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All luminaries get illuminated by His Illumination!
The whole Universe is enlightened by His light!
– Kathopanisad

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Issue 160 *Dr. Sreenivasarao Vepachedu[1], JD, PhD, LLM*

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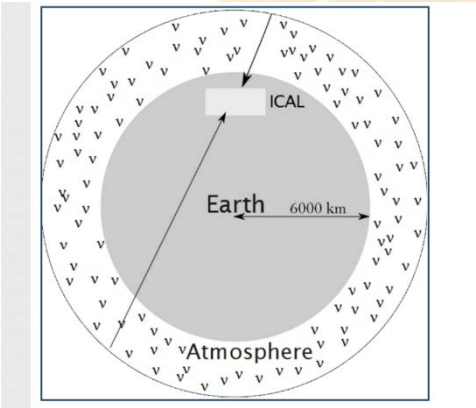
INDIA'S NEUTRINO QUEST[2]

Indian physicists had hoped to compete with the ambitious foreign labs. For 15 years, they have strived to break ground on the $230 million India-based Neutrino Observatory (INO) in the State of Tamil Nadu.



That project has been in limbo, having failed twice to win environmental approval for INO's two caverns inside a mountain - the stable and dense rocks found in the Western Ghats of Tamil Nadu suitable for making such caves, and the observatory in West Bodi Hills in Theni district, which is about 110 km from Madurai in Tamil Nadu; two caverns will be made inside this hill and a tunnel of 2 km will connect these caverns to the portal outside the hill. Outside the hill, surface facilities like housing for scientists, engineers and other workers, a hostel for students, labs, offices and workshops will be constructed in the available land.

By moving the location from Tamil Nadu to Bengal, India will inaugurate Jaduguda Underground Science Laboratory, situated 550 meters below the surface in an operating uranium mine, on 2 September, 2017, where the Saha Institute of Nuclear Physics refurbished a 37-square-meter cavern used for storage at the Jaduguda uranium mining complex, 260 kilometers west of Kolkata. Work is about to get underway to characterize the background radiation and log cosmic particles.

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APPLE'S WAY[3]

Apple's marketing strategy includes the software updates and new iPhones, iPad, and iPods, and discontinuing old models. Apple is going to release three new iPhones with an improved security system that allows users to log in, authenticate payments, and launch secure apps by biometric authentication of the face, with a dedicated chip for processing artificial intelligence tasks and screens that can display content at a higher frame rate, along with an OLED screen to crisply reproduce colors. Apple launched the iPhone 7 and iPhone 7 Plus last year, focusing on camera and speed upgrades while using the same design as the previous iPhone 6s. The new device will have slimmer side bezels around the screen and eliminate the physical home button in favor of a virtual software-based button, with a display roughly the size of the one on the larger iPhone 7 Plus. In the new high-end iPhone Apple also plans a taller screen with rounded corners, a cutout at the top of the display for the camera and sensors, and new antenna locations, the images show. It may automatically block notifications when your phone thinks you are behind the wheel[4].

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FOREIGN INVESTMENT IN THE UNITED STATES

In February 2016, Chinese conglomerate Chongqing Casin Enterprise Group announced its intent to buy the exchange, pending regulatory authorization. There is nothing frightening about Chinese-led group buying the Chicago Stock Exchange (CHX), despite some officials in Washington. Foreign investment contributes to the US economy, just as it benefits the acquiring country. The Committee on Foreign Investment in the United States (CFIUS), which investigates deals on national security grounds, approved the Chinese-led acquisition of CHX , valued by financial sources at around $30 million.

Chinese WH Group Limited, the world's largest pork company, announced this month (August 2017) that wholly-owned subsidiary Smithfield Foods, Inc., the renowned US pork processor has signed a strategic partnership with Chef'd, a best-in-class online meal marketplace in the US. This partnership is concurrent with Smithfield's US$25 million investment in part of the Series B funding for Chef'd. This investment makes Smithfield the largest strategic investor in Chef'd and provides WH Group Limited's Smithfield a seat on the company's board of directors.

In 2013, Shuanghui International Holdings Limited (WH Group) acquired Smithfield gaining access to high-quality, competitively-priced and safe US products, as well as Smithfield's best practices and operational expertise. WH Group is the largest pork company in the world, with number one positions in China, the US and key markets in Europe. Our unique global platform integrates hog production, hog slaughtering and the processing and distribution of packaged meats and fresh pork, placing us in the number one position in all of the key segments of the pork industry. WH Group was formerly known as Shuanghui International and renamed itself to its current form in January 2014 to reflect its emerging global reach and aspirations as a world-leading brand.

The CFIUS is comprised of 9 Cabinet members, 2 ex officio members, and other members as appointed by the President, that assists the President in overseeing the national security aspects of foreign direct investment in the US economy. While the group often operated in relative obscurity, the perceived change in the nation's national security and economic concerns following the September 11, 2001, terrorist attacks and the proposed acquisition of commercial operations at six U.S. ports by Dubai Ports World in 2006 placed CFIUS's review procedures under intense scrutiny by Members of Congress and the public. Prompted by this case, some Members of Congress questioned the ability of Congress to exercise its oversight responsibilities given the general view that CFIUS's operations lacked transparency. The current CFIUS process reflects changes Congress initiated in the first session of the 110th Congress, when the House and Senate adopted S. 1610, the Foreign Investment and National Security Act of 2007 (FINSA). In the 115th Congress, legislation has been introduced to include the Secretaries of Agriculture and Health and Human Services as permanent members of CFIUS and for other purposes.

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Chinese interests have plowed about $135 billion into a variety of companies and business sectors during the last 17 years, according to New York-based Rhodium Group, which tracks China-led investments. In Illinois, an estimated $10 billion in 71 deals has been invested, with much of that cash backing real estate developments or purchases of Chicago-area office and high-end residential real estate. According to Mergermarket, Chinese companies invested a total of $51.09 billion into the US via 65 deals in 2016. The CFIUS is comprised of 9 Cabinet members, 2 ex officio members, and other members as appointed by the President, that assists the President in overseeing the national security aspects of foreign direct investment in the US economy. While the group often operated in relative obscurity, the perceived change in the nation's national security and economic concerns following the September 11, 2001, terrorist attacks and the proposed acquisition of commercial operations at six U.S. ports by Dubai Ports World in 2006 placed CFIUS's review procedures under intense scrutiny by Members of Congress and the public. Prompted by this case, some Members of Congress questioned the ability of Congress to exercise its oversight responsibilities given the general view that CFIUS's operations lacked transparency. The current CFIUS process reflects changes Congress initiated in the first session of the 110th Congress, when the House and Senate adopted S. 1610, the Foreign Investment and National Security Act of 2007 (FINSA). In the 115th Congress, legislation has been introduced to include the Secretaries of Agriculture and Health and Human Services as permanent members of CFIUS and for other purposes.

