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Path dependence and the Korean alphabet

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Abstract

The paper examines the history of the Korean Alphabet as a possible case of third degree path dependence. The Korean Alphabet, a system of writing invented in the mid-15th century superior to the one then in use, was largely neglected for nearly 500 years and finally adopted as the official script in the mid 20th century. The neglect of the superior writing system seems due to a combination of second degree path dependence and institutional barriers that did not permit competition. The processes by which the alphabet later became official are consistent with the view.

JEL classification: D00; D89; O39

Keywords: Path dependence; Literary media; Alphabet; Institutional barrier

1. Introduction

Since Paul David's 1985 paper "Clio and Economics of QWERTY", the concept of path dependence has gained much currency in the economics and public policy arenas.[1] The reason for the popularity of the concept of path dependence goes beyond the platitude that "history matters". Its popularity derives from the interpretation of path dependence as a new class of market failures and the implied policy relevance (Krugman, 1994, pp. 221–244).

According to David, the conventional keyboard arrangement, QWERTY, has prevailed over DSK (Dvorak Simplified Keyboard), a proven more efficient keyboard arrangement, only because QWERTY had an early start and historical accidents such as an exceptional typist using QWERTY

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[1] See also Arthur (1989). Path dependence results from two sources of increasing returns to scale due, for example, to positive network externalities, learning and improvement, or simply economies of scale.

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winning speed-typing competitions. Precisely because of its earlier start, QWERTY experienced the problem of mechanical arms tangling when people would type quickly, making it slower than DSK. By the time a better keyboard arrangement in DSK based on the principle of scientific motion studies was introduced, when the tangling of typing arms was no longer an issue, however, QWERTY was already well established as the standard, with all the advantages of network externalities. Consequently, despite the findings of the US Navy study that the efficiency gain from switching to DSK was such that the cost of retraining typists can be recovered within 10 days, and despite Apple Computer's claim that DSK can increase typing speed by 20–40% (and its computers offered the choice of switching to DSK by a click of the mouse), DSK was not able to replace QWERTY. David (1985, p. 336) concludes that

> competition ... drove the industry prematurely into standardization *on the wrong system* .... Outcomes of this kind are not so esoteric ....in the presence of strong technical interrelatedness, scale economies, and irreversibilities due to learning and habituation.

Apparently, the idea of path dependence that results in an inefficient outcome hit a responsive cord among many economists. Paul Krugman (1994, p. 235) summarizes the implication of path dependence with his characteristic air of authority: "in a QWERTY world, markets cannot be relied upon to get things right". The popularity of the concept of path dependence, in short, arises in a large measure from the implication that some kind of government intervention could improve upon the market outcome[2] (Cowan, 1991).

A few economists have since tried to document such cases: for example, the dominance of VHS over Betamax (Arthur, 1990), of the light water reactor over the heavy water or the gas graphite reactor (Cowan, 1990), of chemical pesticides over integrated pest management (Cowan and Gunby, 1996), of the internal combustion engine automobile over the steam engine automobile (Arthur, 1989)[3], of the Windows OS over Mac OS, and do on. In all these cases, society is seen as being locked, through the process of market competition, into inferior technologies or standards, hence, the market failure.

However, not everyone is persuaded by the argument that path dependence results in market failures. Two of the most vocal critics of path dependence as market failure have been Liebowitz and Margolis [LM, hereafter]. Yes, history matters in the sense that today is preceded by yesterday. It is also true that what we do today is based on some arbitrary decisions made in the past. Nevertheless, the arbitrariness of past choices does not necessarily make them any less efficient, as in driving on the right (versus on the left), or parting our hair on the left (versus on the right), or using fork and knife (versus chopsticks), and so on. If arbitrary choices made in the past make no practical difference, why should they be regarded as market failure? LM (1995) call this type of situation as *first degree* path dependence.

However, we may not be as indifferent to other path dependant practices or standards. A choice made earlier may eventually become the standard, or technology of choice, through network effects and/or learning. But the choices that seemed prudent at the time of initial adoption may later come to be compared unfavorably in light of some newly available technologies and alternatives. One may come to believe that a system-wide switching to an alternative (through a collective action)

[2] The envisioned intervention may range from picking a winner to underwriting the experimentation of all promising technologies.

[3] Kirsch (1996) argues that the internal combustion engine was an effective choice. I thank an anonymous referee for the reference.