Velocipede: Who Knew?

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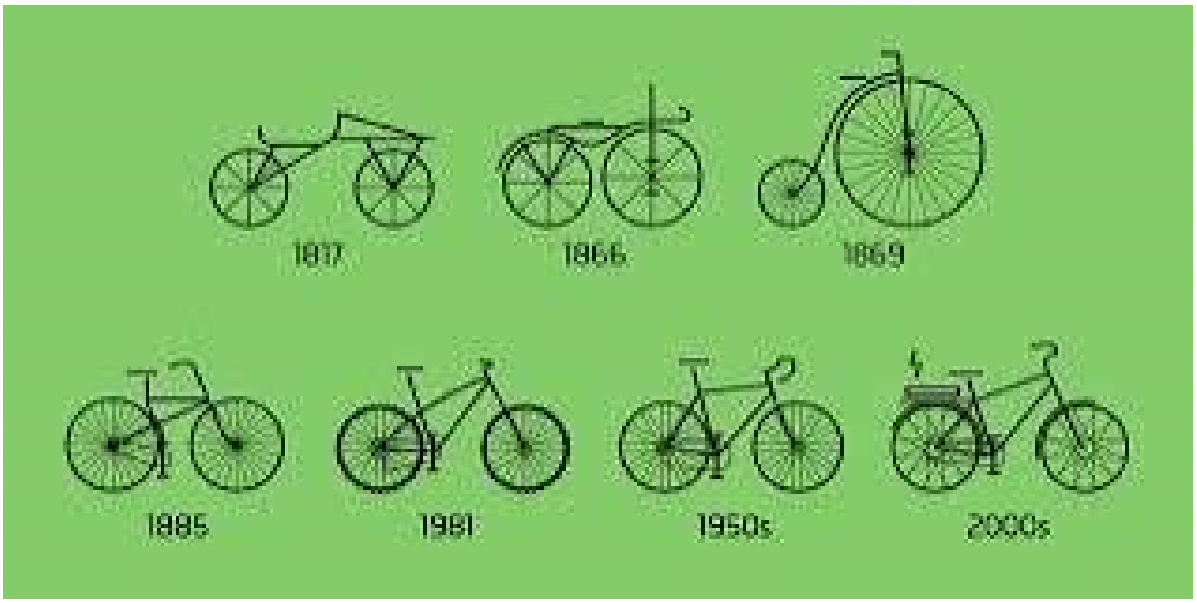
I. Introduction

Tonight, I present my Essay on certain interesting facets of the bicycle, originally known as the "velocipede" (and hence the title of this Essay). I will first discuss the history of the bicycle, and then I will talk about the societal impact of the bicycle.



Why in the world would I want to present an essay on the history and societal impact of the bicycle to this esteemed group? Two reasons.

First, I believe that most good essays come from an essayist with a genuine and passionate interest in the subject matter, which triggers a desire to dig deeper and learn more than the average person on the subject. This seems to be at the core of the Kit Kat Club's mission and purpose.

I am indeed an avid bicyclist. I love the machines. I personally own six bicycles. So, to the oft-asked question, what is the proper number of bicycles one should own?: My answer is N+1 (though my wife has offered that the better answer may be N-1). And, yes, I ride quite a bit, not as much as I will in my oncoming retirement years, but, yes, a lot.

Second, bicycling is something I know many of you enjoy. You know the joy of a bicycle ride. For those of you who do not ride, I make this sales pitch to you: bicycling is a wonderful form of exercise that allows you to see your surroundings, feel the cool breeze on your face, and even enjoy the company of others as you work on your fitness and work off your most recent meal.

II. The History of the Bicycle

A. The First Bicycle (1817 and before)

-The "Velocipede," invented by German, Baron Karl von Drais, 1817

So, who invented the bicycle? The answer is a little more complicated than you may think. The bicycle as we know it today was a creation of the late 18th century starting before the Industrial Revolution thanks to a series of inventions and re-designs by many different inventors.

