INFORMATION TECHNOLOGY AND THE LEGAL PROFESSION

This paper explains how Information Technology can help professionals in the field of law: they may be lawyers, judges or corporate executives.
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'गुरु गोबिंद दोऊ खड़े, का के लागूं पाय।

बलिहारी गुरु आपनै, गोबिंद दियो मिलाय॥'

This is a couplet of Kabir and with that, I would like to pay respect to Professor GP Tripathi, the Dean of the Law faculty of your University, who was my teacher as well. He taught me Transfer of Property Act more than 40 years ago in 1971-72 academic session of the Allahabad University. I remember him as a strict teacher.

In my times, the law used to be the last resort for taking admissions in the University and I never wanted to be a lawyer; I wanted to be a scientist. I took admission at IIT, Kanpur but on my father's insistence, who was a lawyer, I took admission in law in the Allahabad University. It did have negative reaction: I did not study, just managed to pass.

We had semester system. In every semester, a paper was for fifty marks. Out of this, ten marks were for the tutorials. Generally, in a tutorial class, there used to be ten students and it was basically to clarify the doubts in the students' minds. The normal practice used to be that if you were did not create trouble and contributed to the University, you would get excellent marks in the tutorials.

Fifty percent used to be the passing marks. I never created any trouble. I was good in sports and represented the University in squash and table tennis. I got good marks in the tutorials in the first two years (four semesters) and assumed the same for the third year as well.

Professor Tripathi took my tutorial in the third year. But Professor Tripathi did not give me the good marks in the tutorial; he gave me the marks that I deserved namely three out of ten. The result was that I failed in my seventh semester. It prompted me to study hard for my eight semester for the fear that I might loose a year. I studied hard and passed the third year. It taught me a lesson: Work hard if you want to succeed. A lesson well learnt.

With these words let's come to today's topic. But before we talk about it, some words about Information Technology and its development.

INFORMATION TECHNOLOGY

Information Technology—brought about by computers, Internet, and Cyber space —is a technology for accessing and dissemination of information. Let's take a look on the different steps in the Information technology.

1st STEP: INTERNET

In the early 1970's, Vint Cerf (the mathematician and computer scientist) and Robert Kahn (the Engineer) took the first step, when they figured out a way of splitting information into small packets and sending it from one computer to another in such a way that the packets could be put back together when they reached their destination. This method of splitting information into packets and putting them back together again came to be known as Transmission Control Protocol (TCP).

An important feature of TCP is that it can be carried out even if there is a network of computers. This is possible because every computer has an address and a packet is like a letter with the address of the receiver as well as sender. A computer in the network can figure out whether the packet is meant for it or not and if it is not, then it will pass it on in the direction of the computer for which it is sent. This way of getting a packet to its destination is called Internet Protocol (IP) and the address of computer on the network is called Internet Protocol (IP) Address.

This is how the Internet was born: it is nothing but the global or universal network of all computers (whether standing alone or in a network) that are capable of transmitting, communicating or retrieving information.

2nd STEP: WEB TECHNOLOGY

The next step of the journey started with Tim Berners Lee[1]. After finishing his masters in Physics from the Oxford University (where he was banned for hacking

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1   Sir Timothy John "Tim" Berners-Lee, OM, KBE, FRS, FREng, FRSA, DFBCS also known as TimBL was born on 8 June 1955. He developed Web technology and at present is the director of the World Wide Web Consortium (W3C), which oversees the Web's continued development. He is also the founder of the World Wide Web Foundation, and is a senior researcher and holder of the Founders Chair at the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL).He is a director of the Web Science Research Initiative (WSRI),and a member of the advisory board of the MIT Center for Collective Intelligence.
    Lee was named as one of the 100 Most Important People of the 20th century by Time Magazine in 1999 and was knighted by Queen Elizabeth II for his pioneering work in 2004.

computers), he started working as a fellow at CERN[2], European Nuclear Physics research laboratory (see Appendix-1). The laboratory had different computers with different programmes, having different format. His main job was to see that information is easily transferred from one computer to another and is also understood by the other computer.

In the late 1980's, Lee thought about linking information available on different computers at CERN so that it would look like as one information system that every one could read. This led to the web technology and the first web page was uploaded on 6th August 1991 at CERN.

