

The Great Legal Transformation

The more a civilization grows the more it needs the law to organize social interactions. Legal information is therefore following the exponential growth of the world GDP. Throughout the ages, people tried to organize the law using different mediums and intellectual structures. Today the inflation of norms is such that we need a new system to organize the world's legal information. It will change forever the way we access, understand and practice the law.



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The Use Of Legal Knowledge In Society

The law is the cornerstone of our civilization. Since the beginnings of civilization, human beings regulated an important part of their social interactions through the law. The founder of modern political philosophy, Thomas Hobbes argued that the only way to avoid a “war of all against all” is through regulation if men don’t want to fall back into “brutishness and misery”.

In 1754 before Christ, the sixth king of the First Babylonian Dynasty enacted the code of Hammurabi. It consisted of 282 laws, engraved in stone, dealing with matters of contract or issues concerning family relationships such as inheritance or divorce.

The more developed a civilization, the more it requires norms to regulate social interactions. The amount of written legal norms follows the growth of the worldwide GDP.

Despite the fact that everyone needs to access and understand the law, it has been hard to find a scalable medium with which to broadcast this information, given the vast quantity of norms. Traditionally, legal books were written by hand, and even a few dozen copies were considered to be a sizable edition.

In the 15th century, Johannes Gutenberg introduced the printing press and started the Printing Revolution in Europe. The legal publishing market grew to astronomical proportions. The cost of printing kept declining. In 1600, the Gutenberg-style could print 200 pages per hour; in 1818 the Koenig press could print 2400 pages per hour, hence the massive increase in the quantity of printed materials. At this point in time, the demand to access and understand the law was also higher than ever before because the world GDP experienced a 495.82% growth from 1600 to 1900.

The inaccessibility of the law wasn't only about the cost of broadcasting legal norms. The law is an instrument of power because it governs people and businesses. Hence, governments broadcast only the laws that consolidate their power.

The French Emperor Napoleon I created The French Code that is the most renowned systemic collection of laws. He then introduced it in many European countries standing under French occupation during the time of the Napoleonic Wars. The decline in printing costs allowed the Emperor to print thousands of copies of his code and to make his laws accessible and understandable. Such codes were an attempt to consolidate his power by abolishing previous norms.



The difficulty with making the law both accessible and understandable is a function of the possibility offered by the medium and the government's desire to spread the law at a given time.

Legal information followed, and will continue to follow, the exponential growth of the world GDP. Even if the cost of producing a book was sharply decreasing, paper turned out to be an imperfect medium to store the amount of legal information. Any attempt to collect the full spectrum of

amount of legal information. Any attempt to collect the full spectrum of legal knowledge and provide a quick update using books was doomed to fail.

Luckily, the world moved from atoms to bits. The possibilities offered by digital storage seem endless as computing storage becomes more and more inexpensive. Going from stones and woodblock printing to handwritten books was a first transformation; going from handwritten books to mass production texts was a second transformation; going from mass production texts to digital will be the greatest of all legal transformations.