Before 1817, there were several unverified accounts of two-wheeled contraptions. For example, in 1792, a man named Comte de Sivrac developed a célérifère, demonstrating it at the Palais-Royal in France. The célérifère supposedly had a wooden frame and two wooded wheels and no steering mechanism with directional control attained only by leaning and with the forward propulsion being accomplished only by the rider pushing it along with his feet.

Then, in 1817, the first verifiable, commonly used bicycle was invented in Germany by Baron Karl von Drais, a civil servant to the Grand Duke of Baden in Germany. This first bicycle was known by many names, including the "Velocipede," "Swift Walker," "Draisine," named after the inventor, and "Running Machine."

Constructed almost entirely of wood, the Velocipede weighed 48 pounds. It had brass bushings within the wheel bearings, iron shod wheels, and a rear-wheel brake but no pedals. On his first reported ride in Germany on June 12, 1817, Drais covered eight miles in less than an hour on his Velocipede. After the invention in 1817, the Velocipede was initially manufactured in Germany and France. Several thousand copies were built and used, primarily in Western Europe and in North America.

In my research, I discovered three interesting facets related Drais' first common bicycle.

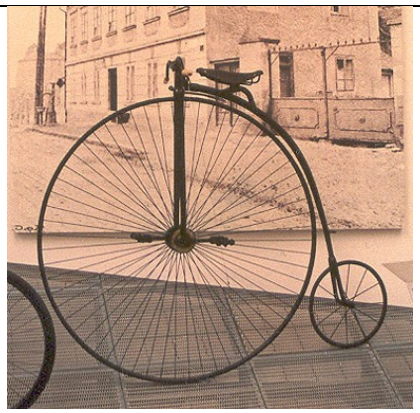
First, it was Karl von Drais who first patented the design of the Velocipede in 1818. This is the reason why Karl von Drais is widely acknowledged as the father of the bicycle, even though there were other versions of the bicycle invented before his patent. This fact related to the first patent of the bicycle reminds us of the importance of the patent system, which has been so critical to industrial development of the Western world. In other words, if you want credit for your invention, get a patent.

Second, the initial development and popularity of the Velocipede was generated and driven by a natural disaster. In 1815, two years before the invention, there was a severe volcanic eruption of Mount Tambora, located in modern-day Indonesia, half way around the world. This eruption was so big that it led to a dramatic crop failure around the world in 1816, known as the Year Without a Summer. This crop failure then led to the starvation and death of huge number of horses, which were, at that time, a central form of transportation. Apparently, finding an alternative to the horse drove Drais' interest in creating the Velocipede. Who knew? Amazing!

Third, after a couple of decades, the popularity of this original version of the bicycle faded due to increasing numbers of accidents as well as some city authorities' prohibition of the use of Velocipedes on sidewalks or entirely. This development reminds me of the current controversies of the electric scooters we see all over downtown Columbus and other places.

II. The History of the Bicycle

B. The Early Years (1818 – 1884)

	
-The "Hobby Horse," and the "Boneshaker," invented in the 1860s.	**-The "Penny Farthing," invented by Eugene Meyer and James Starley in 1870.**

Drais's first Velocipede enjoyed a brief stint in the spotlight. Over the next fifty-plus years, this early version of the bicycle continued to be improved upon across Europe. Other inventors made various changes to the early bicycle, including Denis Johnson (English), Pierre Lallement, Pierre Michaux and Ernest Michaux (French).

These developments included first and foremost, replacing the wood frame with a metal frame, which dramatically decreased the weight of the Velocipede. Another important early development was the addition of pedals attached to the front wheel. These improved versions were known by a variety of different names, including the "Hobby Horse" and the "Boneshaker, the latter so-named due to its rough ride.

