

# Chapter 9

## Return to the Past

In 1977 the highway signs in the US were to be changed to metric. This might have provided a turning point for metric implementation in the United States, it might have become a catalyst for change, but instead it proved to be the beginning of the end.

In April of 1977 the Associated Press reported:<sup>[1]</sup>

A highway administration official said there is no plan to print both metric and mileage figures on the highway signs to ease familiarization.

The official said the action is in line with the national switch to the metric system outlined in the Metric Conversion Act of 1975.

The changeover will apply to every highway, road and city street in the country. Under the Metric Conversion Act, the highway administration can order the conversion even on roadways that receive no federal aid.

During the 90 days ending September 30, 1978, vertical clearance signs for over passes also will be changed to metric figures. Truck drivers accustomed to looking out for 10 foot warnings will have to learn to hit the brakes when they see a three meter sign.

Some American cars already contain markings for kilometers as well as miles, and auto makers already are planning to install metric speedometers and odometers in all cars.

Motorists with old cars will not be required to buy new speedometers. They will be able to go metric simply by pasting a label over their speedometer.

If people started seeing the government actually implementing metric, it might have made a considerable amount of difference. Unfortunately, one man was ready to stand alone against Congress and the public. That man's name is Representative (now Senator) Charles Grassley (1933- ) of Iowa. Representative Grassley waged a one person political war against metric road signs, and single handedly killed them on June 8, 1977. The Thursday June 9th *Des Moines Register* reported that:

The Iowa Republican told his House colleagues that Federal Highway Administrator William Cox will withdraw proposed regulations that would have forced the conversion of highway signs to the metric system.

The Des Moines paper further related Grassley as:

Denouncing kilometers as a "foreign system of measurement," Grassley said that "forcing the American people to convert to the metric system goes against our democratic principles."

Who Grassley was representing is unclear. The *Sunday Des Moines Register* reported on January 11, 1976 that a majority of Iowa's manufacturers were for metric adoption by the US. On October 31, 1976 the *Cedar Rapids Gazette* had a full page devoted to metric, which showed a photograph of a dual unit road sign, and did not seem to receive a deluge of anti-metric reaction. Grassley was also for a law, which was eventually passed, forbidding the use of federal funds for metric road signs.

On October 20, 1977 the weather service decided to put implementing the metric system on indefinite hold.

It was in 1980 that Ronald Reagan (1911-2004) was elected. He promised to return the United States to a pristine time in the past when all was abundance, and the US was at its zenith. He asserted that nothing was wrong with the nation that could not be fixed by reducing and attenuating government. A few newspapers of the time reported the words of Dean Krakel, Director of the National Cowboy Hall of Fame, who summed up the cold war zeitgeist by associating the metric system with communism and stating: "We know the West was won by the inch, foot, yard, and mile."

In February of 1982, the US Metric Board told congress they needed a clear congressional mandate to bring about metric conversion. Dr. Louis F. Polk (1903-1991), Chairman of The Metric Board asserted that:

Before putting money on the line, business leaders want and deserve a clear-cut position so they can order mills, systems, and machine tools without expensive uncertainty as to the proper selection from among metric, customary, hybrid or universal stocks and standards.<sup>[2]</sup>

Polk was an engineer, scientist and had been chairman of Sheffield Measurement, as well as a director of the Bendix Corporation.

Ronald Reagan then requested that congress abolish the U.S. Metric Board.<sup>[3]</sup> On September 30, 1982 it was abolished as “an economy measure.” What little remained was renamed “The Office of Metric Programs.” The budget, which in 1982 had been \$2.7 million, was reduced to \$300,000 per year by 1984.

In 2006, Frank Fabian Mankiewicz II (1924-2014) came forward and claimed he had been working behind the scenes with another person, Franklyn C. “Lyn” Nofziger (1924-2006), in secret, to assassinate the US metrication effort during the Reagan Administration.