Largest Sources of FDI in the United States (by UBO)

Rank	Market	2016 Position in USD millions	Share of total
1	United Kingdom	$598,319	16.1%
2	Canada	$453,641	12.2%
3	Japan	$424,347	11.4%
4	Germany	$372,778	10.0%
5	Ireland	$279,647	7.5%
6	France	$267,573	7.2%
7	Switzerland	$196,595	5.3%
8	The Netherlands	$191,937	5.2%
9	Singapore	$73,677	2.0%
10	Spain	$67,179	1.8%
11	China	$58,154	1.6%
12	Belgium	$55,940	1.5%
13	Israel	$55,362	1.5%
14	Australia	$54,307	1.5%
15	Sweden	$52,730	1.4%

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REAL ID vs. UNIVERSAL ID

Biometrics are unique physical characteristics such as fingerprints for automated recognition used by the Office of Biometric Identity Management (OBIM) of the Department of Homeland Security (DHS) to monitor entry and exit of individuals to and from the US, grant and administer proper immigration benefits, vetting and credentialing, facilitating legitimate travel and trade, enforcing federal laws, and enabling verification for visa applications to the US, through biometric interoperability with the Department of Defense (DOD) and the Department of Justice (DOJ), DHS shares critical biometric information using advanced data filtering and privacy controls to support the homeland security, defense, and justice missions from catching criminals to establishing efficiencies within the health care sector, to providing an identity for opening a bank account. Biometrics is essentially the authentication or identification of an individual based on personal or behavioral characteristics.

The US government began maintaining a database of fingerprints in 1904. Armed with the digital technology created opportunities, the US Federal Bureau of Investigation's Integrated Automated Fingerprint Identification System (IAFIS) database was an early (1999) digitized fingerprint database, which allowed digitized fingerprints to be exchanged among law enforcement agencies. Recently, the FBI has incorporated additional biometrics, such as iris and facial recognition, in an updated system called Next Generation Identification (NGI), which was launched in 2011 and is now in its fourth increment. Europe has similar databases that have undergone a comparable paper-to-digital transformation.

Large digital identity ecosystems come with increased efficiencies, but it is important that digital biometric identity systems be used by governments with a Do No Harm Mandate under an enforceable regulatory and restorative framework ensuring data and privacy protection. However, very often the result of such system is an outcome that is often not guaranteeable. Biometrically enhanced identity information, and demographic data such as address, age, gender, etc., used in increasingly large, automated systems create changes in societies regarding data protection, privacy, and security due to the digitization of a rich and deep pool of information, easily and instantly accessible.

Similar to the REAL ID of the US, India has implemented a systemic digital biometric identity system called Aadhaar or Universal ID (UID), used across sectors such as banking, health, and government. A significant majority of India's residents now have the Aadhaar ID; as of 2016, 97% of adult Indians, and 67% of children are enrolled, reaching one billion enrollees, which is more than 3x the US population.

In the US, starting January 22, 2018, passengers who have driver's licenses not compliant with REAL ID will need to show an alternative form of acceptable identification for domestic air travel. REAL ID is a State issued driver's

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license or identification card having the features: (1) The person's full legal name. (2) The person's date of birth. (3) The person's gender. (4) The person's driver's license or identification card number. (5) A digital photograph of the person. (6) The person's address of principal residence. (7) The person's signature. (8) Physical security features designed to prevent tampering, counterfeiting, or duplication of the document for fraudulent purposes. (9) A common machine-readable technology, with defined minimum data elements.

The issuing authority before issuing a driver's license or identification card to a person, must verify valid documentary evidence that the person-- (i) is a citizen or national of the United States; (ii) is an alien lawfully admitted for permanent or temporary residence in the United States; (iii) has conditional permanent resident status in the United States; (iv) has an approved application for asylum in the United States or has entered into the United States in refugee status; (v) has a valid, unexpired nonimmigrant visa or nonimmigrant visa status for entry into the United States; (vi) has a pending application for asylum in the United States; (vii) has a pending or approved application for temporary protected status in the United States; (viii) has approved deferred action status; or (ix) has a pending application for adjustment of status to that of an alien lawfully admitted for permanent residence in the United States or conditional permanent resident status in the United States.

The Real ID Act was passed by Congress and signed into law by President Bush in 2005. There are millions of Americans without any form of ID or drivers license. Therefore, DO NO HARM mandate does not apply to the US. However, India must follow that mandate- India Failed to "Do No Harm" -- India's Aadhaar biometric ID program and its inability to protect privacy in relation to measures in Europe and the US. Two additional political jurisdictions, the European Union, and the United States are also situationally analyzed as they may be germane to data protection and privacy policies originated to safeguard biometric identities. Since biometrics are foundational elements in modern digital identity systems, expression of data protection policies that orient and direct how biometrics are to be utilized as unique identifiers are the focus of this analysis.

As more of the world's economies create and elaborate capacities, capabilities and functionalities within their respective digital ambits, it is not enough to simply install suitable digital identity technologies; much, much more - is durably required. For example, both vigorous and descriptive means of data protection should be well situated within any jurisdictionally relevant deployment area, prior to in-field deployment of digital identity technologies. Toxic mixes of knowledge insufficiencies, institutional naïveté, political tomfoolery, cloddish logical constructs, and bureaucratic expediency must never overrun fundamental protections for human autonomy, civil liberties, data protection, and privacy.