In 1870, a signicant change occurred in the bicycling world. Inventors Eugène Meyer and James Starley introduced new models that sported an oversized front wheel, known as the "Penny Farthing." These oddly shaped machines contained a number of important technical improvements, including a much larger front wheel, a much smaller rear wheel, hollow steel frames, ball bearings, wire-spoked wheels, and rubber tires, which all contributed to an impressive weight reduction, greater speeds and a more comfortable ride.

Penny Farthings became all the rage during the 1870s and 1880s and helped give rise to the first bicycle clubs and competitive races. Beginning in 1884, an Englishman named Thomas Stevens famously rode a high-wheeler bike on a journey around the globe. Bicycle races were staged and well attended by the public, which spread interest for the high-wheeler worldwide because of the far-flung British empire.

Despite the growth of the bicycle in this era, the popularity of the Penny Farthing was limited. Front-wheel sizes quickly grew to as much as 5 feet, but the bicycles were considered by the general public to be quite dangerous. In addition, they were expensive, and thus riders were mostly wealthy young men who formed an elite brotherhood.

II. The History of the Bicycle

C. The Bicycle Growth Era (1885-1900)

-The "Safety Bicycle," invented by John Kemp in 1885

While the Penny Farthing helped bring bicycling into the mainstream, its four-foot-high saddle made it too dangerous for most to ride. That changed in 1885. This is when Englishman John Kemp Starley, the nephew of James Starley who invented the Penny Farthing, invented the "Safety Bicycle."

The important technical developments for the Safety Bicycle included equal-sized wheels, a chain drive, new brakes and air-filled tires, which all contributed to a much safer ride and a more efficient ride allowing for greater speeds and longer distances. This bicycle established the basic template for what would become the modern bicycle of today.

Interest in the two-wheeled machines exploded, and by the 1890s, Europe and the United States were in the midst of a bike craze. A *New York Times* article from 1896 gushed that "the bicycle promises a splendid extension of personal power and freedom, scarcely inferior to what wings would give."

II. The History of the Bicycle

D. The Modern Era (1901 - Present)

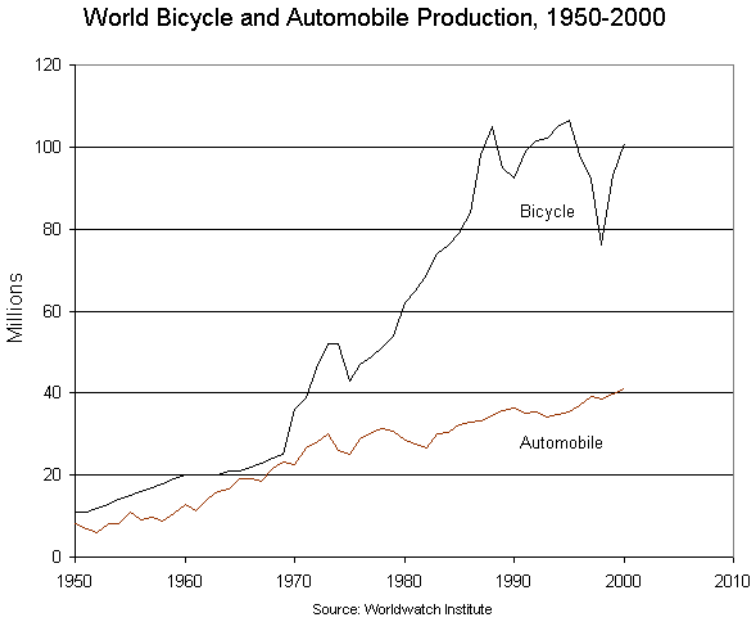
The beginning of the 1900s saw bikes being mass produced; they became affordable to the general public and evolved from a status symbol of the wealthy to an object of practical use for everyone. Some important technological developments since then over the last 120 years are quite notable, including geared sprockets/derailleurs, better building materials (steel, aluminum, carbon fiber, titanium), clipless pedals, GPS computers , bike suspension systems, and dozens more.