Nofziger and Mankiewicz were journalists, who worked for political campaigns. Neither had any scientific, engineering or manufacturing background, which might have informed them about the issues involved with metrication. Mankiewicz, in a remembrance of Nofziger, who died in 2006, had this to say in *The Washington Post*:<sup>[4]</sup>

So, during that first year of Reagan’s presidency, I sent Lyn another copy of a column I had written a few years before, attacking and satirizing the attempt by some organized do-gooders to inflict the metric system on Americans, a view of mine Lyn had enthusiastically endorsed. So, in 1981, when I reminded him that a commission actually existed to further the adoption of the metric system and the damage we both felt this could wreak on our country, Lyn went to work with material provided by each of us. He was able, he told me, to prevail on the president to dissolve the commission and make sure that, at least in the Reagan presidency, there would be no further effort to sell metric.

It was a signal victory, but one which we recognized would have to be shared only between the two of us, lest public opinion once again began to head toward metrification.

It is doubtful that Mankiewicz's history is accurate.

Lyn Nofziger was Born in Bakersfield, California in 1924 and earned a degree in journalism from San Jose State College. He worked as a reporter for a number of years. Richard Nixon was elected in 1968 and Nofziger began to work in various capacities for the Nixon administration. According to John Dean (1938- ), who was Nixon's White House council, Nofziger helped to compile Nixon's infamous enemies list. Lyn Nofziger worked to elect Ronald Reagan in 1980. Following Reagan's election, he held positions in the Reagan White House.

Frank Mankiewicz was born in Beverly Hills, California in 1924. His father co-wrote *Citizen Kane*. Mankiewicz is credited with coining the term retronym. This is a name that has been modified because its original meaning has ceased to be relevant because of technical innovation. Generally a leading adjective is used. Examples are: mechanical typewriter, analog watch or film camera. While these are observations of technical change, there is no evidence that Nofziger ever educated himself about technical issues of any kind. Like Nofziger, Frank Mankiewicz earned a degree in Journalism. He worked on Robert Kennedy's campaign as press secretary. Mankiewicz would announce Robert Kennedy's death to the world in June of 1968. He would work as a campaign director for George McGovern in 1972. Mankiewicz would be on the "Master List" of Nixons political opponents. Did Lyn Nofziger helped to place him there?

One can feel the schadenfreude toward the metric system that Mankiewicz exudes in his remembrance. Mankiewicz appears eager to claim credit for destroying metrication in the US. In fact he is so eager, one might not immediately notice his choice of words: "He was able, he told me, to prevail on the president." The 'he' refers to Nofziger. When Mankiewicz makes this assertion, it is essentially hearsay. His eagerness to take credit for crushing the metric system in the US makes one wonder if the "journalist doth protest too much that he did it." Mankiewicz seems to be confessing to a murder he wished he had committed. Mankiewicz's zeal to destroy the metric system was so strong, that it is surprising, that a person who worked on Robert Kennedy's campaign, would be so proud as to have lobbied a person who worked

for both Nixon and Reagan to ‘nix’ the metric system. The two political opposites in the US shared a unified culture of anti-metric sentiment.

Mankiewicz never changed his view on metric. In a November 12, 2013 Reddit ask me anything period, he pushed back against a pro-metric interviewer and finally indicated with some exasperation: “Let them convert. Seriously, both may be the answer, as we all become more global.”

After the defeat of metric, only Democratic Senator Claiborne Pell of Rhode Island spoke up in front of congress:

It’s inevitable that the United States will change to the metric system, and it would be best for American businesses if the conversion were to take place in 10 to 15 years instead of 30 to 40 years.

Republican Representative Eldon Rudd (1920-2002) countered with an appeal to cultural identity:

... the dual system used by Americans has worked well and has become as much a part of our heritage as the English language.

Rudd also claimed that “No free country in the world has voluntarily gone metric, . . .” The word voluntary is again invoked for affect, and in this context assumes that Australia, New Zealand, Canada and others were not free countries in the 1970s when they implemented metric conversion. The bloody shirt of “the loss of freedom” was invoked yet again to rationalize the visceral backlash of reactionary Congressmen. Once again it was shown that derailing legislation is easy, implementing change in the US is not, unless it is done by executive order.

