

THE INTERNET

THE NEW TECHNOLOGY January 11, 2000

Every major advance in communication and transportation has been a marvel to users, a huge stock market celebration and, for the economy, significantly lowered costs. Ultimately, every distinctive innovation matured and was eclipsed by the next one.

In the late 1600s, Turnpike Trusts in England became very popular with investors and provided dramatically improved efficiencies. As existing roads were narrow and rough, pack horses were widely used. The new toll roads featured a well structured roadway wide enough that wagons could pass. A pack horse could carry about 250 pounds, but the turnpike could support a two-ton wagon load pulled by a two-horse team for a quadruple in productivity.

In the 1720s, the prolific writer, Defoe, noted that the reduction in freight rates mainly benefited tradesmen rather than carriers. Obviously, conditions were competitive. The public heard all the touts, but considered the tolls as taxation and were impatient for benefits. The following doggerel sums up the party aspects of the boom and its consequence: "Now with Turnpikes are grown much in fashion the hardest Tax in all our Nation - for where Wine & Women & Stock-Jobbing past, The Turnpike must help us at last"

The jump in efficiencies with canals was outstanding as one horse could tow a barge carrying 50 tons. The improvement over the pack horse was by a factor of 400 times or over the turnpike by about 50 times. It's easy to see how Turnpike Trusts lost their new paradigm status as speculators frantically chased new canal issues.

Of course, the construction time from stock mania to operating success was measured in years and canals provided the first great vision phenomenon well in advance of commercial reality. A new issue mania erupted in 1792 and subscriptions could only be entered with the company in the town where the canal was to start. Newspapers that winter provided entertaining accounts of speculators wildly galloping through the night in snow storms to get to the next town for the start of business.

As wondrous as they were, canals had limitations with droughts in summer and ice in winter. Also, speed was limited due to bank erosion from the wake of faster "packets" designed for passengers and mail. Horse-drawn freight wagons rolling on wooden rails had long shown efficiencies superior even to wide (up to 9 inches) steel-tired wheels on improved roads. Originally developed as feeders to turnpikes and then to canals, all that was needed was a mobile steam engine to launch another revolution in communications.

Naturally, speculators were in full song well before commercial success. The high-tech concept celebrated in the bubble that peaked in 1825 was the railroad. "Nothing now is heard of but railroads.", said the Quarterly, a London publication, in March 1825. "The daily papers teem with notices of new lines in every direction; and pamphlets are thrown before the public eye recommending nothing short of them general throughout the Kingdom."

During 1824 and 1825, prospectuses were issued for 624 companies and in March of 1825 the famous merchant banker, Francis Baring, noted "The gambling mania [has] seized upon all classes and was spreading in all parts of the country."

That bubble topped out in the summer and the Street was into severe speculative liquidation in late October when the first commercial railroad began operations.

Railroads did not reach ultimate saturation in the U.S. until the 1890s just as the next new paradigm in transportation - the automobile - was being developed.

The electronic world, so to speak, began in the 1860s with telegraph using Morse code and by 1869 undersea cables provided instantaneous communication between America, Europe, and England. In good markets, this was given as bullish and in major declines the telegraph was praised for bringing instantaneous help and, at the same time, blamed for instantaneously spreading the panic. (Understandably, different writers had differing perspectives.) The ticker tape (1867) no doubt experienced a similar range of opinion. All of this was celebrated as high-tech in the 1873 Bubble.

Obviously, the telephone, in moving from Morse to voice was an outstanding but evolutionary step.

The next distinctive jump in communications and transportation was highly celebrated in the 1920s' great financial boom.

Radio communications using Morse was expanded by military purposes during WWI and handed off to RCA. The business plan in 1920 could not have imagined network broadcasting of voice and music, as well as gramophones and talking pictures by 1929. Saturation in both the stock market and the industry was reached in 1929, and the subsequent contraction is well known.

With the development of the Model T, Henry Ford accomplished a revolution in automobile production and price. By 1928, manufacturers were providing an outstanding product when Knudsen, the president of Chevrolet, estimated that saturation would not be reached "even in 1930".

The head of the Society of Automotive Engineers wrote (also in 1928) that market saturation could be offset with "changing automobile appearance frequently as to obsolete those in the hands of the owners".

Automobile sales collapsed to 50,000 units in the severe recession following the 1920 commodity boom. Then sales soared to around 400,000 in the latter years of the financial boom. The unusual spike up to April, 1929 indicated enthusiastic buying to total market saturation and even the final leg up on the Dow to September provided no relief in the collapse in sales.