However, the basic approach of the Safety Bicycle remains in place today. Oddly, despite these seemingly important developments, the truth is that very little has changed over the last 120 years. Anyone from the 1880's could pick up one of my six bicycles and completely understand every element of it. They would figure out the derailleurs in seconds and how they work and could use my bicycle tools just as effectively as I can. I could do the same. I could go back 120 years and every part of riding a bicycle and using the older equipment would be completely familiar. Dramatically, I submit to you that few things in life are so similar between the two time periods.

Interestingly, as one example, there is a bicycling world record known as the Traditional Bicycle Hour Record. It is simply the most miles ridden in one hour on a flat road in windless conditions. This world record is just over 30 miles in one hour. Amazingly, this record and has stood for two generations since 1972 when Eddie Merckx set the record. Who knew? Incredible! Precious few world records in any sport from 50 years ago still stand today. This remarkable fact shows how bicycles have not changed in any material way, despite all kinds of new materials, science and technologies that we currently spend so much money on.

II. The History of the Bicycle

D. The Modern Era (1901 - Present) – *con't*



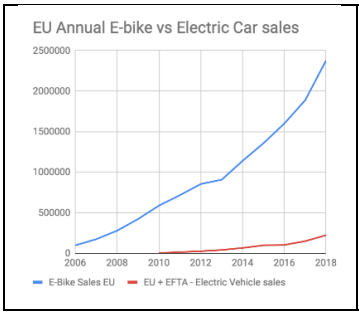
For decades, the bicycle was an important means of transportation, though this changed with the economic boom of the 1950s: Cars and motorcycles quickly took hold as the main method of transportation, especially in the U.S. Most people who rode bikes were those who could not afford a motor vehicle or those who did not have a driving license. In a strange twist of fate, the former status symbol now bore the reputation of being merely a poor man's car.

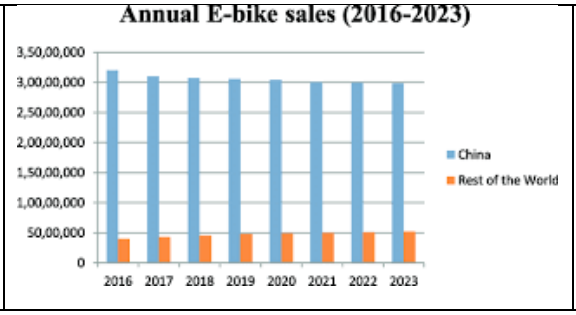
So, the car killed the bicycle, right? Not so fast, my friend. The answer may seem so in the U.S., but not worldwide. The truth is that, in the world, especially in Asia, the bicycle is a very popular and important mode of transportation. Worldwide, there are far more bicycles than cars.

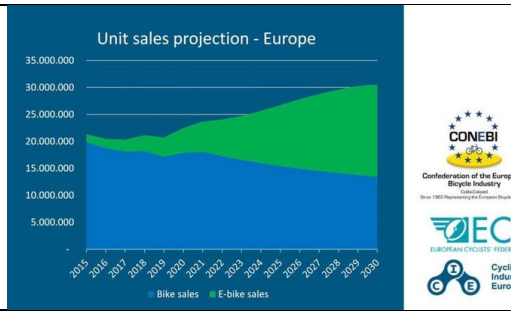
In more recent times in the U.S., the bicycle experienced a notable resurgent boom beginning at the end of the 1960s, when the banana bike and the fold-up bike were launched. During the oil crisis in the 1970s, cost-saving transportation grew, and ecological awareness developed. So the bicycle began slowly to become important again, especially in an urban context. As a result of the rise of mountain biking in the 1980s and the emerging fitness movement since then, the interest in bicycles has continued to grow to what we see today.

Today, the bicycle still signifies a fun, economical, utilitarian form of transportation. It can be whatever the rider desires it to be. It is a great exercise device. It often brings people back to their childhood and happier, more carefree days. It is sometimes viewed as a political statement—the politically correct antidote to cars, pollution, and climate change.