The standard size of paper used by the US government had been determined in 1921 by then Secretary of Commerce Herbert Hoover (1874-1964). The paper dimensions chosen were 8 x 10  $\frac{1}{2}$  inches. Why this size paper was chosen is a mystery. When government archivists researched the origin of why 8 x 10  $\frac{1}{2}$  inch paper had been chosen for government use, they were unable to find any information. In 1923, the printing and paper industries were consulted and recommended 8  $\frac{1}{2}$  x 11 inch paper, but government and industry simply continued to disagree on paper size. This was the case until the late 1970s. Senator

Claiborne Pell wrote a memo insisting on the use of  $8\frac{1}{2}$  x 11 inch paper for government use, and Ronald Reagan endorsed the move.<sup>[5]</sup> Which apparently made it another “bipartisan” agreement against metric. The choice government made for paper, had apparently little affect on what was used by industry. This choice calls into question the idea that if the government just switched over to metric, then industry would follow.

It has been claimed that when photocopiers became available in the late 1970s, an  $8 \times 10\frac{1}{2}$  inch document did not lend itself to easy copying, but this is not a tenable claim, because neither is  $8\frac{1}{2}$  x 11 inch. That moment was a great opportunity to mandate the use of A4 paper. Paper with A series dimensions is designed to be exactly enlarged or reduced without introducing distortion (A series paper will be discussed at length in a later chapter). Astonishing amounts of paper could have been saved from becoming waste, as well as fewer strained eyes, had A4 been chosen.

Why Claiborne Pell recommended  $8\frac{1}{2}$  x 11 inch paper is unknown. It certainly could not have been from an exhaustive analysis. The A-series paper standard had existed since 1922. By 1977, A4 was the standard letter format in 88 of 148 countries. Today “metric paper” has been officially adopted by all countries, with the exception of the United States and Canada. It is very possible that the adoption of  $8\frac{1}{2}$  x 11 inch paper by the government might have been a result of industry pressure. Rather than switching to metric paper in the late 1970s, US industry probably saw it as a way to make the government conform to their usage. Only the government would bear any cost, as US industry would continue with the paper size it had been using for decades.

The property of A-series paper that makes it so useful, is that the ratio of its length to width is the square root of two. This allows one to exactly double or halve the paper without distortion. The square root of two is approximately 1.414. If one takes the dimensions of A4 paper (the approximate equivalent of  $8\frac{1}{2}$  x 11 inch paper), which are 210 mm x 297 mm, and divides the length by the width we obtain 1.414—which is essentially the square root of two.

Industry used both  $8\frac{1}{2}$  x 11 *and*  $8\frac{1}{2}$  x 14 paper. A very minimal change, and consolidation of these accepted industrial paper sizes, into one that would now have a length of one foot, would have produced  $8\frac{1}{2}$  x 12 inch paper, which would have essentially modernized the old paper size. This new foot-long paper would have a length to width ratio of 1.411, which is very, very close to the square root of two. This change

would have created US paper with essentially the same advantages of “metric” A-series paper. There was apparently no actual analysis done by Pell’s committee, and 8  $\frac{1}{2}$  x 11 inch paper was probably only implemented to placate industry, which has only served to isolate the US further from common international usage, and provided no technical benefit.

At the end of his presidency in 1988, Ronald Reagan signed into law The Omnibus Trade and Competitiveness Act of 1988. It amended the Metric Conversion Act of 1975, yet didn’t have the word metric in the title of the legislation. President Reagan was apparently concerned that the voluntary nature of the Metric Conversion Act of 1975 was not clear enough. The new legislation now did what previous legislation did not, give a date by which this voluntary act should be accomplished.

Section 3 of the Metric Conversion Act of 1975 is amended to read as follows:

SEC. 3. It is therefore the declared policy of the United States

(1) to designate the metric system of measurement as the preferred system of weights and measures for United States trade and commerce;

(2) to require that each Federal agency, by a date certain and to the extent economically feasible by the end of the fiscal year 1992, use the metric system of measurement in its procurement, grants, and other business-related activities, Except to the extent that such use is impractical or is likely to cause significant inefficiencies or loss of markets to United States firms, such as when foreign competitors are producing competing products in non-metric units;

The legislation allows the government to opt out if anyone finds switching to metric “impractical” or “inefficient.” making it non-legislation legislation which echos the American Bar Association’s opinion that the 1975 Metric Conversion Act made no change to existing law.