There is a linking theme through all of the examples of new financial eras and periods of rapid technological innovation. In 1975, Gerhard Mensch published a paper that provided a calculation of the rate of introduction of new technology by business. He observed that while scientific innovation occurred fairly consistently, its application by business was recurring and related to business conditions.

Our own work supports this (as would anyone who reviewed financial history) and we have explained it as follows. In a disinflation period, real interest rates were higher than during the preceding era of high inflation. This, with little pricing power, forced lean inventories, cost cutting, as well as new methods of business and, in desperate resort, the application of new technology. This condition, in every case, became celebrated as a "new era".

Mensch's chart plotting the rate of introduction is included nearby. Institutional Advisors has added the years in which each "new era" ended with the collapse of the bubble in financial assets.

In the first example, the increase in new technology anticipated, and was celebrated by, the 1772 bubble when the literary genius, Samuel Johnson, described the rate of change with "everything is to be done in a new way". Association with the abrupt increase in innovation is very clear with the 1825 bubble. In the 1873 example, innovation really soared with the intense pricing pressures with the first part of the 1873 to 1895 Great Depression (as it was called by economists until 1939). Obviously, the 1920s

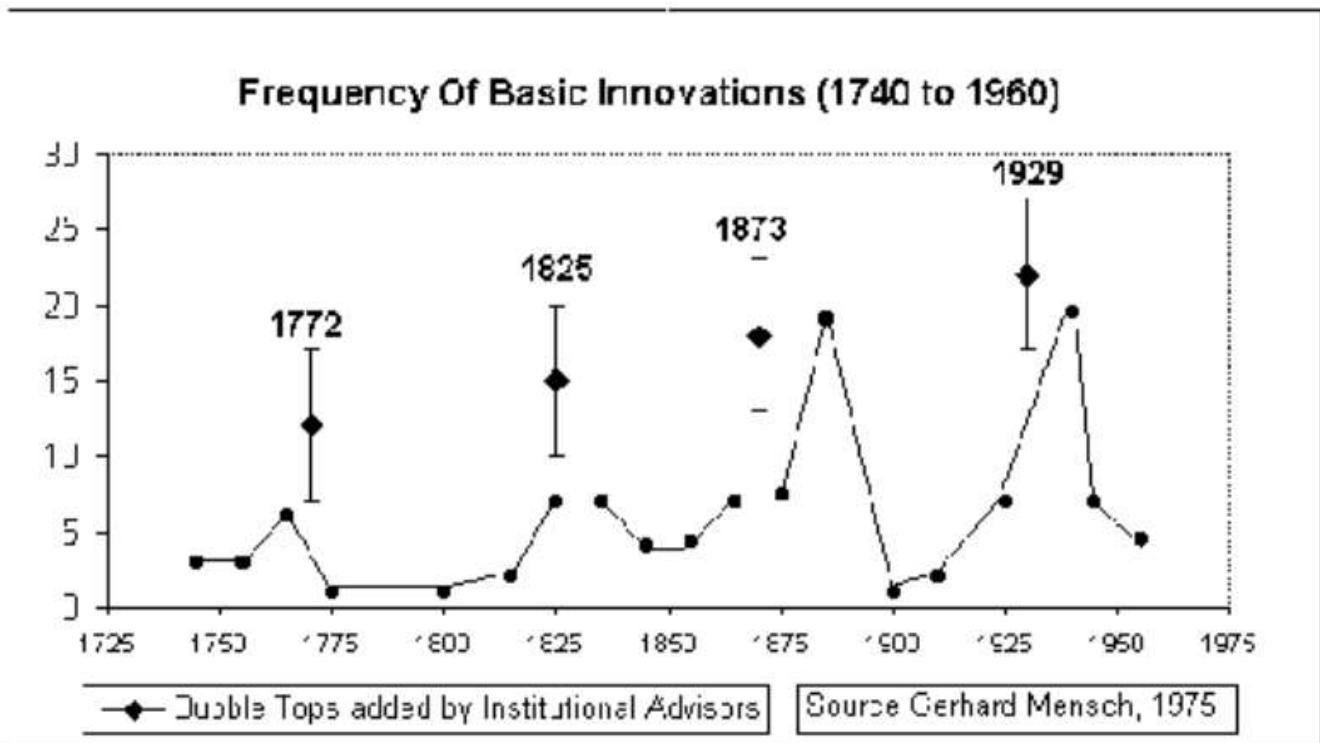
enjoyed a fabulous new era, which innovation continued (minus the party) to be enhanced by the consequent harsh deflation in both financial and tangible assets.

