Letter to the Editor

Review of The Great Schism: Federal Bicycle Regulation and the Unraveling of American Bicycle Planning (37 Transp. L.J. 73, 2010)

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I. Introduction

Bruce Epperson describes the events surrounding the issuance of the U. S. Consumer Product Safety Commission's regulation of the design of bicycles[1] and the adoption, starting in California and moving to the Association of State Highway and Traffic Officials and the Federal Highway Administration, of the standards for bikeway design. John Forester is a rather central character in these events. Epperson makes a large number of errors and makes several unwarranted opinions, and those that refer to Forester are strongly biased against Forester.

1. 16 C.F.R. Part 1512

Epperson states: "This article will argue that the promulgation of a set of product safety standards by the then-new Consumer Product Safety Commission ('CPSC') triggered an irrevocable ideological schism between experienced recreational cyclists, government, and the bicycle industry. Of course, there were adult cyclists well before the 1960s, but they amounted to a small number of hardy devotees. While most of these cyclists welcomed the popularity brought about by the great bike boom, a group of 'club cyclists,' racers, and marathon-distance semi-competitive tourists (called 'randonneurs') devoted to featherweight precision-built European bicycles, wanted the new cycling populism nipped in the bud and the clock rolled back to what they saw as an idyllic pre-1967 insularity. . . . In less than a decade, the ideology of a handful of elite, high-performance cyclists on exotic bicycles priced more than some used cars came to dominate the bicycling community. The consequences were enormous. The American industry, once home to thousands of well-paying, blue-collar jobs, simply disappeared. . . . The CPSC regulations not only proved ineffective in improving bicycle safety, but also opened a window of opportunity for those who sought the destruction of the domestic industry and wished to block the efforts of local, state, and federal agencies to improve bicycle safety and revitalize bicycling as a viable transport mode."[2]

Because Forester was the leader in this activity, Epperson rightly makes him the leading target in his argument. The issue to be discussed herein is the accuracy and trustworthiness, or not, of Epperson's statements regarding Forester.

II. Definitions

Toy bicycle: A bicycle intended to be suitable for children, as the regulation required, even if sized for adults.

Real bicycle: A bicycle intended to be efficient, capable, durable, and useful for the usual purposes of adult bicycling.

These two definitions, biased though they seem, are necessary to overcome the confusion that is inherent in the CPSC bicycle regulation. In general, the American bicycle industry manufactured toy bicycles, while real bicycles came from Europe.

III. Epperson's Arguments

Argument About Bicycles

Epperson argues (see above) that the users of real bicycles managed

2. Bruce Epperson, The Great Schism, 37 Transp. L.J. 73, 75 (2010)

to prevent the public from buying toy bicycles and thereby killed the American bicycle industry.

ARGUMENT ABOUT BIKEWAYS

Epperson argues that the controversy over regulation of the design of bicycles "opened a window of opportunity for those who . . . wished to block the efforts of local, state, and federal agencies to improve bicycle safety and revitalize bicycling as a viable transport mode."

SUMMARY OF EPPERSON'S ARGUMENTS

Epperson tries to tie together two controversies that are entirely different, although they have points in common.

The differences: The bicycle regulation involved bicycle manufacturers, bicycle buyers, and federal regulation of consumer products. The bikeway standard involved cyclists, motorists, and state highway departments, and, eventually, environmentalists.

The common factors: Both the bicycle regulation and the bikeway standard were based on the concept that people who use bicycles are childlike and incompetent. (That is the legal standard for the bicycle regulation, and it has always been the basis of bikeway laws and bikeway advocacy.) Forester was the leader in opposing both of these, acting to preserve the right of cyclists to buy the bicycles they chose and the right of cyclists to operate according to the rules of the road for drivers of vehicles.

A. EPPERSON'S BICYCLE REGULATION ARGUMENT

Epperson appears to argue (see above) that those who used real bicycles managed to get the bicycle regulation written to prohibit toy bicycles. How else could those people kill the American bicycle industry? Wrong. The bicycle regulation was written to require that all bicycles be toy bicycles of the kind the American industry produced. Indeed, the regulation was largely copied from BMA/6, the standard written by the Bicycle Manufacturers Association to persuade parents that American-made bicycles were reliable toys for their children.[3] The opposition arose when the CPSC ruled that all bicycles sold in America had to be toy bicycles; real bicycles were prohibited. In the end, the regulation was modified so that it permitted both toy and real bicycles. At no time did anyone do anything with the intent of killing the American bicycle industry, nor had anyone but the CPSC regulators the power to do so, and they were wedded to the toy bicycle concept. In fact, with the regulation based on typical American-made bicycles, it must be considered as intended to protect the American bicycle industry. Why, then, is Epperson so intent on

3. Safety Standards for Regular Bicycles, Bicycle Manufacturers Association of America, New York; 1972

maligning Forester? The bicycle regulation controversy provides no reason to do so.

B. Epperson's Bikeway Argument

Epperson shows the most probable answer to that question in a small statement in the outline of his argument and some paragraphs in his paper. The initial statement refers to those who "wished to block the efforts of local, state, and federal agencies to improve bicycle safety and revitalize bicycling as a viable transport mode". Epperson's evidence is presented in the sections titled *We Don't Know What to Call Them* and *A Darwinian Perspective*, in the final three paragraphs of his paper, and scattered through his footnotes.

While the bicycle design regulation controversy aroused both anger (in cyclists) and financial concern (in the bicycle industry), none of the design controversy went very deep and it quickly disappeared once the regulation permitted real bicycles as well as toy bicycles. But one part of the bicycle design regulation affects cyclist operational safety: the all-reflector system of nighttime traffic protection.[4] Those persons who are concerned about cyclist safety view both the all-reflector system and bikeways as misleading means, as false promises, for reducing casualties to cyclists.