India is currently our 9th largest goods trading partner with $ 67.7 billion in total (two way) goods trade during 2016. Goods exports totaled $ 21.7 billion; goods imports totaled $ 46.0 billion. The US goods trade deficit with India was $ 24.3 billion in 2016. India is currently our 9th largest goods trading partner with $ 67.7 billion in

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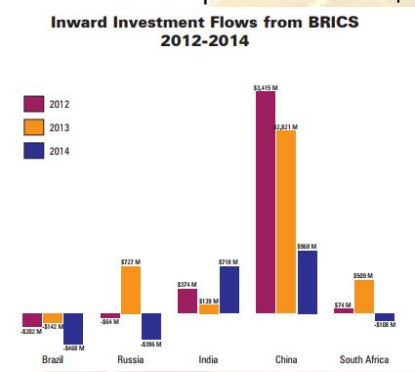
o The Essar Group invested over $1.6 billion in the declining Minnesota Steel Industries and now employs over 7,200 people in almost a dozen states.



o The Tata Group has invested more than $3 billion in the US and now employs nearly 19,000 throughout the country.

o Jubliant Organsys Total Capital invested $246 million in the US and now employs nearly 900 employees throughout the country.

o Wockhardt, a pharmaceutical company, acquired Morton Grove for $37 million. The deal preserved the jobs of all 200 original Morton Grove employees.

o Crompton Greaves, an entity of the Indian conglomerate Avantha Group, has invested and partnered on a $20 million to launch a Center for Intelligent Power with the University of Albany. The deal will create 100 high-tech jobs in upstate New York.

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THE HISTORY OF THE ELECTRIC CAR

AMERICA LEADS THE WORLD IN SOFTWARE PIRACY

America leads the world in software piracy at $9.1 billion. *China at $8.7 billion, India at $2.7 billion, France at $2.1 billion, the United Kingdom at $1.9 billion, Brazil at $1.8 billion, Germany at $1.7 billion, Russia at $1.3 billion, Italy at $1.3 billion, and Indonesia at 1.1 billion.* The global scale of intellectual property theft and its unlawful exploitation by third parties poses serious threats to "US national interests!"

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ॐ भूर्भुवः स्वः तत्सवितुर्वरेण्यम भर्गो देवस्य धीमहि। धियो यो नः प्रचोदयात॥

I Hear America Singing

Walt Whitman, 1819 - 1892

I hear America singing, the varied carols I hear,
Those of mechanics, each one singing his as it should be blithe and strong,
The carpenter singing his as he measures his plank or beam,
The mason singing his as he makes ready for work, or leaves off work,
The boatman singing what belongs to him in his boat, the deckhand singing on the steamboat deck,
The shoemaker singing as he sits on his bench, the hatter singing as he stands,
The wood-cutter's song, the ploughboy's on his way in the morning, or at noon intermission or at sundown,
The delicious singing of the mother, or of the young wife at work, or of the girl sewing or washing,
Each singing what belongs to him or her and to none else,
The day what belongs to the day—at night the party of young fellows, robust, friendly,
Singing with open mouths their strong melodious songs.

Each singing what belongs to him or her and to none else - One cannot overstate the value of intellectual property rights (IPRs) to innovation, investment and economic development. IP-based businesses and entrepreneurs today drive more economic growth in the United States than any other single sector.

The IP Awareness Assessment, developed under the joint efforts of United States Patent and Trademark Office (USPTO) and National Institute of Standards and Technology/ Manufacturing Extension Partnership (NIST/MEP), allows you to assess your intellectual property awareness. Test Your IP Awareness: Assessment

IPRs include the following:

Copyrights and related rights: Frequently Asked Questions (FAQs)

Industrial Property Rights: Patents for Invention, Utility Models, Industrial Designs, Intellectual Property with Regard to Integrated Circuits, Trademarks, Trade Names, Geographical Indications, and Protection against Unfair Competition

The IPR protection and enforcement are critical to the success of US businesses, including medium-sized enterprises, and to the US economy as a whole. Electronics, apparel, and pharmaceuticals are some of the products counterfeiters fake. The US Chamber of Commerce estimates that IP intensive industries employ more than 55.7 million Americans, and the Small Business Administration has estimated that SMEs alone employ half of Americans and account for 65 percent of new jobs. Given the significance of IP theft to both the success of individual companies and the economy as a whole, protection of IP assets is critical whether you are a major multinational firm or a single-person, home-based business.

Chinese piracy and counterfeiting of US software and a wide range of other intellectual property cost American businesses an estimated $48 billion in 2009, the US International Trade Commission said in a report. STOPfakes.gov was launched to serve as a one-stop shop for US government tools and resources on IPR. The federal agencies behind STOPfakes.gov have developed a number of resources to educate and assist businesses, particularly small and medium-sized enterprises, as well as consumers, government officials, and the general public. The International Trade Administration (ITA), US Department of Commerce, manages STOPfakes.gov to

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assist US businesses protect and enforce their intellectual property rights against counterfeits and pirated goods in the global marketplace[5].

The Global Intellectual Property Education Database (USIPR) maintained by agencies of the United States Government provides training and technical assistance relating to protecting intellectual property rights. Many programs are offered to help developing countries comply with their obligations under the World Trade Organization (WTO) Agreement on Trade Related Aspects of Intellectual Property, commonly known as TRIPs. These programs also help the United States meet its TRIPs obligation to provide technical assistance to developing and least developed members of the WTO[6].

A Step in the Right Direction with a Foot in the Right Footwear: Footwear manufacturer New Balance has won a significant trademark payout in China, after a court awarded the US company more than RMB 10 million ($1.5 million) in damages.

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PROTECTING BIODIVERSITY IS PROTECTING HUMANITY

The world is facing a variety of crises due to the loss of biodiversity felt at local level, but unnoticed at national and international levels.

Biodiversity is the variety of all life forms on earth - the different plants, animals and micro-organisms and the ecosystems of which they are a part. It is the diversity of life including all life forms on the entire Earth. On a much smaller scale, it could be the biodiversity within a pond ecosystem, neighborhood park, rain forest, prairie, steppe, desert, etc. Identifying and understanding the relationships between all the life on Earth are some of the greatest challenges in science. The biodiversity includes genetic and ecological biodiversity, in addition to the species diversity. There is more biodiversity within tropical ecosystems such as rainforests than temperate or boreal ecosystems.

It is estimated that there are about 3 to about 30 or 100 million species on Earth. Currently, researchers have identified only 1.7 million species, i.e., about 1.7% (if 100 million species) to about 56% (if 3 million species) of the total biodiversity. Over half of the 1.7 million animals identified are invertebrates, of which beetles are the most numerous species.