II. The History of the Bicycle
E. The Future







What is in store for the future for bicycles? Who knows!?!

But one interesting new development I will share is the invention of the electric bicycle and its amazing growth in popularity. While electric and gas-powered bicycles and other versions of hybrid bicycles or mopeds have existed in various forms for over 100 years, there have been amazing new developments with electric bicycles in the last few years. The improvement in battery technology, in particular, has allowed much more power to be contained in much smaller and lighter batteries, as also seen in electric cars, cell phones, leaf blowers and other applications. As a result, the popularity of electric bicycles has grown very rapidly and is expected to continue, especially in Europe and Asia.

III. The Bicycle's Impact on Society

Now, let's segue from the history of the bicycle to the bicycle's impact on society. To explain what the bicycle has meant for society, let us look at six ways it changed life, society, technology and the world.

A. An Affordable Means of Transportation

First, the bicycle, at its core, is an affordable means of transportation. In the late 1800s and early 1900s, the mass production of the Safety Bicycle, discussed earlier, led to a large part of society owning an affordable and practical means of transportation. For most people, travel by means other than public transit was unusual, if indeed one traveled at all. But the advent of the bicycle at affordable prices made personal transportation practical for the general population.

Bicycles were used to commute to work, as a work tool and as a cheap and easy way to get around. The ability to move quickly sped up key and basic processes such as delivery services. The bicycle brought about enormous workplace and economic changes. It opened the doors to increased worker mobility and job choice creating greater worker freedom. It also gave employers the ability to employ people from a much larger geographic region.

III. The Bicycle's Impact on Society
B. Emancipation of Women

The second way the bicycle changed society is by liberating women. In 1896, Susan B. Anthony is quoted as saying that the bicycle did more for women's rights and emancipation than any other single invention or law to that point in history. In other words, women experienced freedom for the first time, and this contributed greatly to a feeling of equality that helped women pursue more social and civil rights.

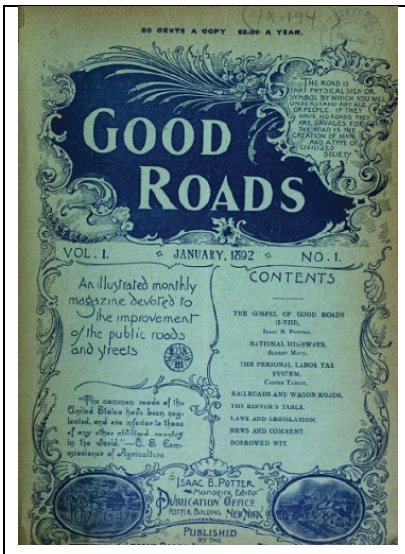
Office workers and shop assistants rode bicycles to work. Women from the upper social classes used bicycles for leisurely rides or to call on friends. The bicycle also provided a form of exercise for women that demonstrated they could be athletic. During most of the 19th century, women were discouraged from or outright barred from most athletic competition.

After the new bicycle design proved popular with women, it also forced a change in women's fashions. Long skirts, overflowing frilly dresses, large hoop skirts, and tight corsets were no longer standard apparel for women. Clothing had to be designed more practically for women to be able to move more freely so they could ride a bike. Bloomers and shorter, split midi skirts became popular.

On the personal side, women were now able to go cycling unchaperoned. Ladies, and even young girls, began riding alone or accompanied only by friends. The conservatives at this time were against the new clothes, freedom and exercise. They even claimed that a woman's contact with the bicycle saddle was sexually immodest.

However, the momentum of women's rights and the related suffrage movement could not be stopped, and the bicycle facilitated this movement. Many suffragettes clearly saw the bicycle as a liberating and emancipating means of transport. For women, pedaling meant raising and gaining awareness of their personal freedom. Many commentators believe that the bicycle motivated women (and men alike) to join the movement for women's suffrage: a goal they had been fighting for since the mid-nineteenth century.