However, the bikeway controversy involves much more emotional matter than does the all-reflector system, and its controversy is as emotional as ever. Epperson's early statement (above) about cyclist safety and revitalizing bicycle transportation refers to the standard bicycle planning and bicycle advocacy argument. There exists a great unsatisfied demand for bicycle transportation that is held back by the danger of motor traffic, so that building bikeways to make cycling safe will persuade many motorists to switch many trips from motor to bicycle transportation. This argument has three elements:

Bikeways reduce the level of skill required for safe cycling;

Bikeways make cycling safe for unskilled persons;

Safe cycling will persuade American motorists to switch a transportationally significant number of trips from motor to bicycle transport.

These are articles of faith among bicycle planners and advocates. Providing factual criticism of these articles of faith provokes angry responses, such as shown in Epperson's paper.

American traffic law has two opposite laws for cyclists. One law requires cyclists to obey the same laws as other drivers.[5] The other law pro-

4. 16 CFR Part 1512; sections 1512.16 and 1512.18(m)(n)(o)

5. Cyclists "shall have all of the rights and all of the duties applicable to the driver of any other vehicle . . . " UVC 11- 1202.

hibits them from doing so, by limiting them to the edge of the roadway,[6] or off the roadway when a path is nearby.[7] America has correspondingly had two styles of cycling. One is obeying the same laws as other drivers on an equal basis, the other is hugging the curb to stay out of the way of same-direction motor traffic, as if inferior to motorists. Motorists enacted the cyclist-inferiority laws and argued that they were necessary to make cycling safe because child cyclists were incapable of obeying the standard rules of the road.[8] They later added bikeways "to make cycling safe" by enforcing cyclist-inferiority cycling on all cyclists.[9] These restrictions on cyclists appeared to make motoring more convenient; they were enacted without any shred of traffic-safety evidence; they were contradicted the moment such evidence was discovered.

The public, which had never thought much about cycling and had never experienced adult cycling, believed in the cyclist-inferiority dogma. Those who opposed motoring, called anti-motorists, believed this at least as strongly as the rest of the public, perhaps more strongly because of their antipathy toward motoring and motorists. Therefore, calling themselves bicycle advocates, they placed their faith in bike-ways as the best available means of enticing motorists to switch many trips from motor to bicycle transport. Just as in the case of bicycle design, cyclists who used the adult method of obeying the rules of the road arose in opposition to being required to cycle as children, with its corresponding degradation in safety, convenience, and status. The political situation of the era produced both the bicycle design and the bikeway laws at much the same time. Forester, having entered the bikeway opposition, later entered the bicycle design opposition. This is the reverse of the sequence stated by Epperson.[10] The two lines of opposition to detrimental laws operated entirely separately, except that in both cases lawful, competent cyclists were led by Forester.

Epperson's history of the bikeway program is inaccurate; he cites irrelevant documents and ignores relevant documents and events. The present national bikeway program is descended from the work done by California's government as filtered by the opposition led by Forester, who

6. Cyclists "shall ride as close as practicable to the right-hand curb or edge of the roadway, except . . . " UVC 11-1205.

7. Cyclists "shall use such path and not use the roadway" Formerly in UVC 11-1205, still extant in some jurisdictions.

8. JOHN FORESTER, EFFECTIVE CYCLING 6th ed Chap 45; The MIT Press, Cambridge Mass; 1993

9. *Id.*, Chap 46. *See also* JOHN FORESTER, BICYCLE TRANSPORTATION 2nd ed Chap 13; The MIT Press, Cambridge Mass; 1994

10. BRUCE EPPERSON, THE GREAT SCHISM, 37 Transp. L.J. 73, 75, *contra*, 37 Transp. L.J. 73, 91

has continued to play a leading role among the rules-of-the-road cyclists. Forester's actions regarding bikeways are the source of Epperson's anger.

The documents and work cited by Epperson are largely irrelevant. BIA's *Bike Trails*, the work in Davis, Palo Alto's sidepaths and bike lanes, all led nowhere, except that Palo Alto's facilities sparked Forester's comparison of traffic movements in vehicular cycling versus bikeway cycling.[11] California's first try, UCLA's *Bikeway Planning Criteria and Guidelines*,[12] was never issued because Forester led the objection to its dangerous copies from Dutch and German sidepath designs. The FHWA work was finally issued in three volumes: Vol 1, *Bicycle Facility Location Criteria*; Vol 2, *Design and Safety Criteria*; Vol 3, *Final Report*,[13] the research papers. Forester demonstrated that the research supporting the designs was gravely defective, and the full documents were never adopted.[14]

The actual line of development runs through two California governmental committees established by the Legislature. The first was the California Statewide Bicycle Committee, composed of eight highway and motoring representatives plus one cyclist, Forester. During its operation, Forester discovered the UCLA document with its dangerous sidepath designs and also that the purpose of the Committee was to recommend laws to enforce cyclists to use bikeways, wherever built. Forester, leading as president of the California Association of Bicycling Organizations, prevented the Committee from recommending a mandatory sidepath law, but failed to prevent the recommendation of a mandatory bike lane law, and the Legislature followed those recommendations.[15]

The rejection of the UCLA designs required a second committee, the California Statewide Bicycle Facilities Committee, to prepare new designs. This committee was composed of six representatives of highway departments, one cyclist representing the League of American Wheelmen (but who, as an employee of a governmental office in transportation refused to speak out) and one cyclist representing the California Association of Bicycling Organizations. The Committee rejected Forester but accepted his close associate, Prof. John Finley Scott, sociology, UC, Davis. While Scott and Forester generally opposed the work of the Commit-

11. *See* JOHN FORESTER, BICYCLE TRANSPORTATION 2nd ed, Chap 9; The MIT Press, Cambridge Mass; 1994.