Modern India holds about 20% of world's human population, about 60% of the world's wild tiger population, and the best chance of saving this magnificent beast, not only because it has 20% of the most intelligent animal species to protect the endangered 60% of another animal species, which is their National Animal, but also because tiger is an umbrella species that conserves habitats of several other species ensuring continuity of natural evolutionary processes in the wild. Accordingly, the Project Tiger was launched in 1973 by the Government of India. Now it includes 50 tiger reserves across the country, covering over 2% of India's geographical area to protect landscape features and wildlife including tiger and for biodiversity conservation with genetic, species and ecosystem diversity. It should be noted that the human diversity in India is similar to the biodiversity of a forest in terms of ethnic, caste, tribal, *jati, varna,* linguistic, religious, and genetic diversity.

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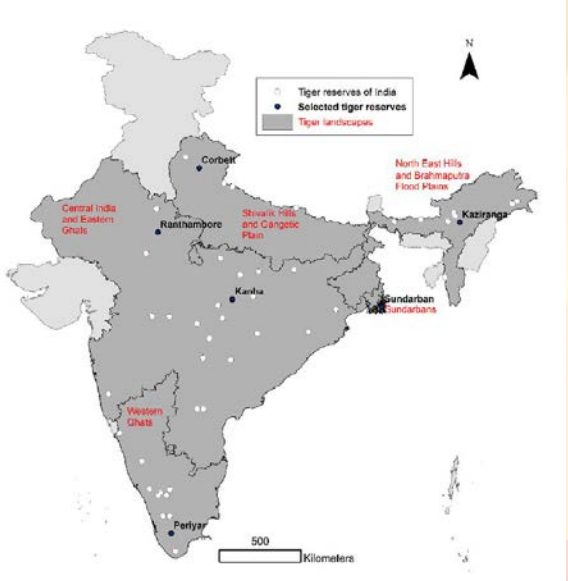

Tiger reserves in India not only support more than half of the global tiger population and are cornerstones of biodiversity conservation, they also provide a wide range of economic, social and cultural benefits in the form of ecosystem services. Knowledge of such values influences public policies, including decisions involving investments and allocation of funding, that may impact their protection status with serious implications on human wellbeing.

Through economic valuation of ecosystem services from 6 tiger reserves in India, it is demonstrated that enhanced investment in these tiger reserves is economically rational. The flow benefits from selected tiger reserves range from US$769 ha-1 year -1 to US $2923 ha -1 year -1. The usefulness of such information for developing incentive-based mechanisms and informing zoning and management of tiger reserves at the landscape level is also discussed[7]. Although tiger reserves make a large contribution to local and national economies, proper assessment of these values can substantially benefit their protection status, and thereby benefit the world.

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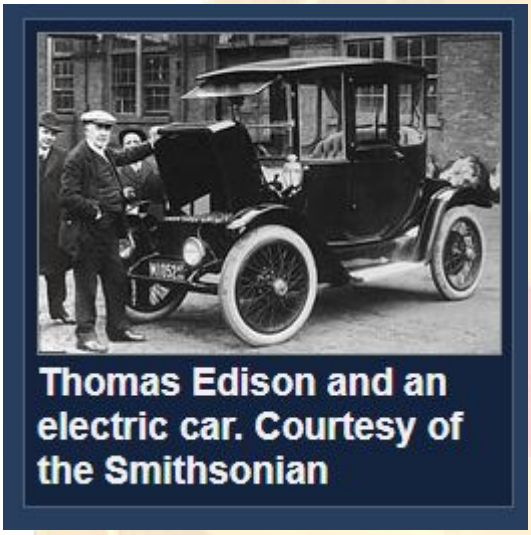
THE HISTORY OF THE ELECTRIC CAR[8]

Electric cars are popular today for many of the same reasons they were first popular when introduced more than 100 years ago. The demand for electric drive vehicles will continue to climb as prices drop. Electric vehicles are of the following types: 1 **Hybrid electric vehicles (HEVs)**: Vehicles that generate all their electric energy onboard the vehicle. HEVs include all varieties of hybrids that use electric motors for traction, including series hybrids, parallel hybrids, through-the-road hybrids, and mild hybrids. Stop-start vehicles are not included in the HEV category.2 **Plug-in hybrid electric** vehicles (PHEVs): Vehicles that use energy stored from the grid, but also have an ICE to extend the range of the vehicle. 3 **Battery electric vehicles (BEVs)**: Vehicles that use energy stored from the grid.


Thomas Edison and an electric car. Courtesy of the Smithsonian

1832-1839: Scottish inventor Robert Anderson invented the first crude electric carriage powered by non-rechargeable primary cells.
1835: American Thomas Davenport is credited with building the first practical electric vehicle -- a small locomotive.
1859: French physicist Gaston Planté invented the rechargeable lead-acid storage battery. In 1881, his countryman Camille Faure improved the storage battery's ability to supply current and invent the basic lead-acid battery used in automobiles.
1891: William Morrison, a chemist from Des Moines, Iowa, built the first successful electric automobile in the United States.
1893: A handful of different makes and models of electric cars exhibited in Chicago.
1897: The first electric taxis hit the streets of New York City early in the year. The Pope Manufacturing Company of Connecticut became the first large-scale American electric automobile manufacturer.
1899: Believing that electricity will run autos in the future, Thomas Alva Edison began his mission to create a long-lasting, powerful battery for commercial automobiles. Though his research yielded some improvements to the

1906 Wood's Queen Victoria Electric Car. Wikimedia Commons/ Cycle and Automobile Trade Journal)

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alkaline battery, he ultimately abandoned his quest a decade later.

1900: The electric automobile was in its heyday. Of the 4,192 cars produced in the United States 28 percent were powered by electricity, and electric autos represented about one-third of all cars found on the roads of New York City, Boston, and Chicago.

1908: Henry Ford introduced the mass-produced and gasoline-powered Model T, which had a profound effect on the US automobile market.

1912: Charles Kettering invented the first practical electric automobile starter. Kettering's invention made gasoline-powered autos more alluring to consumers by eliminating the unwieldy hand crank starter and ultimately helped pave the way for the electric car's demise.

A Ford Model T

1920: During the 1920s, the electric car ceases to be a viable commercial product. The electric car's downfall is attributable to a number of factors, including the desire for longer distance vehicles, their lack of horsepower, and the ready availability of gasoline.