III. The Bicycle's Impact on Society
C. Improved Infrastructure



The third way the bicycle changed society is by improving infrastructure. In the United States, England, and continental Europe, bicycle clubs and advocacy groups pressed for road improvement, which resulted in the closing of the social gap between rural and urban spaces. Increased use of bicycles created the need for more and better infrastructure, especially during the times of the different bicycle booms.

One example is an organized social movement group in the U.S., known as the "Good Roads Movement" founded in 1880 and extending into the 1920s. This movement was a coalition between various farmer organizations and bicyclist organizations, who lobbied the federal government to invest in improving rural roads. The arrival of the automobile at the beginning of the 20th century combined with the Good Roads Movement successfully led President Woodrow Wilson to sign the Federal Aid Road Act in 1916, the first federal highway funding legislation in the United States.

Improved roads allowed cyclists from the city to see the countryside in ways they had not been able to before, due to cost as well as absence of access. Similarly, country folk could visit the larger towns or cities cheaply. The popularity of the bicycle and the improved road system changed social relations because young men and young women were not limited to potential marriage partners in their own towns. They could travel elsewhere to meet new potential partners. This changed the whole dynamic of gender relations. Some commentators have speculated that, other than war, the bicycle and the improved road system have been the most important factors in modern time in the blending of different segments of human DNA, which is believed to add greatly to the development and health resistance of the human race. Who knew? Huge!

III. The Bicycle's Impact on Society

D. Bicycle Technology Used in Other Inventions

The fourth way the bicycle changed society is by contributing its technology to the development of other industries. Many of the various elements of bicycle technology developed over the years were used in other important inventions. The tools necessary to make a bicycle spurred technological development in the steel industry, rubber industry, plastics, and so forth. Inventors sought to make more efficient tools so they could supply the manufacturers in the bicycle industry that were experiencing a boom in the 19th century. These tools were then used for other inventions.

The first gasoline-powered cars used the spoked wheels, steel tubes, pneumatic inflated tires, bicycle chain propulsion and a sprocketed differential, all originally used in bicycles. The photo above on the left is the rear-engine-mounted Benz Patent-Motorwagen built in 1886, which is considered to be the world's first car. You can definitely see how this invention borrowed technology from the bicycle.

The airplane also owes much of its early technology to the bicycle. As you all know, the Wright brothers, Wilbur and Orville, are the most famous aviation pioneers. Before they embarked on their air journey, they were successful entrepreneurs in the bicycle industry in the late 1800s. In 1892 they founded a bicycle shop in Dayton, Ohio where they manufactured, repaired, and rented out their Van Cleve bicycles. With their yearly profits of $2000-3000, they began to research aeronautics and in 1899 they were able to experiment with their first flying devices. They used many different bicycle parts in their first gliders and other airplanes developed later.

III. The Bicycle's Impact on Society
E. Bicycle Technology in Wartime

202 CYCLING 5TH OCTOBER, 1914.

The Work of the Soldier-Cyclist.

IN this war, says one who has been in the thick of the fighting, "hundreds—even thousands—of men have been killed without setting eyes on the troops opposed to them. It is not a war of men: it is a war of machines"—of automatic death-dealers in the shape of the mitrailleuse and the "soixante-quinze."

In the fighting lines undoubtedly this is generally true, but it must not be forgotten that there are continually happening "affairs of outposts," miniature battles between scouting parties and rival bands of cavalry or infantry which have become detached from their regiments. In these affrays all the conditions and circumstances of former warfare are reproduced and the old ardour of conflict is revived.

The soldier-cyclists of each side have had a great share in these incidental affairs. Their work has been full of adventure and peril, their exploits more stirring than any that fiction has hitherto anticipated. When they have joined issue with the enemy it has generally been at close quarters, under conditions which have ensured "a short fight and a merry one." If there be any of the old glamour and romance left in modern warfare the cyclist scouts are having more than their share of it.