12. Bikeway Planning Criteria and Guidelines, Institute of Transportation and Traffic Engineering; UCLA; April 1972

13. Safety and Locational Criteria for Bicycle Facilities: User Manual Vol I, Bicycle Facility Location Criteria; FHWARD-75-113; FHWA 1976. Same title; User Manual Vol II, Design and Safety Criteria; FHWA-RD-75-114. Same title; Final Report; FHWA-RD-75-112

14. JOHN FORESTER, BICYCLE TRANSPORTATION 2nd ed, App 2 pgs311-313; The MIT Press; 1994

15. SCR 47 Statewide Bicycle Committee Final Report; California Dept. of Transportation; Feb 1975

tee, their criticism provided a large part of the technical information that prevented adoption of really dangerous designs and enabled the resulting designs to be probably proof against lawsuits.

The Committee issued *Planning and Design Criteria for Bikeways in California* in June, 1978.[16] That document was then largely copied and adopted by the Association of State Highway and Traffic Officials as its *Guide for Bicycle Facilities*,[17] which the FHWA then adopted. All later design standards are based on this.

The bicycle transportation controversy still rages. The current scientific state of the controversy favors vehicular cycling over cyclist-inferiority bikeway cycling. Bicycle advocates have never demonstrated which traffic-cycling skills are no longer needed with a practical bikeway system; they have never demonstrated the mechanism by which a bikeway design actually reduces car-bike collisions, and they have not demonstrated reduction in motoring.[18] Vehicular cyclists have demonstrated how the rules of the road prevent collisions between drivers, that it is easy to learn how to obey the rules of the road, and that obeying the rules of the road does not require the ability to ride fast.[19] Considering this balance of evidence, cities who actually own bikeway systems rely on the public superstition that bikeways make cycling safe for the unskilled, while limiting themselves to legally safe statements that their bikeways provide comfortable routes for cyclists of all levels of skill.

This mild conclusion has not been accepted by anti-motoring bicycle advocates and bikeway promoters. Their standard argument is that only the elite few are capable of obeying the rules of the road when riding a bicycle. Therefore, the bicycle transportation system must be designed for safe operation by those incapable of obeying the rules of the road;[20] those opposed to this policy deserve opprobrium. Bicycle advocates accuse vehicular cyclists of trying to limit cycling to their elite few, to return cycling

16. Planning and Design Criteria for Bikeways in California; California Dept. of Transportation, June 1978. Latest revision is in the California Highway Design Manual, Chapter 1000

17. Guide for Development of New Bicycle Facilities, American Association of State Highway and Transportation Officials; Washington DC; 1981 (Since periodically revised)

18. JOHN FORESTER, THE BICYCLE TRANSPORTATION CONTROVERSY, Transportation Quarterly V 55 #2, Spring 2001, p 7-17

19. JOHN FORESTER, ELEMENTARY-LEVEL CYCLIST TRAINING PROGRAM: OBJECTIVES, TECHNIQUES AND RESULTS; circa 1982; http://johnforester.com/Articles/Education/elecpro.htm. *See also* JOHN FORESTER, EFFECTIVE CYCLING AT THE INTERMEDIATE LEVEL, *available at* http://johnforester.com/BTEO/ECIL.pdf, *and* JOHN FORESTER, EFFECTIVE CYCLING INSTRUCTOR'S MANUAL; 1976 ONWARD, *available at* http://johnforester.com/BTEO/ECIM6.pdf.

20. WM. C. WILKINSON, ANDREW CLARKE, BRUCE EPPERSON, ET AL. SELECTING ROADWAY DESIGN TREATMENTS TO ACCOMMODATE BICYCLES - MANUAL; FHWA 1992. and U. S. DOT encourages "facilities that foster increased use by bicyclists and pedestrians of all ages and abilities"; US DOT Policy Statement on Bicycle and Pedestrian Accommodation . . . " March 2010; http://www.dot.gov/affairs/2010/bicycle-ped.html.

to what the advocates imagine to have been its elite status before 1970. They also accuse vehicular cyclists of siding with the motoring interests and with suburbanites. This accounts for Epperson's injection of his antipathy to elite cyclists into his account of the bicycle design controversy, where it actually counters rational argument.

The bicycle transportation controversy stretches into fields further from bicycling. The nearest one, and the only one specifically mentioned by Epperson, is the bicycle advocates' hatred of suburbs.[21] Bicycle advocates want dense central cities, which they believe reduce motoring, while vehicular cyclists advocate the best cycling technique for the environment that exists and improvements to make the roads better for rules-of-the-road cyclists.

Notice that none of these controversies have anything to do with the design of bicycles, the subject of the CPSC controversy. This explanation of Epperson's line of argument should provide the intellectual background necessary for evaluating Epperson's errors and biased opinions.

C. Consumer Product Safety Commission Regulation

Some background information is necessary about the CPSC bicycle design regulation. The starting document was the Bicycle Manufacturers Association Bicycle Standard BMA/6: *Safety Standards for Regular Bicycles*.[22] There is no evidence that the requirements of this document were based on any safety studies. Many requirements were pure strength tests and there was a bumpy road simulation; these were basically durability tests. There were two brake tests: the stopping distance test had an easy requirement; the brake fade test required that the brake hold the bicycle to 15 mph for one mile on a 5% grade (264 feet elevation loss in 4 minutes). There was a front fork impact test simulating cycling into curbs and other objects; this was "to assure the strength and durability of front forks." And there was the 10-reflector system which assured that at least one reflector would be facing motor vehicle headlamps no matter what angle to the road the bicycle assumed.

Among the BMA/6 requirements that the CPSC adopted were the stopping distance test, the front fork impact test, and the all-reflector system. The CPSC refined these requirements and added some more. Some of the added requirements referred to non-slip pedals (based on accident survey), strength of rims (to prevent failure caused by excessive spoke tension), prohibition of derailleur adjusting screws (to prevent children from misadjusting derailleurs), prohibition of quick-release hubs, a

21. 37 Transp. L.J. 73, 118. The American Dream Coalition acts to protect suburbanites. But opposition to suburbs is rife within the discussions of bicycle planning.