In developing the web technology, Lee used Hyper Text Markup Language (HTML) and hypertext transfer protocol.

- **HTML:** it is a language for encoding documents. One of the advantage of writing a page in HTML is that a hyperlink (or link) can be provided to another web page. Every document or site or resource has a unique address called the Uniform Resource Locator (URL). The link is provided by embedding the URL of the other site/page. It is a piece of text that is differentiated from the regular text by a special colour (usually blue) or special formatting (such as underlining).
- **HTTP:** When you click on the link, by a mouse or other pointing device, you are taken to the website referenced by that link. This transfer or retrieval of information takes place according to the hypertext transfer protocol (HTTP).

Lee did not invent the HTML or the HTTP but put them together to develop the Web technology.

3rd STEP: WORLD WIDE WEB - Free and Open

The web pages are in a way linked with one another forming a web; they can be anywhere in the world. It is for this reason that this method is aptly termed as the World Wide Web (www) or the web.

The Web technology was developed at CERN and was its IPR. On April 30, 1993, CERN's declared the web technology to be freely available; to be used by anyone, without paying any fees to CERN.

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2   CERN is short form for Conseil Européen pour la Recherche Nucléaire; an organization of European states with a centre in Geneva for research in high-energy particle physics, now called the European Laboratory for Particle Physics

There are many ways of communication and retrieving information on the Internet. The web is one of the methods but the decision to make it freely available, has led the Web to be the most powerful and popular form of communication and retrieval of information on the Internet. It is so common that we often think that the web and the Internet are the same.

4ᵗʰ & NEXT STEP: WEB 2.0 AND SEMANTIC WEB

Web 2.0

Because of the name Web 2.0, many think that it is next generation web but this is not so: it is not a technical update of existing Web specifications but refers to changes in the way software developers and end-users use web. This 'Web 2.0' caught on during O'Reilly Media conference in 2004. According to him:

> 'Web 2.0 is the business revolution in the computer industry caused by the move to the Internet as platform, and an attempt to understand the rules for success on that new platform.'

Others define it as,

> 'Web 2.0 is a knowledge-oriented environment where human interactions generate content that is published, managed and used through network applications in a service-oriented architecture.'

Broadly, it refers to a trend in web design and development of web-based communities and hosted services that aim to facilitate creativity, collaboration, and sharing between users i.e. social-networking sites, wikis, etc. Some specific examples are Wikipedia, Flicker.

Semantic Web

The fundamental characteristic of the Web at present is to link web pages: it is basically a web of documents rather than for data and information that can be processed automatically. The Semantic Web aims to make up for this.

What Web has done for web-pages, the Semantic Web is to do for data. It is an extension of the current web; it is a sort of next generation web where data—instead of web pages—will be connected. It will enable computers to understand and process data in much better way then they do at present. In substance information will be better defined for computer programmes to understand.

5th STEP: FEED TECHNOLOGY

The purpose of any website is to give information and there are many ways to get new information from a website.

- The traditional way is to go on a website and see what new information is available there.
- As the technology improved, it was no longer necessary to go on the website. You could register your email-id and the website would send new information by email.
- The latest is the feed technology.

A 'web feed' (also called 'syndicated feed' or just 'feed') is a data format for providing updated content of a website. If they are published by the website then they can be accessed through a program called aggregator (also called a feed reader or a news reader). When you subscribe to feed with an aggregator then whenever instructed, the aggregator checks the websites in its feed list to see if they have new content; if so, then the aggregator either makes a note of the new content or downloads it. This can be scheduled to check for new content periodically and this is normally done. Depending on whether the feed is full or summary, you can read the new content on your computer or have to go to the website to read it.

These programmes are available free of cost: some are independent programmes; others are either part of the email programme or web browser. This method of getting new information has many advantages. Amongst the others,

- You don't have to waste your time by going to the websites and see what new information is there because as soon as the new information comes on the websites, it is delivered to your computer.
- You can play news editor and subscribe feed of only that part of the information on the website that interests you.

The feeds are of two kinds: one is RSS, the other is atom. There is some debate as to what RSS stands for, but the majority agree that it stands for 'Really Simple Syndication'. There is technical difference between the two but for user there is no difference; they do the same work. RSS is older and is more popular; it works with podcast as well. Nowadays most websites provide feed and is easy to subscribe them in the feed reader of your choice.