To our own men the ubiquitous Uhlan guarantees that each mission they undertake shall be full of risk and incident, with the odds often against a successful issue. Yet we know that such missions are undertaken with zeal, and carried through with remarkable efficiency. When the war is over the tales our cyclist warriors have to tell will be amongst the most inspiriting in the annals of

This Stupendous Conflict.

The reasons of the success of the soldier-cyclist are not far to seek. In the first place it must be realised that his mount, unlike that of the cavalryman, is silent in progress. This gives him an enormous advantage over his noisy foe, whose horse betrays his presence even when galloping over grassland. In short, the cyclist can hear and not be heard. He can approach speedily and noiselessly, and without warning can attack the enemy, who, all unconscious of his presence, often falls an easy prey.

* THE WORL

But silence is by no means the cyclist's sole advantage. He has a good turn of speed, which is a factor useful alike in attack and retreat. A cyclist in warfare is really a mounted infantryman, and, generally speaking, he is superior in point of speed to the heavily-accoutred cavalryman, while, of course, the ordinary infantryman is snail-like by comparison. Should his attack fail for the time being, or receive an unexpected or momentary check, the cyclist can easily beat a retreat, and by a circuitous route come upon his foe again at another point, where, perhaps, he is least expected. Thus he can be said to possess to a marked degree the power to "cut and come again," which hardly is

Eminently Useful in War.

Again, the ability to take cover often spells the difference between victory and defeat, and here the cyclist scores distinctly. He has but to lay his mount down flat upon the ground and it is practically invisible. The horse-soldier, on

BRINGING UP THE MACHINE GUN.

The fifth way bicycles have changed society is by contributing during wartime. Bicycles have been used for military purposes and in wartime since their invention.

Bicycles were initially used in battle during the Second Boer War, which took place from 1899-1902 in present-day South Africa and Swaziland. Both sides, which included the British Empire on one side and the South Africa Republic on the other, used them. Bicycles were well known for their ability to facilitate scouting opposing forces and to transmit information onward.

In World War I and World War II, the completion of gravel and paved roads across much of Europe helped create conditions that were ideal for military bicycles, which more and more accomplished to do things like communications, evacuation, reconnaissance, scouting missions and general transportation.

In Vietnam, airplanes were of little use in certain areas. In these places, te simple nature of a bicycle prevailed over the U.S. Army's sophisticated aircraft. Modified and reinforced bicycles, known as "Steel Horses" were used to carry heavy weights over 1,000 pounds through narrow and winding jungle paths. War reporter Harrison Evans Salisbury testified before the Senate Foreign Relations Committee in 1967 that the Steel Horses were instrumental in the North Vietnamese resistance. Senator Fulbright, a member of the committee, responded: *Why don't we concentrate on bombing their bicycles instead of the bridges? Does the Pentagon know about this?* Who know? Incredible!

III. The Bicycle's Impact on Society
F. Increased Societal Connection -- Freedom

The sixth, final (and I believe the most important) way the bicycle changed society is by increasing societal connection and creating a sense of personal freedom. The widespread use of bicycles in the late 1800s and early 1900s changed the way people thought about space and time. Being able to travel long distances in a few hours put an end to the isolation of many remote rural areas. Distances that used to take days to journey by foot or horse could now be covered in hours or a single day. Anyone with a map and a bike could go anywhere in the world, and they did.

At its core, cycling is a transformative experience allowing for greatly expanded human freedom. Before the bike was invented or, at least, mass produced so a great number of people had access to bicycles, most people had never been terribly far from where they were born and raised and where they would eventually die. The bicycle changed all that. Now, anyone could travel and explore their world.

In fact, the Tour de France was conceived as a way of allowing onlookers to see and newspapers to show readers their French country, which before the bike, is something that had been impossible for most people to comprehend, let alone see in person.