22. See *supra*, note 3.

"brake fade" test for caliper brakes but not for coaster brakes, and the prohibition of anything small that stuck out, "protrusions" (to prevent cuts and scrapes if a person bumped one).

Some of these requirements prohibited real bicycles (and a few prohibited toy bicycles also): prohibition of quick-release hubs, prohibition of derailleur adjusting screws, prohibition of protrusions. Therefore, these were revised to permit both toy and real bicycles. The bicycle industry either accepted or wanted the remaining requirements.

Safety regulations require some justification. For "toys or other articles intended for use by children" regulated under the Federal Hazardous Substances Act, only the regulator's say-so was required. For consumer goods regulated under the Consumer Product Safety Act, formal justification was required.[23] Had the CPSC replied to challenges by refusing to provide justification because the FHSA did not require such, it would have been in great political difficulty. Therefore, the CPSC attempted to provide safety justifications for the requirements remaining in the regulation. However, several requirements were durability requirements and not safety requirements; for example, the front fork impact test and the spoke tension test. Rather than delete these, the CPSC attempted to invent safety justifications that appeared to be based on engineering.

The front fork impact test[24] delivered a weighted blow to the front fork, as if the bicycle had been ridden into a wall or similar object. The purpose of the BMA test was to demonstrate to potential buyers that they would not have to buy new forks when their children rode up curbs or similar objects.

The spoke tension test[25] was a late addition by manufacturers. With a wheel held in position by its rim, a specified lateral force was applied to the hub, perpendicular to the plane of the wheel. This increased the tension in the spokes on one side of the wheel and decreased the tension in the opposite-side spokes. Bicycle wheels are assembled from hubs, spokes, nipples, and rims. Bicycle wheels are "tension-spoked wheels" whose spokes must be in tension. The final step in wheel building, after all the parts are together, is to screw the nipples tighter onto the ends of the spokes until the desired spoke tension is reached and the rim is true, does not "wobble" when the wheel is rotated. Some types of rims failed during this last stage of wheel building. As the spoke tension increased, the rim allowed some nipples to pull through the rim material. The bicycle manufacturers used this increased tension test to disqualify some models of rim.

23. Discussed at 37 Transp. L.J. 73, 113.
24. 16 CFR 1512.18(k)(1)
25. 16 CFR 1512.18(j)

The CPSC chose to include these two requirements and their tests in its regulation. When challenged (by Forester) to provide the safety justifications for these (as well as for others), the CPSC's political situation required it to invent safety justifications that appeared to be based on engineering.

For the front fork impact test, the CPSC argued that sufficiently strong front forks prevented the cyclist from flying forward into whatever was in front of him.[26] Any first-year engineering student would see this error; the cyclist has no seat belt to hold him back, and there's no fixed object to which the seat belt could attach. The CPSC's arguments get funnier. At this period gear-shift levers were often mounted on the top tube. There was concern that the cyclist, flying forwardin a crash, would pass his crotch area over the shift lever. The CPSC decided to prohibit such shift levers. Therefore, at one point the CPSC was arguing that when a cyclist rode into a large fixed object his arms were sufficiently strong to prevent him from flying forward (in defense of the front fork impact test) while simultaneously being too weak to prevent him from flying forward (in defense of the top tube shift lever prohibition).[27]

For the spoke tension test,[28] the CPSC argued that when a bicycle was ridden over a bump the increased spoke tension could pull many nipples through the rim and cause catastrophic wheel failure.[29] Such an accident had never been recorded, either in written form or in memory. When Forester asked for such data, the CPSC replied that its engineers believed that such could occur. The invention of an imaginary kind of accident that has never caused casualties is one source for the "body count" controversy sneered at by Epperson.[30] In fact, the CPSC's hypothesis is false; its postulated accident mechanism cannot occur. When a bicycle wheel carries an increased load, as when going over a bump, the increase in load is not carried by increased tension in the topmost spokes but by decreased tension in the bottommost spokes. (This was not known at the time, but was discovered a few years later, not coincidentally by

26. "It is recognized by the CPSC that a fork construction, resulting in unnecesarily high stiffness, might lead to potential injury because front impact energy would be transmitted more directly to the rider." Draft regulation December 1974 (#A 24, p10).

27. "[T]he probability that a cyclist can use his arms to prevent forward body movement during a sudden stop" (Forester v CPSC, Reply Brief 40). "[T]he Commission cannot regulate the speed of a bicycle at the time of a collision or the impact force of a bicyclist against a protrusion during a collision" (Forester v CPSC Reply Brief 38).

28. 16 CFR 1512.18(j)

29. "The proposed test was designed to simulate spoke loading under actual roadway conditions. Hazards associated with wheel collapse will be minimized if the spokes do not fail or pull out under conditions of high loading. The stress level . . . is high enough to simulate a bicycle running through a pothole at moderate speeds." Federal Register 16 July 1974, p 26103

30. 37 Transp. L.J. 73, 116

Forester.)[31]

The testing of caliper brakes but not coaster brakes for heat fade was illogical and counter factual (caliper brakes didn't fade, but coaster brakes did). Some requirements, while possibly safety related, such as the requirement for non-slip tread on pedals (feet slipping off pedals, particularly in wet weather, was a known cause of injuries), were so carelessly worded that nobody could make sense of the requirement.

While these were engineeringly absurd, they were largely harmless (people who bought coaster-braked bicycles didn't ride them over such mountains that would burn out their brakes), there was one really dangerous requirement. The all-reflector system purported to produce nighttime traffic protection which it could not possibly deliver. For whatever reason, both the bicycle industry and the CPSC have stuck to this dangerous requirement, against the opposition of traffic experts, right through meetings as late as 1997.