1966: Congress introduced the earliest bills recommending use of electric vehicles as a means of reducing air pollution. A Gallup poll indicated that 33 million (18%) Americans are interested in electric vehicles (out of 179 million total population America, 1960 census).

Participants at the First Symposium on Low Pollution Power Systems Development looking over the Esb "Sundancers", an Experimental Electric Car in 1973. Wikimedia Commons/Frank Lodge

1970s: The Clean Air Act was established, which required states to take control of their air quality and meet certain standards by deadlines. The OPEC oil embargo of 1973, which skyrocketed gasoline prices, also sparked interest in alternatives to fueled vehicles.

1972: Victor Wouk, the "Godfather of the Hybrid," built the first full-powered, full-size hybrid vehicle out of a **1972 Buick Skylark** provided by General Motors (G.M.) for the 1970 Federal Clean Car Incentive Program. the US Environmental Protection Agency certified that Wouk's vehicle ***met the strict guidelines for an EPA clean-air auto program*** and ***REJECTED IT.***

The story about the vehicle and its inventor, who died in May, 2005, at age 86, is unknown to today's hybrid/electric car movement. America was ahead of all other countries in hybrid car science, at least by three decades ahead, but squashed it under the weight of the Auto Industry and Oil

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Industry. So much for the constitutionally mandated protections for inventors, the democracy, the free market economy, and we love to harangue about other countries, the Environmental Protection Agency killed the program in 1976. **The hybrid killer award** goes to the Iron Duke aka Mr. Clean Air aka Eric Oswald Stork, born Jan. 8, 1927, in Hamburg, Germany, came to the United States at 13 and grew up in the state of Washington.

A market economy is when competition from free enterprise makes economic decisions. The United States is considered the world's premier free market economy, because the US Constitution guarantees the three critical elements that create a free market, 1) ownership of private property, 2) a competitive market, and 3) unregulated prices. The law of demand and supply sets prices and distributes goods and services.

In 2004, one year before his death, Dr. Victor Wouk (doctorate in electric engineering from the California Institute of Technology, magna cum laude) recorded an oral history interview with the CalTech Archives, " *If we must reduce automobile pollution and reduce automobile fuel consumption a large amount in a short period of time. The only thing you should do is use existing technologies, and as these technologies improve, you just go ahead. But nobody did anything about it until, independently, the Japanese—Toyota and Honda."*

1974: Vanguard-Sebring's CitiCar makes its debut at the Electric Vehicle Symposium in Washington, D.C. The CitiCar has a top speed of over 30 mph and a reliable warm-weather range of 40 miles. By 1975 the company is the sixth largest automaker in the US but is dissolved only a few years later.

1975: The US Postal Service purchases 350 electric delivery jeeps from AM General, a division of AMC, to be used in a test program.

1976: Congress passes the Electric and Hybrid Vehicle Research, Development, and Demonstration Act. The law is intended to spur the development of new technologies including improved batteries, motors, and other hybrid-electric components.

1988: Roger Smith, CEO of GM, agrees to fund research efforts to build a practical consumer electric car. GM teams up with California's AeroVironment to design what would become the EV1, which one employee called "the world's most efficient production vehicle." Some electric vehicle enthusiasts have speculated that the EV1 was never undertaken as a serious commercial venture by the large automaker.

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1990: California passes its Zero Emission Vehicle (ZEV) Mandate, which requires two percent of the state's vehicles to have no emissions by 1998 and 10 percent by 2003. The law is repeatedly weakened over the next decade to reduce the number of pure ZEVs it requires.
1997: Toyota unveils the Prius. Nearly 18,000 units were sold during the first production year. Released in Japan in 1997, the Prius became the world's first mass-produced hybrid electric vehicle.
1999: Honda released the Insight hybrid in 1999, making it the first hybrid sold in the US since the early 1900s.
2000: Prius was released worldwide, and it became an instant success with celebrities, helping to raise the profile of the car. To make the Prius a reality, Toyota used a nickel metal hydrid battery -- a technology that was supported by the Energy Department's research.
1997 - 2000: A few thousand all-electric cars (such as Honda's EV Plus, GM's EV1, Ford's Ranger pickup EV, Nissan's Altra EV, Chevy's S-10 EV, and Toyota's RAV4 EV) are produced by big car manufacturers, but most of them are available for lease only. All of the major automakers' advanced all-electric production programs will be discontinued by the early 2000s.

2002: GM and DaimlerChrysler sue the California Air Resources Board (CARB) to repeal the ZEV mandate first passed in 1990. The Bush Administration joins that suit.
2003: GM announces that it will not renew leases on its EV1 cars saying it can no longer supply parts to repair the vehicles and that it plans to reclaim the cars by the end of 2004.
2005: On February 16, electric vehicle enthusiasts begin a "Don't Crush" vigil to stop GM from demolishing 78 impounded EV1s in Burbank, California. The vigil ends twenty-eight days later when GM removes the cars from the facility. In the film "Who Killed the Electric Car" GM spokesman Dave Barthmuss states that the EV1s are to be recycled, not just crushed.
2006: Tesla Motors publicly unveils the ultra-sporty Tesla Roadster at the San Francisco International Auto Show in November. The first production Roadsters will be sold in 2008 with a base price listing of $98,950.
2008, January: The Israeli government announces its support for a sweeping project to promote the use of electric cars in Israel. The effort will be a joint venture between Better Place, a Palo Alto start-up founded by software maven Shai Agassi, and French automaker Renault-Nissan. Agassi's plan is to create an extensive network of charging spots and to sell EV drivers mileage in their cars like minutes on a cell phone plan. The first

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Renault electric cars are scheduled to hit the streets of Tel Aviv and other cities in 2011. Better Place announces a host of partnerships to support electric vehicle projects in Denmark, Canada, Japan, Australia and the US.