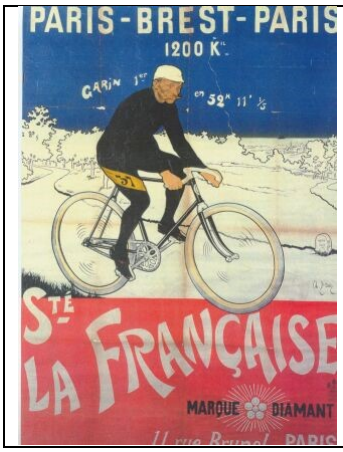
And think about the liberation of your first bike ride, or your child's first ride. For many, a four- or five-year-old's first real sense of freedom and independence in their life is riding a bike. I remember my first bike ride without training wheels like it was yesterday, and it was 54 years ago. I could go anywhere I wanted to, and no one could stop me.

III. The Bicycle's Impact on Society
F. Increased Societal Connection – Freedom – *con't*

This societal connection of bicycling is alive and well today. Yes, some bicyclists ride alone. But many ride in groups. It is estimated that there are in excess of one billion bicycles and 10,000 bicycle clubs in the world. There are a countless number of organized group bicycles events, many of which are designed to raise money for very worthy causes. Locally, Pelotonia is one such event with over 6,000 riders raising more than $236 million for the OSU James Cancer Hospital. I have participated in Pelotonia with our Porter Wright peloton for all 13 years the event has been in existence.

III. The Bicycle's Impact on Society

F. Increased Societal Connection – Freedom – *con't*



There is one final event I would like to share: Paris Brest Paris (PBP). PBP is a group bicycle ride (not a race) in France that goes from Paris to Brest on the west coast of France on the Atlantic Ocean and then back to Paris. PBP is a grueling test of human endurance and cycling ability. PBP is 1200-kilometers or 765 miles long and must be ridden in under 90 hours. This distance is longer than riding from Columbus to Chicago and back to Columbus in less than 4 days. In other words, you have to ride about 200 miles a day for almost four days.

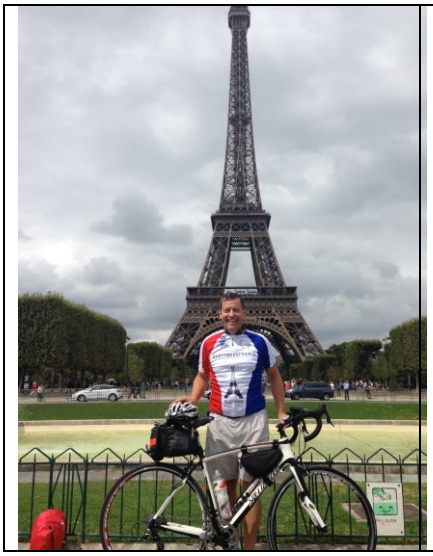
PBP was first established in 1891 and is organized as a group ride every four years, like the Olympics. It is older than the Tour de France. In fact, PBP is the oldest bicycling event in the world still run on a regular basis. There are over 6,000 riders from more than 60 countries. Crowds of French people line the road at all hours of the day and night cheering and ringing bells. It is truly an international bicycle spectacle in France, which is and remains the bicycling capital of the world.

So why do I end tonight's Essay with PBP? Because, yes, I successfully rode and completed this event in 2015. In my case it took everything I had to finish this ride. I rode through the night the first night with no sleep and then slept less than 3 hours each of the next 2 nights. By the end, I was so sleep deprived and exhausted that could not convert time from a 24-hour clock to a 12-hour clock. When I finished, I slept 16 of the next 17 hours. I could not feel my left hand due to numbness for over three months.

Crazy? Yes. For sure! Will I do it again? Yes, I hope to ride it in 2023, or more likely 2027.

In closing, I offer this: take a crazy pill and come join me. Thank you.

IV. Questions?



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