Just as with the front fork test and the spoke tension test, it is necessary to explain the errors of the all-reflector system.[32] The regulation contains highly detailed engineering tests for individual reflectors but no test of the system. BMA/6 contains one system test, which, so Forester has been told, was convincingly demonstrated to the CPSC officials in their own driveway. The test consists of an observer in the driver's seat of a stationary car observing a bicycle standing in the headlamp beams of that car. The bicycle is supported by a person who also rotates the bicycle through a full circle, 360 degrees. The test requires that at all times least one reflector is reflecting light to the observer.[33]

The test may have some relevance to a child playing with his bicycle in the roadway at night, but it has practically no relevance to actual traffic operation and nighttime car-bike collisions. The feature that condemns the all-reflector system is its inability to alert other drivers and pedestrians of the approach of the cyclist. Consider a nighttime motorist arriving at a stop sign. The motorist is required to yield to approaching traffic. The headlamps of approaching vehicles alert him to wait. When he sees no headlamps approaching, he starts across the road. A cyclist relying on the all-reflector system is approaching, say from the motorist's left, invisible to the motorist until his reflectors get in front of the motorist's headlamp beams. By the time that the motorist sees a reflector, he has already started across the intersection into a collision in which either he hits the cyclist's side or the cyclist hits his side. This is important. The best evi-

31. JOHN FORESTER, HELD UP BY DOWNWARD PULL, American Wheelmen, Aug 1980, 13-14

32. 16 CFR 1512.16 and 1512.18(m), (n)

33. BICYCLE MANUFACTURERS ASSOCIATION; APPENDIX TO BICYCLE STANDARD BMA/6; June 1972; Test item 6.1.4

dence strongly suggests that 75% of nighttime car-bike collisions occur after the motorist has been forward of the cyclist, cases in which the cyclist's headlamp would be of prime importance.[34]

While it is true that the CPSC regulation does not prohibit the use of headlamps, it officially discourages them. First, the CPSC declared, on the sole basis of the driveway demonstration, that the all-reflector system provided adequate visibility under nighttime conditions. Epperson states this purpose at page 110: "Because the CPSC reflector regulations were meant to reduce the risk of injury from inadequate cyclist visibility to cars, but were not meant to reduce the risk from obstacles in the road. . ." the states could require headlamps for this purpose. (Which is practically the opposite of reality; most headlamps of this time were insufficiently bright to disclose tire-damaging obstacles in the roadway.) This is an official lie that is deadly dangerous.[35] Second, the official requirement for a proliferation of reflectors on the bicycle convinces people that the reflectors must make nighttime cycling much safer, so they don't bother to buy and operate headlamps. Adequate bicycle headlamps always required informed purchase and careful operation; any excuse for not using them was persuasive. Only in very recent years the advent of light emitting diodes and better energy sources have made bicycle headlamps cheaper and easier to manage.

IV. Epperson's Errors and Biases, in Sequence

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"Beginning in 1973, [BMA] pledged $56,000 to the venerable League of American Wheelmen" to hire an executive director, Morgan Groves. But Epperson's account is erroneous. Groves planned that LAW would attract many new members by attaching LAW prospectuses to BMA bicycles, and these new members would produce a strong lobby for bikeways. The project failed because purchasers of BMA bicycles weren't interested in cycling activity, and LAW members didn't buy BMA bicycles. Groves overspent LAW into technical bankruptcy, debts exceeding assets.

When Forester first served as director, 1976, the directors were informed by the president, Kehew of Pennsylvania, of the financial situation, that Groves was out, and it was up to us to manage the League with our own resources.

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34. John Forester, Bicycle Transportation 2nd ed, Chapter 17; The MIT Press, Cambridge Mass; 1994

35. A cyclist relying on the all-reflector system was descending an arterial road at about 33 mph. A motorist coming up the hill did not see him and turned left so that the cyclist hit his vehicle, causing lifetime disability. Johnson v Derby Cycle, Essex County Superior, N.J. Nov 4, 1993

Contrary to Epperson, the BMA's money was out before Forester even became a director, and therefore is not relevant to him becoming president in 1980, nor to Epperson's claim of what he was saying at the time, which Epperson got from an article published in 1973.

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This is Epperson's argument that buyers of good bicycles killed the American bicycle industry. This is disproved in section 3.3.1 above.

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Epperson's history is erroneous. A more accurate account is from "Epperson's history of the bikeway program is inaccurate" at page ? herein through "All later design standards are based on this" at page ?.
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The Federal study of bicycle accidents contained many errors. Its statement about nighttime protective equipment was so vague as to be useless. It recommended better illumination, without stating where it should come from; could even be from streetlights.

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Epperson's description of Forester as a "production analyst" is erroneous. At the time that all this started, Forester was director of industrial engineering of Raychem, in Menlo Park CA, a prominent manufacturer of aerospace materials, supervising four engineers and a statistical assistant.

Epperson's claim that Forester was "a devotee of Harold Munn's 'vehicular cycling' theory" is false. Forester knew Munn when they both cycled in Los Angeles, which Forester left in 1969. Forester does not recall discussing bikeways with Munn, certainly not in a highway engineering context; in 1969 bikeways were not a subject of concern. Furthermore, Forester's attachment to the vehicular cycling principle goes back to his early training in England in the 1930s and to reading the articles by George Herbert Stancer in the 1940s. Stancer was the leader of the British Cyclists' Touring Club from 1920 to 1962. Furthermore, Forester's first analysis of the superiority of vehicular cycling over bikeway cycling was done for the Palo Alto bikeway case, in 1972, while Munn did not publish his article until 1975.