2008, July: Gas prices reach record highs of more than $4 a gallon and car sales drop to their lowest levels in a decade. American automakers begin to shift their production lines away from SUVs and other large vehicles toward smaller, more fuel-efficient cars.
2008, August: On the campaign trail, presidential candidate Barack Obama says he will push to have one million plug-in hybrid and electric vehicles on America's roads by 2015.
2008, November: Struggling to remain profitable during the economic downturn, executives from the Big Three American automakers go to Washington to make the case for a $25 billion Federal bailout of the USautomotive industry.
2008, December: BYD, a Chinese battery manufacturer turned automaker, releases the F3DM, the world's first mass produced plug-in hybrid compact sedan. Though they pack less energy than more conventional lithium ion batteries, BYD opts to power the F3DM with a more stable lithium iron phosphate battery. BYD plans to release the F3DM in the US in 2011, but some industry insiders have doubts about whether the car is ready for the US market. Though sales of the car remain sluggish, Warren Buffett's Berkshire Hathaway purchases a 10% stake in the company.
The National Bureau of Economic Research states officially that the US has been in a recession since December 2007. The economic downturn is global in scope and will continue to exert financial pressures on the already battered US auto industry.
2008: Engineered by Mercedes-Benz, Smart For-two is an all-new brand and vehicle in the US, a miniature two-seat car that was available at select dealerships. In 2009, a new sport trim was added and flexible door storage nets were made standard. New options were introduced for 2009, including optional leather seating, automated lights and automated wipers. While no changes were in store for 2010, the 2011 model year got LED daytime running lights, a new dash panel, cruise control, more storage options, an improved stereo system and new side curtain and knee airbags. Optional GPS and an updated stereo system marked the only changes for 2012.
2009, February: The American Recovery and Reinvestment Act of 2009 allocates $2 billion for development of electric vehicle batteries and related technologies. The Department of Energy adds another $400 million to fund building the infrastructure necessary to support plug-in electric vehicles.

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The whole Universe is enlightened by His light!
– Kathopanisad

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2009, April: Prime Minister Gordon Brown announces that the British government will promote the use of electric vehicles in the U.K. by offering a £2,000 subsidy to purchasers. A high-ranking government official estimates that 40% of all cars in Britain will need to be electric or hybrid for the country to reach it's goal of cutting 80% of its CO2 emissions by 2050.

Chrysler files for Chapter 11 bankruptcy. As part of its restructuring, Chrysler forms a partnership with the Italian car maker Fiat.

2009, May: President Obama announces a new gas-mileage policy that will require automakers to meet a minimum fuel-efficiency standard of 35.5 miles a gallon by 2016.

2009, June: The Department of Energy awards $8 billion in loans to Ford, Nissan, and Tesla Motors to support the development of fuel-efficient vehicles. The automaker loans are the first distributions from a larger $25 billion fund created under the Energy Independence and Security Act of 2007.

General Motors, the leading producer of automobiles for most of the 20th Century, files for bankruptcy protection. While strong GM brands such as Chevrolet, Cadillac and GMC are slated to continue, smaller names like Saturn, Hummer and Pontiac will be sold or closed. The federal government will hold a 61 percent stake in the reborn General Motors.

2009, August: Nissan unveils its new electric car, called the LEAF ("Leading, Environmentally Friendly, Affordable, Family Car"). The LEAF is capable of a maximum speed of more than 90 mph, can travel 100 miles on a full charge, and has a battery that can be recharged to 80% of its capacity in 30 minutes. Similar to the Better Place initiative in Israel, Nissan plans to work with the Japanese government and private companies to set up charging station networks across several countries. The first production LEAFs are scheduled to go on sale in Japan, Europe, and the US in the fall of 2010.

Late 2009: Though a few electric cars and plug-in hybrids are currently available on the market, several new models including the Nissan LEAF, Chevrolet Volt, and Mitsubishi i MiEV are scheduled to hit the streets in the near future. Toyota, creator of the popular Prius hybrid, has thus far declined to deliver a fully electric car.

2010: Tesla received at $465 million loan from the Department of Energy's Loan Programs Office to establish a manufacturing facility in California. Tesla Tesla repaid the loan nine years early. In the short time since then, Tesla has won wide acclaim for its cars and has become the largest auto industry employer in California. In late 2010, the Chevy Volt and the Nissan LEAF were released in the US market. The first commercially available plug-in hybrid, the Volt has a gasoline engine that supplements its electric drive once the battery is depleted, allowing

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consumers to drive on electric for most trips and gasoline to extend the vehicle's range. In comparison, the LEAF is an all-electric vehicle, meaning it is only powered by an electric motor.

2012: President Obama launched the EV Everywhere Grand Challenge, a Department of Energy initiative that brings together America's best and brightest scientists, engineers and businesses to make plug-in electric vehicles more as affordable as today's gasoline-powered vehicles by 2022. The Department's Joint Center for Energy Storage Research at Argonne National Laboratory is working to overcome the biggest scientific and technical barriers that prevent large-scale improvements of batteries.

2013: A slightly updated exterior, a new driver seat armrest and updated trim level options as well as the release of the electric version, the Electric Drive, earmarked the key changes for 2013 Smart For-Two ED.

2016: Tesla has secured an estimated 500,000 pre-orders for the Model 3 since the vehicle was first unveiled in March 2016. Starting at $35,000, the Model 3 is Tesla's first car geared at a consumer audience. Tesla will offer six color options for the Model 3: black, midnight silver metallic, deep blue metallic, silver metallic, pearl white multi-coat, red multi-coat. Tesla's big selling point for the Model 3 is its affordability, with a starting price of $35,000 before tax incentives. The base Model 3 can drive 220 miles on a single charge, accelerate to 60 mph in 5.6 seconds, and reach a top speed of 130 mph. Tesla will also sell a premium version of the Model 3 with a range of 310 miles. Priced at $44,000, the car can accelerate to 60 mph in 5.1 seconds and reach a top speed of 140 mph.

Today: There are 23 plug-in electric and 36 hybrid models available in a variety

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of sizes -- from the two-passenger Smart ED to the midsized Ford C-Max Energi to the BMW i3 luxury SUV. As gasoline prices continue to rise and the prices on electric vehicles continue to drop, electric vehicles are gaining in popularity -- with more than 234,000 plug-in electric vehicles and 3.3 million hybrids on the road in the US today. Despite promising signs, the electric car will need to navigate a bumpy road before it can become a viable option for many drivers. Challenges to mass adoption include high sticker prices, limited battery life and travel range, and building charging stations and other infrastructure to support electric vehicles.

It's sporty. It's progressive. It's mobility in its purest form, reducing every type ofwaste, indulging all the senses, and accelerating towards the future.

