) theory on the origin of railway gauges (and shuttle boosters), see:
Origin of Standard Gauge (Info Blue Mountains Railway Pages: undated)
<http://infobluemountains.net.au/rail/horse-ass.htm>

Views (pro and con) on the origins and future of the corporation:

Brown, Bruce. The History of the Corporation, Vol. 1, (BF Communications/Astonisher.com: 2003).
[Sample quote: “God, demon, servant, master, parasite or provider -- what exactly is the corporation?”]
www.astonisher.com/archives/corporation_intro.html#introduction

Hay, Donald. “The Joint Stock-Company: Blessing or Curse?” (1990) (unpublished)
www.gordon.edu/ace/pdf/Hay_JointStockCo.pdf

Novak, Michael. “The Future of the Corporation” (The AEI Press: Washington, D.C. 1990).
www.aei.org/docLib/20021130_70809.pdf

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