Pages 91-92

Epperson pejoratively disparages Forester for claiming "a vast conspiracy". However, on the evidence at that time, Forester was accurate. The bicycle industry was already promoting bikeways, which only government could build (Epperson 80), it had subsidized LAW's executive director to build a lobbying force for bikeways (Epperson 74), the CPSC regulation, at that time, required toy bicycles and prohibited real bicycles,

and California government was designing dangerous bikeways and laws to require cyclists to use them.

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Epperson disparages Forester by saying that Forester had "laughed uproariously" because the chairman of his city's bikeway committee had been in a car-bike collision. What Epperson fails to understand is that the humor was Kafkaesque. The person named to chair that important bikeway committee had cycled himself into a car-bike collision by doing something typically absolutely incompetent and childish, and had then complained about the lawfully behaving motorist.

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Epperson's denial of the validity of Forester's complaint about the CPSC requiring only toy bicycles and prohibiting real bicycles is plain false. The early versions of the regulation did that (see third paragraph of Section 4). This was known to Epperson, because he tells of DeLong later "working . . . to find a mutually acceptable set of rules". It was also the cause of the anger expressed about the regulation by Tullio Campagnolo, a leading manufacturer of bicycle components. Epperson attributes this to the protrusions rule, but it was more likely to the initial prohibition of derailleur adjusting screws to prevent misadjustment by children. This was so unworkable that it was deleted early and all derailleurs continue to have adjusting screws.

Pages 98-99

Epperson's account of the negotiations between DeLong, Townley (vice president of Schwinn Bicycle Company with responsibility for government relations) and the CPSC to fix up the regulation is reasonable, but his view of Forester's part is false. Forester recognized that the regulation was an absurdity in mechanical engineering (defying Newton's laws of motion), safety engineering (inventing accidents that had never occurred), and traffic engineering (the dangerous all-reflector system); it was reasonable to fear further troubles from the same source. None of the other parties cared about the errors or the dangers. DeLong and Townley cared only that the regulation permit both toy and real bicycles, while the CPSC cared only that the regulation be issued with little trouble. Epperson asserts that Forester knew that the CPSC did not need to depend on DeLong's advice because Forester knew that the CPSC had a responsible engineer named O'Connor. Forester knew of O'Connor, but he also knew that the engineering incompetence of the regulation demonstrated either that O'Connor was incompetent or that his advice was ignored.

Had the other participants told Forester that they didn't care how silly the regulation was, as long as issuing it would not cause casualties to

cyclists, Forester might well have cooperated, leaving only the all-reflector system to be negotiated over. Instead, the other participants kept insisting that this absurd regulation was wonderful.

Pages 99-100

Epperson's account of the creation and the content of Forester's Effective Cycling course and program is erroneous. While Munn and Forester had similar opinions regarding bicycle traffic, those opinions were widespread at the time. Forester had formalized his view of traffic-cycling in the course of the Palo Alto sidepath case of 1972, and was teaching his Effective Cycling course in 1973, while Munn's article was not published until November, 1975.

In the 1960s Forester had been involved with the Sierra Club in teaching some aspects of mountaineering, and as a professor had created his own university course in statistical decision theory. He had no need of DeLong's information (as asserted by Epperson) to develop a course that taught what Forester knew to be necessary. Furthermore, Forester has always opposed cyclist training based on hazard recognition (misstated by Epperson as "hazard record approach").[36] The driver who drives along wondering what might be the next hazard has insufficient time to scan everything, recognize a hazard, and decide what to do about it. The driver who operates as a driver and understands why traffic operates as it does is quick to recognize the occasion when something is not operating properly and can best take evasive action.

Epperson's statement, based on Townley, that Forester and DeLong disliked each other intensely is inaccurate. Possibly DeLong had such strong dislike for Forester, but Forester merely considered DeLong to be an engineer of low competence.

Pages 100-101

Epperson's justification for the different treatments of bicycles with coaster brakes and bicycles with rim brakes is both uninformative and falsely impugns Forester. The CPSC regulation is based on the argument that there is no safety difference between toy bicycles and real bicycles. Surely, the ability of brakes to control speed during descents is an important safety attribute. Therefore toy bicycles, which often use coaster brakes, ought to have the same braking performance as real bicycles, which, in America, never have coaster brakes.

For one of his real bicycles that had rim brakes front and rear, Forester built a wheel with a coaster brake. He instrumented the rims and the coaster brake with temperature recording labels, such as are used in heat treating. He then descended a hill near his house, approximately

36. JOHN FORESTER, EFFECTIVE CYCLING INSTRUCTOR'S MANUAL 6th ed, 13, *available at* http://johnforester.com/BTEO/ECIM6.pdf

2,000 feet elevation loss. First, using both rim brakes; a second time using only the rear rim brake; a third time using only the coaster brake. The front rim when using both rim brakes, and the rear rim for only one rim brake, did not quite reach the brakeblock test temperature specified in the regulation, and the brakeblocks remained in perfect condition. The coaster brake started smoking about one-third of the way down, would neither release fully nor grip fully two-thirds of the way down, and was good only for scrap when the bottom was reached. Either there should be two standards, one for toy bicycles and one for real bicycles, or coaster brakes should be prohibited because they burned out on hills frequently used by riders of real bicycles.

Epperson claims that Forester "forgot to mention that he had his own conflict of interest: at the time, he was being paid as an expert witness to testify in litigation against the Bendix Corporation, the nation's largest supplier of coaster brakes." Epperson then quotes a statement from James Green: "There is no ideological basis to anything Forester does. He will sway in the wind depending on who is paying him."