The fact that any website provides feed is indicated by an orange button that says RSS or XML (the computer language that feed uses) or by an orange symbol. They look like as follows:

Some good feed readers are as follows. Out of these the first two are independent programmes; the third one is an email programme; and the remaining two work with the web browser:

(i)   FeedReader (http://www.feedreader.com/)

(ii)   RSSOwl (http://rssowl.org/)

(iii)   Thunderbird (http://www.mozilla.com/thunderbird/)

(iv)   feeedly (http://feedly.com/)

(v)   The Old Reader (http://theoldreader.com/)

There are premium versions of these programmes but the basic free versions are good enough and you can choose the one that you like.

Some of the good website that offer feed in the field of law are:
   (i) High Court - Allahabad (http://www.allahabadhighcourt.in/)
   (ii) High Court – Chhattisgarh (http://cghighcourt.nic.in/)
   (iii) QuickLinks (http://www.qlinks.net/)

(iv) BBC Learning (http://www.bbc.co.uk/learning/)

(v) NewYork Times (http://www.nytimes.com/)

(vi) Arts & Letters Daily (http://www.aldaily.com/)

(vii) Science Tech Daily (http://scitechdaily.com/)

(viii) Discover Science for curious (http://discovermagazine.com/)

(ix) Linux Today (http://www.linuxtoday.com/)

SOFTWARE TO USE

We are the upholders, protectors, and enforcer of law; we must take care that while using Information Technology, we are not on the wrong side of law. We can achieve it to large extent, if we use open source software (OSS) rather than any proprietary or close source software. There is no copyright infringement by merely using OSS: there is no piracy.

In order to use OSS, no royalty is required to be paid; however, money could be charged for services. OSS is as good as any proprietary/close source software; at least so far as legal profession is concerned. Some of the successful and commonly used OSS are as follows:

(i) Linux: It is an operating system like windows;

(ii)   LibreOffice.org suite: It is an office suite similar to Microsoft office suite. It is normally used for word processing, data base programmes, and making presentations;

(iii)   GIMP: GNU image manipulation programme. It is like Photoshop and helps in editing images;

(iv)   Audacity: A programme to record and edit audio files;

(v)   Mozzilla foundation: It has come out with the following software—

(a)   Firefox, an Internet browser, similar to the Internet explorer;

(b)   Thunderbird, an email manager, similar to the Outlook express

(c)   Sunbird, it is an e-manager and reminds birthdays, marriage anniversaries and other important dates. It is similar to Microsoft outlook.

These programmes are 'operating system free' *ie* they work in all operating systems. Even if you don't work in Linux, you should use these programmes. This will prepare you to work in all operating systems.

BLOG, PODCAST, VIDEOCAST AND SOCIAL MEDIA

Information technology is about communication and dissemination of information.

It is a powerful tool for expression. Two good ways of expressing yourself are: blogs and podcasts. Both are Portmanteau words:

- Blog has been made from the words web and log and is a kind of diary on the web;
- Podcast is made from iPod and broadcast and is a kind of facility that helps to broadcast your speech;
- Videocast is a podcast with video content.

Apart from the internet connection, they do not entail any extra expense. You can express views by writing posts on blog or broadcasting them on podcast.

Here are some places where this may be done easily:

- Two good places to write your blog are Bloggger (https://www.blogger.com/start) and WordPress.com (http://wordpress.com/). You can even write a blog in Hindi as well. But remember, use Unicode Hindi font. If you can type in English then typing in Hindi is easy: you can use phonetic keyboard.
- Some good places to keep your podcast are Ourmedia (http://www.ourmedia.org/) and MyPodcast.com (http://www.mypodcast.com/).
- Youtube is the best place to keep your Videocast.

Facebook Google$^+$ and twitter are the best option to express your views. It is easy to inform your friends and followers about your your new post, podcast or videocast. But don't get addicted to social media. You don't have to upload your every activity, every photograph on the media: just restrict yourself to activity relating to law.

CONCLUSION

In the end, I will like to add,

'जब इंटरनेट हो, साथ तुम्हारे,
समझो सूचना, पास तुम्हारे।'

Appendix-1

(Reasons for CERN being in news recently)

There are two theories regarding creation of Universe: the Big Bang and the Solid State. Out of these two, the Big Bang is more acceptable one. In this theory, it is necessary to explain how the particles and the other matter got mass.