Perhaps one of the strangest statements in this law is the idea that foreign competitors might produce “competing products in non-metric units..” The markets for non-metric products is officially: The United States, Liberia and Myanmar. It seems completely unreasonable to expect that Liberia and Myanmar would become manufacturing power-

houses that could produce products in non-metric units, which would put US industry at a disadvantage. No country which has ever become metric, has ever changed back, so it would be delusional thinking on the part of Congress that suddenly new markets for non-metric products might emerge from metric nations. Clearly the 1992 date was meaningless and arbitrary. It made it look like the government was taking action, when in fact it was not.

These actions by the Reagan administration effectively squelched any discussion of metric from that point on. The metric system as a national topic for discussion was “off the table.”

President George H.W. Bush (1924- ) issued an executive order in July of 1991. It authorized the Secretary of Commerce to issue regulations to carry out government metrication and report annually the progress being made in metric use. It also “Required all agencies to submit detailed metric transition plans to the Department of Commerce. Agencies were required to develop plans for implementation by 1993 through 1996 fiscal years.”

The year 1992 came and went without any implementation of the metric system. By 1996 it was clear that new hearings would be a good idea. On May 16, 1996, The US House of Representatives held hearings on proposed amendments to the Metric System Conversion Act. There was considerable concern about the previous legislation which was articulated on the first page:

While there appears to be a built-in flexibility in the current law to account for adverse economic impact, there is a concern that such flexibility is not being implemented administratively.

Congressman Cox’s bill attempts to promote flexibility by providing soft metric conversion in construction metrication instead of hard metric measurements, which are in round metric units.

So in response to these concerns, our first witness today, our colleague, Congressman Chris Cox, introduced H.R. 2779, the Savings in Construction Act.

What soft metric conversion means is no metric conversion. All of the sizes remain as they always have been and are measured in metric.

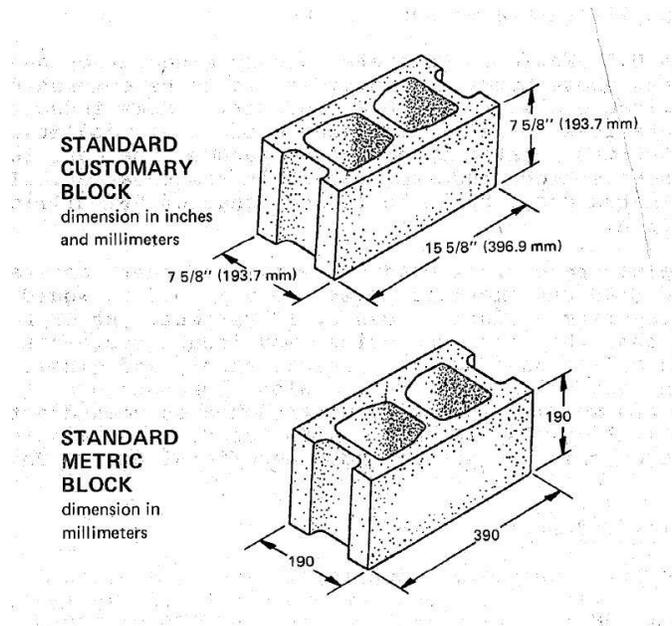


Figure 9.1: An Olde English dimensioned block is the top figure. It does not have dimensions that produce easy lengths for checking construction values. The metric block is designed for 10 mm of mortar so the overall dimensions become 200 mm x 200 mm x 400 mm. 10 blocks upward is 2000 mm or 2 meters, and 10 blocks along a wall is 4000 mm or 4 meters. (Image is from 1978 GAO report)

Soft metric values appear ludicrous, and camouflage the advantages actual designs with metric values would allow. Flexibility essentially is a code-word for no metric. Hard metric in this context means actually switching to using the metric system. The “Cox Bill” amended the Metric Conversion Act:

- A Federal Agency may require that specifications for structures or systems of concrete masonry be expressed under the metric system of measurement, but may not require that the concrete masonry units to be “hard-metric” converted products.
- The Federal Agency may not require that lighting fixtures be converted products unless the predominant voluntary industry consensus standards are “hard-metric.”