Forester ran the descent tests in 1973 and his article was published in March 1974. Epperson lists the Bendix case as 1977, while Forester lists his testimony as 1978. Forester was assisting the U. S. Customs Service in a very simple case. Bendix was trying to evade customs duties by importing coaster brakes under a different name (backpedalling brake) with a lower rate. All Forester had to do was to look at a standard Bendix coaster brake that Bendix was importing from Mexico and say that this type of brake had always been known as a coaster brake. Epperson's claim that such easy testimony influenced Forester's determination, four years before, to test a coaster brake (a New Departure one, not a Bendix) is absurd. Furthermore, Epperson should have recognized that Green's claim does not comport well with the Forester that Epperson claims to be describing. Epperson describes Forester as having undertaken, at the cost of great worry and effort, to correct dangerous engineering errors without possibility of financial recompense.

Page 103

No matter what correspondence the CPSC had generated, in May 1976 the question of the definition of a "one-of-a-kind" bicycle still worried cyclists. Forester attended a May 1976 CPSC meeting at which, Epperson claims, "Forester tried to use the San Francisco meeting to bully the CPSC into a verbal interpretation that would open a new 'two-box' loophole, but by now the CPSC staff knew him well enough not to give him a straight answer." The practice of buying made-to-measure framesets was, and is, a large part of the good-bicycle business, and cyclists were worried whether the CPSC regulation would consider such bicycles exempt as "one-of-a-kind" or would prohibit them. So Forester

asked the question, was told that if it used standard bicycle components it could not qualify as a one-of-a-kind bicycle. Forester asked the more specific question about using standard bicycle tubing, such as Reynolds 531. The reply that he was given, heard by all there, was that if it used standard bicycle items it could not be exempt as a one-of-a-kind bicycle. That official statement made the custom framemaking business unlawful. Epperson's claim that Forester was bullying the CPSC is absurd, but the demonstration of the CPSC's ignorance and incompetence stands out.

Page 105

Epperson asserts that he doesn't know why Forester objected to the all-reflector system. "For obscure reasons, the 10-reflector rule became his bête noire." If this statement is true, Epperson has demonstrated that he does not know how the rules of the road work and therefore should be disqualified from working in the bicycle traffic field, and equally was not qualified to have written his article.

Epperson's statement of Forester's motive is erroneous, speculative, and defaming: "driving American cycle makers out of business while making bicycles too expensive for the casual, occasional, or indifferent cyclists he loathed so much." This is the typical bicycle advocate's hatred of what he calls elite cyclists forced into a controversy in which it has no place. Forester was not so foolish as to think he could accomplish that, even had he wanted to, which he didn't.

Page 105, footnote 228

Epperson again tries to assert that Forester had a monetary conflict of interest. "Forester started a bicycle accessories firm, which sold a proprietary front headlight system. Forester claimed that the only two worthwhile headlamp systems were his and acetylene lamps, which hadn't been made for 50 years because of their propensity to explode." The statement is false. Forester designed and made his first pieces of equipment to make cycling more useful when he lived in Los Angeles, before 1969. Note the emphasis on utility, not what one would associate with elitism. Forester never "sold a proprietary front headlight system." All he ever sold was a kit of some precut pieces of aluminum from which the customer could cut and bend a handy and reliable bracket on which to mount any commercially available headlamp and generator. Forester intended to make cycling safer and more useful by making generator headlamps more easily used; nobody would do this for money. And acetylene lamps did not explode; their use dropped because they required careful management to work properly, they took time to start, and they smelt bad after use.

Page 106

Epperson claims "Forester hoped to use the CPSC ruling to turn the clock back to an idyllic, pre-bike boom era." Epperson's claim makes

sense only to bicycle advocates who believe that vehicular cyclists want to restrict cycling to the elite few, as the bicycle advocates claim it was before the bike boom. This is false from the beginning. Cycling stopped being an elite activity in the nineteenth century. In the twentieth century the great majority of American cycling was done on the type of bicycles produced in America to suit the American market, called "toy bicycles" herein. Therefore, in the twentieth century, American bicycle use could never have been an elite activity. Forester had two aims in opposing the CPSC regulation. The first and broader was to stop government from issuing a patently absurd and useless regulation. The second was limited to getting rid of the dangerous governmental requirement for the all-reflector system of nighttime protection.

Page 108

Epperson's statements about the Chicago meeting between the BMA and the National Committee for Uniform Traffic Laws and Ordinances (NCUTLO) about lights are erroneous. Groves, upon whom Epperson relies, may have thought that the subject concerned 3M's reflectorized tires, but the subject discussed and voted upon was the bicycle headlamp requirement of the Uniform Vehicle Code.[37] Forester stands by his account that the BMA argued that the CPSC all-reflector system supplanted the UVC, so that voting to repeal the UVC requirement was just a formality, and if the NCUTLO did not repeal its requirement the BMA would go to the individual states. When the vote came, nobody voted to repeal the headlamp requirement.

Page 109, footnote 254.

Epperson's supposition that Forester had written to Dr. Clifford Graves is incorrect. The Cliff to whom the letter was addressed was Clifford Franz, the LAW director for Forester's region.

Page 109 & footnote 256

Epperson's claim that Forester arranged for two years financial support from Dorris Taylor is false.

Such an arrangement was never made, Taylor and Forester always split household expenses equally. Taylor never provided Epperson with information to support Epperson's claim, and the one reference Epperson quotes, from one of Forester's books, says only "I decided to rectify government's errors by putting cycling transportation on a scientific basis. I thought it would take me two years, after which I would return to industrial engineering." Forester had savings, and used them.

Therefore, also false is Epperson's statement that "With the imminent end to his court appeal in the Palo Alto bikeways case, (it was decided against him in November 1973) the clock was running out." With no

37. UVC 12-702, at the time of this event numbered 11-1207(a).

arrangement with Taylor, there was no clock to run out. Furthermore while Forester paid a nominal fine of $25, the Palo Alto City Council immediately repealed the law prohibiting cycling on particular roadways.