***17 August 2017**:The Environmental Protection Agency announced Thursday that it will be revisiting the Obama administration's greenhouse gas and fuel efficiency rules for big-rig trucks and trailers.*

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O Sun God, Savitr!
Thou dazzling fount of life-persuasive light!
Sublimest mystery speeding from afar!
Swift became that burst too potent on the sight!
This radiant type of strength and youth!
Glowing eternally!

May the golden-eyed Savitar come hither!
Shining forth he rises from the lap of the dawn!
Praised by singers, my God Savitar!
Stepped forth and never missed his place!
He steps forth the splendor of the sky the wide!
Seeing, far-shining, the shining wanderer!
-Rig Veda, vii. 65

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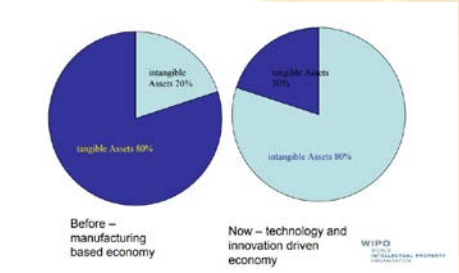
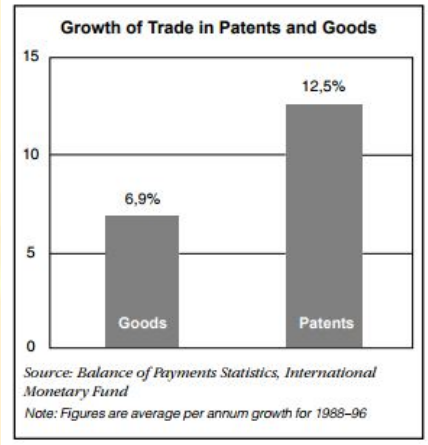
INTELLECTUAL PROPERTY BACKED LOANS



Generally, banks lend money with four main types of collateral 1) accounts receivable due from commercial accounts, 2) equipment, 3) inventory, and 4) real estate.

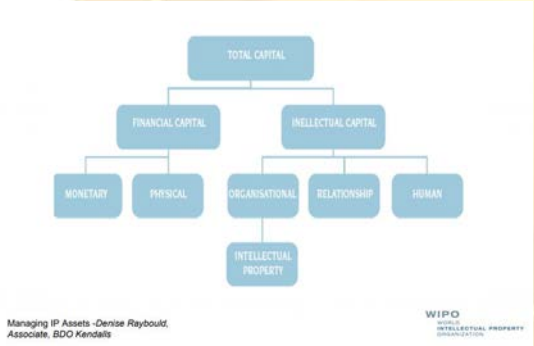
However, it is estimated that the proportion of tangible assets has declined from about 80% to about 20% in the market value of companies of S&P 500, while the value of intangible assets increased.



Intangible assets include goodwill, and Intellectual Property (IP) such as trademarks, patents, copyrights, proprietary technology and trade secrets, know-how, etc.

Valuation is a key tool in the process of financing based on IP assets. Technical valuations are required of intangible assets to give a point in time value of the IP for the purpose of securitization. A wide array of methods to generate economic returns from the IP portfolio with a relatively small investment is available for IP owners. Leveraging the IP assets can generate new revenue streams, strengthen strategic control over profits, and reduce risk.

IP can be used as 'collateral' for a loan. The value of IP assets largely depends on the technology life cycle and monetization potential of the IP. Similar to real property mortgage loans, IP backed money lenders will look into credit history of the borrower and require closing costs which may include costs of due diligence ranging from about $ 2500 to about $ 25,000 or higher depending upon the amount of the loan transaction.



Once an IP asset or portfolio is valued, the owner may seek to leverage the IP in the form of:

- IP-Backed Loan is similar to loans backed by tangible assets. IP backed loans are a way to get cash without selling the IP or licensing it. However, such IP backed loans

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Swift became that burst too potent on the sight!
This radiant type of strength and youth!
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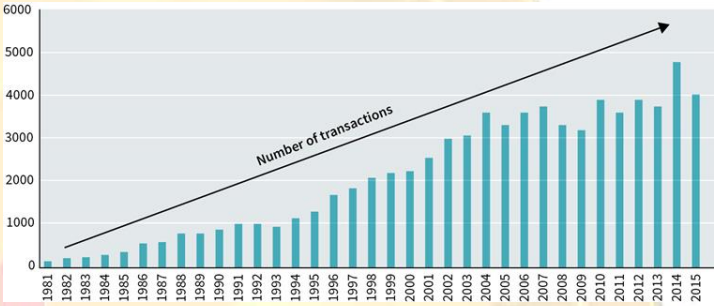
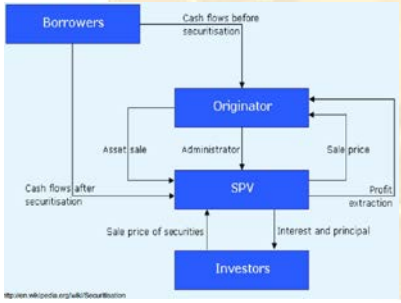
account for about 4% of the commercial loans. It seems such loan transactions are increasing, and the collateralization of intellectual property is emerging as a new credit-enhancement tool for asset-based lenders.

- IP Collateral Enhancement is where the IP assets are used as additions to a broader collateral package ;
- IP Royalty Securitization is where the future IP-related income streams in exchange for a current lump sum payment; and
- IP Sale and License-Back Arrangement is where a buyer purchases IP assets and assigns the assets to a licensing company, which then contracts a license with the former owner of the IP asset for royalty payments during a period of time. Like a legal mortgage, it is a safe security transaction, and requires the IP to be assigned to the lender with a license being granted back to the debtor. A popular example is Bowie Bonds- asset backed securities of current and future revenues of the first 25 albums (287 songs) of David Bowie's collection recorded before 1990. But, there seems to a dearth of recent examples.



- IP Credit Enhancement is a method in which the lender gets reassurance that the borrower will honor the obligation through insurance, or a third party guarantee -IP as collateral for a loan, based on the value of the IP. Credit enhancement reduces credit/default risk of a debt, thereby increasing the overall credit rating and lowering interest rates.

In addition to the traditional Intellectual Property Financing and the above IP Credit Enhancement Insurance, there are several IP insurance products such as Abatement Insurance, Defensive Insurance, Offensive Insurance, Unauthorized Disclosure Insurance, Multi-Peril Insurance, etc. are available in the market.