Canal projections that were yet to be built were the new rage in 1792 and matured to saturation in time for the 1825 bubble. That party highlighted a mania for yet to be built railroads which, by the 1873s' bubble, had become so overbuilt that Vanderbilt wisely observed "Building railroads from nowhere to nowhere at public expense is not a legitimate undertaking."

Given the dynamics of the leaders now and deteriorating technical aspects, speculation in the stock market is approaching saturation. If it does, it would again be anticipating the eventual saturation of another set of wonderful innovations in communications that began with turnpikes in the 1660s.

NEW ERAS – REVISITED and UPDATED

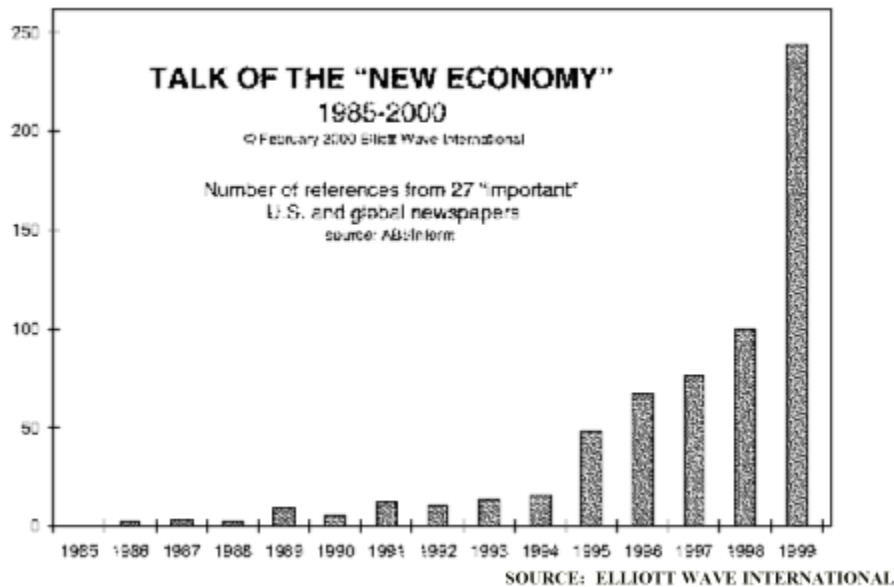
Inflation in financial assets has been the main measure of all the new eras. Fortunately, Gerhard Mensch noted the cyclical nature of innovations which is a non-price measure. Invention is constant, but its application to the consumer is forced by the intense competition of the disinflationary conditions of a typical new era. Mensch's chart is shown and Institutional Advisors has added the year each new era climaxed in a bubble. Obviously, innovation continued for a limited time after financial speculation collapsed. His research was done in 1975; ours was essentially completed by 1980.



ANOTHER MEASURE OF A NEW ERA

The chart below indicates that the "new economy" is becoming more widely known at possibly a parabolic rate. At the height of the 1772 example, the giant of literature, Samuel Johnson, exclaimed "**The age is running mad after innovation; all the business of the world is to be done in a new way.**" In the 1720 mania, an unknown writer noted "**The poor English nation run a madding after new inventions, whims, and projects [promotions] ... They can ruin men silently, undermine and impoverish, fiddle them out of their money by strange, unheard of engines of interest, discount, transfers, debentures, shares, projects, and the Devil and all of figures and hard names.**"

In the 1825 example: "The rage for new projects and loans ... pervades the whole country. Never since the South Sea Bubble has the mania been so endemic. There is not a capitalist nor moneylender ... that is not infected with it." – European Magazine, April, 1824



SEASONALITY

All of the great bubbles, as they occurred in London and Europe, are tabled below. Noteworthy is the seasonality of their frenzied peaks. We used this probability and our forecast of widening credit spreads and declining base metal prices to conclude in our July 1/97 edition: "**Lesser exchanges making highs now ... followed by bear market and credit crisis**". Once it started, we used the table to conclude that the problems would clear in November/97 or January/98.

THE NINE YEARS BETWEEN COMMODITY BOOMS AND FINANCIAL BUBBLES LONDON AND EUROPE 1720 TO 1929			
Tangible Asset Peak Year	Financial Asset Peak Year	Date of Top	End of First Liquidation
*1988	1997	[Asia] July-August	Jan 1998
1920	1929	May	Nov 13
1864	1873	May	Nov 7-15
1816	1825	May	Jan 1826
1763	1772	Early June	November
1711	1720	June 24	Nov 20

* The Economist Index (all items)
1875-1997 – Record high May, 1988

Although history has never recorded two such intense financial speculations within three years, probability suggests that May-June could be the timing limit of the more compulsive sectors of this phase of the bubble. All previous examples suffered heavy liquidation beginning in September and ending as tabled. It will be interesting.