Page 109

Epperson's claim that "Forester set up a company to act as sole-source provider of the textbook" is false. As stated herein under Page 105, footnote 228, Forester had been designing and producing various items to make cycling more useful since 1969. He had also been writing and printing a newsletter to California cyclists to inform them of the acts of the California Statewide Bicycle Committee and the California State Bicycle Facilities Committee. Furthermore, no publishing firm thought there was a market for informed information about cycling, and there was no money to pay printers. And producing textbooks with a mimeograph machine and binding punches was just plain work. Forester was happy when The MIT Press decided to take on the task.

Page 109

Epperson claims, with respect to the Effective Cycling textbook, "Some parts of the book were highly critical of the BMA and American firms, and the industry withdrew its financial support from the League, not to return for over a decade." The claim is misleading. The industry had withdrawn its support years before, in consequence of the Morgan Groves disaster. Thereafter, the industry and the League were on opposite sides. The League represented lawful, competent cyclists, while the industry wanted bikeways to appeal to myriads of incompetent cyclists. Only when control of the League was seized by anti-motoring bikeway-promoting bicycle advocates did the industry see that it could use the League for its own ends (1983).

Page 114

Epperson asserts that Forester was wrong in claiming that the CPSC could not justify some requirements. Epperson states "it wasn't that the CPSC *couldn't* meet the standard, but that they *did not* do it." Epperson's claim is false. As demonstrated herein, as well as in the court documents, it was impossible to provide valid safety justifications for the front fork test, the spoke tension test, and the all-reflector system.

Page 114

Epperson criticizes Forester "who unwisely believed he was competent to act as his own lawyer." The quotation on which Epperson makes this claim does not support Epperson's claim. Forester wrote: "I figure that I am the best combination of cyclist, engineer, and amateur lawyer around." Forester qualified only "lawyer" by "amateur", clearly indicating that he did not consider himself to have professional competence. Furthermore, he applied the description of "best" only to persons who

combined the three different kinds of expertise, surely a small population.

Epperson's criticism is false; Forester had no choice. He had found no source of money to support the case; not for any attorney, let alone such expensive attorneys as hired by BMA or employed by the U. S. government. The choice was to either proceed with the resources available or to quit.

Footnote 289 (page 114)

Epperson's footnote appears to be deliberately written to mislead the reader about Forester's formal qualification. Epperson correctly states that Forester holds a California industrial engineering license. He then states: "Prior to 1973, the State of California granted 'professional engineer' certificates to many types of para-professionals . . . Industrial engineers are specifically prohibited from 'the practice of civil, electrical, or mechanical engineering,' which are the only engineering licenses the State of California now issues." In short, Epperson claims that Forester became registered by California as an industrial engineer before 1973, after which date California ceased to include industrial engineering as a registered discipline. This is false. The California Board for Professional Engineers and Land Surveyors Written Examination Schedule for Engineering Examinations lists industrial engineering examination dates near the end of October in each year for 2010, 2011, 2012, 2013.[38]

Pages 115-116

In footnote 291, Epperson notes the importance of the number of casualties (the "body count") in considering safety regulations. Epperson then claims (116) that Forester argued that a safety regulation must "eliminate *entirely* a specific hazard" and that the Forester case "became known forever more as the 'body count' case." Epperson confuses the presence of a hazard with the number of casualties. Logically, if a hazard is eliminated, then the casualties caused by that hazard disappear. However, many safety regulations, such as requiring headlamps at night, only ameliorate the hazard, thus reducing but not eliminating its casualties.

Epperson ignores the more important aspect of the "body count" controversy. That had two aspects. The CPSC was claiming that casualties must have occurred even though nobody had recorded them and the mechanism was engineeringly impossible: the spoke tension requirement. The CPSC also made opposite claims that its requirement would reduce casualties when that also was engineeringly impossible: the front fork impact requirement.

Forester's arguments for the importance of both the number of casu-

38. www.pels.ca.gov/applicants/schedule_eng.pdf

alties and the mechanisms for reducing them address the entire justification for for safety regulations.

Pages 117-118

In the last pages, Epperson returns to his motivating grievance, Forester's opposition to bikeways and bicycle planning. "[M]any agencies turned to the type of skill-based, anti-facilities program Forester advocated, not necessarily because it was the best approach but because it was the cheapest." Then Epperson quotes Green again: "this puts the public at risk and is deplorable." In these pages Epperson exploits the ubiquitous superstition that bicycle planning of bikeways will make cycling safe and therefore persuade many motorists to switch many trips from motor to bicycle transport. As with other bicycle planners and bicycle advocates, he ignores the fact that America's basic bikeway designs were created by motorists for their own convenience, and the facts that bikeway advocates have never been able to demonstrate either that incompetent cycling on bikeways is safer than rules-of-the-road cycling on roadways or the great predicted switch by motorists from motor to bicycle transport.

Epperson falsely asserts that "Forester . . . now grudgingly concurs with his former opponents on the impact of bicycle facilities: 'Yes, there a correlation between the amount of bicycle transportation and the presence of bikeways.'" Epperson's statement is false because Forester has always said that a larger cycling population produces the political pressure to produce bikeways, which is the opposite of Epperson's claim. Correlation does not demonstrate causation.

Epperson concludes by claiming, in the sentence from which the above quotation is taken, that Forester is "these days an author and speaker for the American Dream Coalition." The ADC is an organization of suburbanites that is, therefore, roundly despised by bicycle advocates for being such and for supporting motor transportation.

Forester has never advocated suburbs, holding only that people should be free to choose their residences. Forester has never spoken for the American Dream Coalition. On the two occasions at which he has spoken to them, his subject was only the welfare of cyclists, saying that both cyclists and suburbanites would be better off with rules-of-the-road cycling than with incompetent cycling on bikeways. In short, he warned them against doing harm to cyclists.[39]

39. The article cited by Epperson is available at http://www.johnforester.com/Articles/Social/place_of_bicycle_transportation.htm.