Thus, there are several IP insurance products available to us, and we have been using the insurance in one form or another for about 5000 years. Chinese traders in the third millennium BC were some of the very first practitioners of risk diversification, dividing their wares between vessels to limit losses (Handbook of International Insurance: Between Global Dynamics and Local Contingencies). Merchants sending boats up and down rivers in China would insure the goods on their boat, to protect against losses due to the boat sinking or being hijacked by pirates. This marine insurance expanded as the population increased, ships grew larger, and trade expanded across the oceans. Groups of

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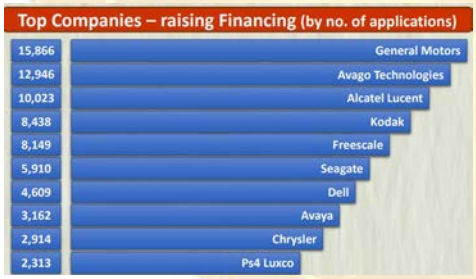
investors would insure the cargo ships in exchange for a premium.

But like many other countries in the continents of Asia and India, China was first introduced to the modern concept of insurance by foreign traders in the early 1800s.

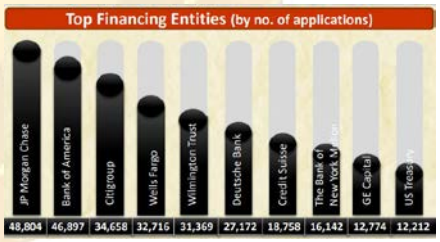
As a country with a history of more than five thousand years, ancient people of China developed various measures by which people with similar conditions could share risks and help each other. These measures can be considered the most primitive forms of insurance. According to the Book of Yizhou, an ancient Chinese literary history book, Chinese people realized the uncertain nature of natural catastrophes and began to make efforts to store grain in abundant years for famine approximately three thousand years ago. Years later, merchants conducting freight on the Yangtze River invented a clever method to diversify risks. Each merchant would place his goods on several different boats, consequently sharing the losses incurred from the sinking of one boat with other merchants.

The modern insurance industry traces its origins back to 2000 BC in Babylonia, when shipping merchants entered into agreements with traders to use their ships as collateral for loans to fund voyages. The fundamental elements of these agreements continued to govern trade in ancient Greece and Rome and throughout the Middle Ages. Merchants and traders quickly realized they could gain a competitive edge by spreading risk among a number of individuals rather than assuming it entirely on their own.

During the 16th and 17th centuries, merchants began securing insurance for their vessels from a syndicate of other merchants which gathered at Lloyd's Coffee House in London. In the Industrial Age, industrialists recognized a similar competitive advantage in spreading the risk of damage to their factories among themselves. The US insurance market remains the largest globally. The US insurance industry's net premiums written totaled $1.2 trillion in 2015. In real terms, according to Swiss Re Sigma, global insurance direct written premiums grew by 3.8 percent to $4.6 trillion in 2015.



However, despite the awareness of IP Credit Enhancement Insurance, Abatement Insurance, Defensive Insurance, Offensive Insurance, Unauthorized Disclosure Insurance, Multi-Peril Insurance, IP related insurance products are a hard sell in the US.



"Is it because the limits of coverage available aren't high enough to protect large companies against a catastrophic loss? Is it because negotiating coverage is cumbersome (insurers are understandably cautious about insuring IP risk)? Is it because IP counsel does not think insurance is necessary (or does not want to lose control over

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litigation to an insurance company)? Is coverage not seen as necessary because our IP rights are strong? Or is the coverage just not well known?" Richard S. Betterley

Intellectual property protection benefits the economy. Intellectual property, properly managed, can be a powerful tool for growth and progress. To fulfill its potential, intellectual property protection has to be supported by appropriate policies and a deep commitment by governments to establish an effective infrastructure to process and make use of intellectual property rights[9].

Disclaimer[10]: Every effort has been made to verify the accuracy of items in the Quarterly IP Law Update. However, readers are urged to check independently on specific matters from their corresponding foreign agents. For further information or support, please contact the editor[11].

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REFERENCES AND NOTES[12]

[1] Dr. Rao Vepachedu is a registered patent attorney with extensive experience in the management of intellectual property and extensive experience in research and teaching. He currently works for Cardinal Intellectual Property (CIP), Cardinal Risk Management (CRM), and Cardinal Law Group (CLG). In addition, he is the president of Vepachedu Educational Foundation Inc. (www.vepachedu.org), a 501(c) (3) educational foundation. For more information visit:
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http://www.avvo.com/profile/dashboard
Contact: svepachedu@yahoo.com or rao.vepachedu@cardinal-ip.com

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[5] This site provides a **free** Online IPR Training Module to learn about evaluating, protecting, and enforcing your intellectual property rights.

[6] **Anti-Counterfeiting and The Global Marketplace-How To Protect and Enforce IP While Expanding Trade** *on Tuesday, August 29, 2017, 8:30 AM – 3:30 PM CT* in Dallas, Texas

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[10] Disclaimer: Although every effort has been made to provide accurate information from reputable sources, the content of this law update is a general guide and CIP or the author is not responsible for inadvertent errors and/or any inaccuracies of the matter obtained from various resources cited therein. Specialist or registered agent's advice should be sought about your specific circumstances and specific country.

[11] Dr. Rao Vepachedu at rao.vepachedu@cardinal-ip.com.

[12] In addition to the primary sources cited above, additional references include:
New York Times, Washington Post, Mercury News, Bayarea.com, Deccan Chronicle, the Hindu, Hindustan Times, Times of India, AP, Reuters, AFP, The Guardian, Pravda, Spiegel, Connexion, etc.

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"Where the mind is without fear and the head is held high, Where knowledge is free Where the world has not been broken up into fragments, By narrow domestic walls." Rabindranath Tagore (1861-1941), Gitanjali, 1912.

One World One Family

AUM! SWASTI!

Om! Asatoma Sadgamaya, Tamasoma Jyotirgamaya, Mrityorma Amritamgamaya, Om Shantih, Shantih, Shantih! (Aum! Lead the world from wrong path to the right path, from ignorance to knowledge, from mortality to immortality, and peace!)

SWASTI! AUM!

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