The law required each agency to appoint a Construction Metrication Ombudsman to handle metric-related complaints. There were a number of metric projects which were underway, and it was believed that US Government construction would be metric by the year 2000.

One of the great advantages of metric in other countries, such as India, occurred when house bricks were changed to 190 mm x 90 mm x 90 mm, so that with 10 mm of mortar, each layer would be 100 mm in one direction and 200 mm in the other. The workmen could count ten of these layers, which should make a distance of 1000 mm or 1 meter in one direction, and 2000 mm or 2 meters in the other. This US legislation essentially outlawed this requirement in the United States.

The difference between metric blocks and Olde English versions is shown in Figure 9.1. Both bricks and blocks would become much easier to use if converted to “hard metric” or as the rest of the world would call it: metric. The image in Figure 9.1 is from the 1978 GAO report.

In January 1994, the National Institute of Building Sciences completed a preliminary report on nine federal metric construction projects:<sup>[6]</sup>

1. GSA Warehouse, Denver, Colorado (\$900,000)
2. Border Patrol Station, Sasabe, Arizona (\$3 Million).
3. Richmond Federal Center Renovation, Richmond, Virginia (\$13 Million)
4. Department Of Veterans Affairs Data Center, Philadelphia, Pennsylvania (\$70 Million)
5. Federal Bureau Of Investigation Regional Office Building, Washington, DC. (\$60 Million)
6. Federal Courthouse, St. Louis, Missouri (\$185 Million)
7. Federal Courthouse, Kansas City, Missouri (\$90 Million)
8. Federal Courthouse, Tampa, Florida (\$40 Million)
9. Census Bureau Computer Center, Bowie, Maryland (\$28 Million).

It was found that design fees for the projects was not an issue, nor were construction costs. It was noted that after a short learning curve, the metric system produced fewer errors, and was easier and faster. The tradesmen adapted to metric usage with such ease that very little job-site training was needed. The most important factor was to supply metric measuring tapes. Even with all the non-metric obstacles in the way, metric still proved its worth.

However, not all was as metric as it seemed. In 1994, the construction of a warehouse using metric units was completed at Denver's Federal Center. It was revealed that "some of the subcontractors converted drawing dimensions to inch-pound units before using them." [7]

After this short period of experimentation, the metric system disappeared from Government construction. By 2012 it had abandoned metric construction altogether. In an article written by the National Precast Concrete Association, Bob Risser, P.E. stated: [8]

There are no plans or specifications for construction produced anywhere in the U.S. that currently use metric units. By the late 2000s, the remaining DOTs using metric specifications had converted to inch-pound units. The U.S. GSA (General Services Administration) and the U.S. Army Corps of Engineers no longer use metrics. In fact, no one in the engineering community, federal government, state government or private business anywhere in the country uses metrics for construction projects.

Every time any metric change began, reactionary forces in US industry and government, would stop it, deride it, and return the frozen republic to its 18th century past.

With a voluntary metrication "plan" in place for over 150 years, how long would it take for metric to seep into the US and finally change it over to metric without a government mandate? One historical example, which might shed light on this question, is the adoption of Hindu-Arabic numerals.

Historian George Sarton [quoted by Hector Vera] [9] had this to say:

The case [of the dissemination of Hindu-Arabic numerals] is interesting because the new decimal system was a time- and labor-saving invention of the first magnitude. The Hindus had made to mankind a gift of inestimable value. No

strings of any kind were attached to it, nor was the suggested improvement entangled with any sort of religious and or philosophic ideas. Those proposing to use the new numerals were not expected to make any disavowal or concessions; nor could their feelings be hurt in any way. They were asked simply to exchange a bad tool for a good one. [... However] more than a millennium had elapsed between the discovery and its general acceptance [...]<sup>[10]</sup>

It took over 1000 years for Hindu-Arabic numerals to propagate around the world without mandate. Their adoption did not require new rulers, tape measures, educational materials or machine tools. The adoption of Hindu-Arabic numerals were not associated with any political doctrine, unlike the mandatory adoption of the metric system in the US. Is there any reason to expect the US to become metric earlier than 1000 years into the future with its voluntary “plan” in place?

## References

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