In 1964 Peter Higgs and five other physicists (some independently) theorised that a trillionth second after the big bang, the Universe was filled with an energy field (called Higgs field) that transmits mass to the things that travel through it. This in turn explained how things in the Universe – stars, planets, even people – came to have mass. This is the standard model.

In case there was energy field then ripples in the same could be identified by sub-atomic particles known as Higgs Boson[3]. In popular media, the Higgs Boson is referred to as the 'God particle'.

The nickname 'God particle' comes from the title of a 1993 popular science book 'The God Particle: If the Universe Is the Answer, What Is the Question?' by Nobel Physics prizewinner and Fermilab director Leon Lederman. The book provides a brief history of particle physics, starting with the Pre-Socratic Greek philosopher Democritus, and continuing through Isaac Newton, Roger J Boscovich, Michael Faraday, and Ernest Rutherford and quantum physics in the 20th century.

The use of the nickname 'the God particle' has contributed to wider awareness and interest but scientists feel that the name is inappropriate and is misleading as it has has nothing to do with God, leaves numerous questions in fundamental physics unanswered, and does not explain the ultimate origin of the universe. However, Lederman explains in the book as to why he gave this nickname to Higgs boson,

> 'This boson is so central to the state of physics today, so crucial to our final understanding of the structure of matter, yet so elusive, that I have given it a nickname: the God Particle. Why God Particle? Two reasons. One, the publisher wouldn't let us call it the Goddamn Particle, though that might be a more appropriate title, given its villainous nature and the expense it is causing. And two, there is a connection, of sorts, to another book, a much

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3   In quantum mechanics, bosons make up one of the two classes of particles, the other being fermions. The name boson was coined by Paul Dirac to commemorate the contribution of the Indian physicist Satyendra Nath Bose in developing, with Einstein, Bose–Einstein statistics—which theorises the characteristics of elementary particles.

older one [Book of Genesis] …

It was difficult to prove the existence of Higgs Boson as they decay very soon. It is in order to find out whether they exist or not that the experiments were carried out at CERN.

CERN is short form for *Conseil Européen pour la Recherche Nucléaire*; an organization of European states with a centre in Geneva for research in high-energy particle physics, now called the European Laboratory for Particle Physics. In order to find out if Higgs Boson exist or not It carried on experiments with Large Hadron Collider (LHC).

The LHC was built in ten years from 1998 to 2008. It lies in a tunnel of 27 kilometres (17 miles) in circumference, as deep as 175 metres (574 ft) beneath the Franco-Swiss border near Geneva, Switzerland.

The LHC is a particle accelerator. It was built to conduct an experiment to collide two beams of subatomic particles called 'hadrons'[4]. Hadrons travel in opposite directions inside the circular accelerator, gaining energy with every lap. By doing this, the scientists were recreating the conditions just after the Big Bang. The analysis of the particles created in the collisions was to show if Higgs boson existed or not. The experiment started on 10th September 2008.[5]

The experiment was being criticised on the ground that it might be disastrous—as creating conditions that existed at the time of Big Bang—it might create black holes that would destroy our planet; these after-effects were explained by the scientists to be far fetched. According to them, even if any black holes were created then they would be too small to be effective.

In case, the experiments at LHC were able to create Higgs Boson then it confirmed the existence of the Higgs field and would show that the Standard Model is essentially correct otherwise other models replacing the standard model will have

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4   Hadron is a composite particle made of quarks held together by the strong force. They are categorised into two families: baryons (such as protons and neutrons, made of three quarks) and mesons (such as pions, made of one quark and one antiquark). A tetraquark state (an exotic meson), named the Z(4430)– was discovered in 2014 by the LHCb collaboration. Other types of exotic hadrons may existbut no current evidence conclusively suggests their existence.
5   For details see at http://public.web.cern.ch/public/en/LHC/LHC-en.html

to be conceived.

Now the scientists are virtually certain from the data collected from the experiments that the Higgs boson exists. This proves that the concept of some type of Higgs field throughout space is proved. In the coming years, further data will tell us more about it.

In 2013, Peter Higgs and François Englert" were jointly awarded Nobel Prize in Physics for their discovery.