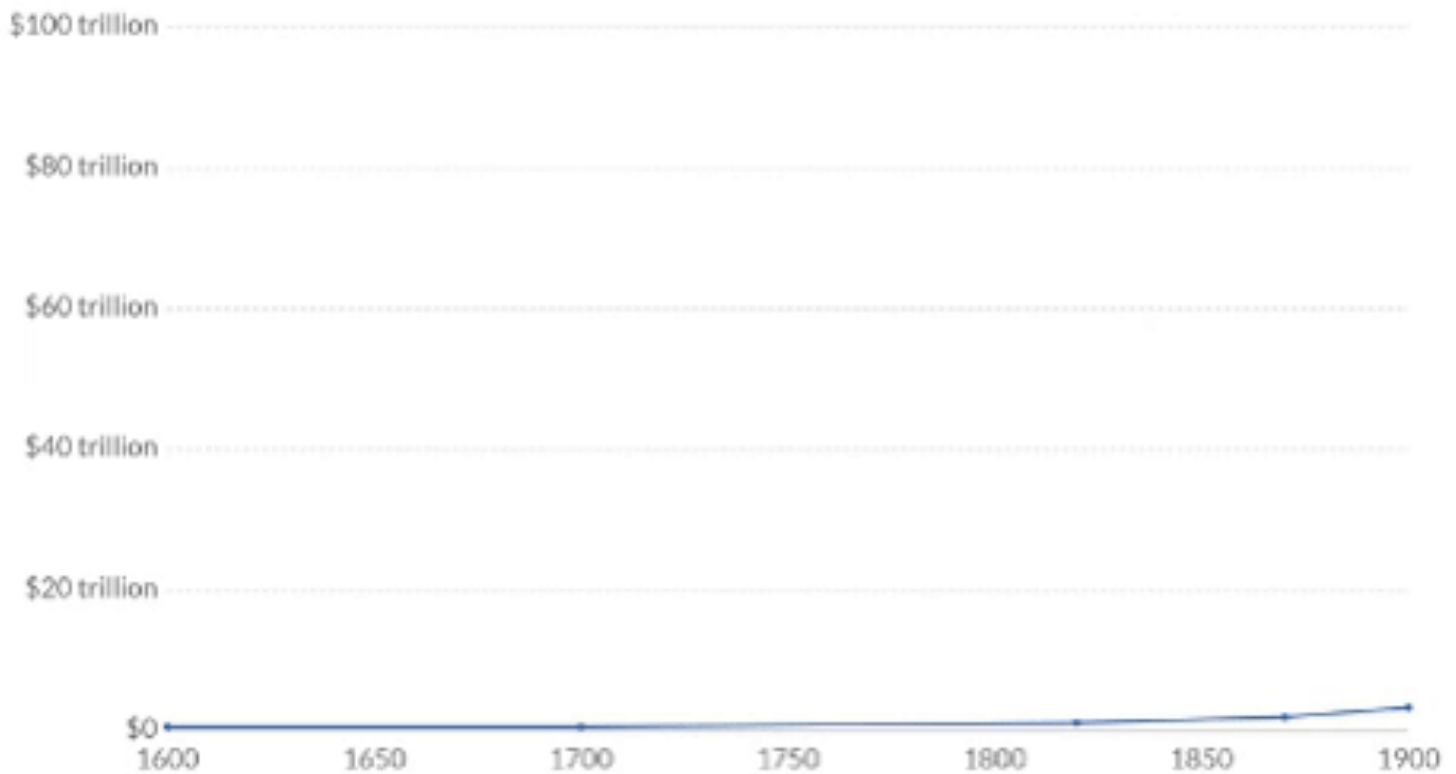
Gutenberg's invention was a major catalyst for the legal publishing industry. From 1945 to 2015 the worldwide GDP increased by 1442.86%; a parallel to the burgeoning need to have comprehensive access to the law. Similarly, the catch-up phenomenon induced by the law going online will be massive.

World GDP over the last two millennia

Total output of the world economy; adjusted for inflation and expressed in 2011 international dollars.

LINEAR

Our World
in Data



Source: World GDP - Our World in Data based on World Bank & Maddison (2017)

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The hardest part during the second transition was to produce the cheapest book possible to satisfy the never ending demand. Today digital companies experience almost zero cost to store all the legal information and almost zero marginal cost for serving another user.

Hence, the hardest part is no longer to store and update legal information, it's about creating the best user experience of discovery and curation of the never ending legal content created every day.

Bringing Order To The Legal Web

Even though technology has changed almost every aspect of our lives, it hasn't yet touched the antiquated field of legal research. Current legal search engines have more to do with AltaVista than Google. So, why isn't there a better way to search the law?

The root cause of the problem is the fact that laws (legislation, case-law and legal commentaries) and the links between them are not being published in ways computers can easily process.

The main difference between a book and a web page is the presence of hyperlinks. Tim Berners-Lee saw the possibility of using hyperlinks to link any information to any other information over the Internet. Google leveraged links in its PageRank algorithm to determine a website's relevance by the number of pages, and the importance of those pages that linked back to the original site. On the other hand, AltaVista and other conventional search engines only ranked results by counting how many times the search terms appeared on the page.

The real challenge for legal research is building links between documents, paragraphs, words, and concepts to determine the level of relevance of a document.

Laws frequently reference other laws. Those references can be subtle and elusive, such as an altered quotation of a landmark decision, without source. A court decision can say "I don't agree that Smith v. Board of School Commissioners applies". Even when the references are explicit, for instance the precise article of the Criminal Code, you need to understand the whole case to link the document to the law in force at the time of the commission of the offence. Experienced lawyers build up detailed mental maps of these links or rely on interns to dig into the cases and manually find these links.

A legal query is more complex than a Google query because it has more words, more concepts, and they combine constraints on semantic content and intertextual links between documents. In addition, answering legal queries is even more of an intricate task because there is often no good answer. For example, how do you answer the query: when is it proper to file a summary judgment motion before claim construction of a patent?

The real challenge is to build a breakthrough technology in order to create a massive legal knowledge graph. Hopefully, now is the right time to apply cutting edge deep learning and natural language processing (NLP) technologies to extract structure out of the law (points of law, settlement, types of action, claims and damages, arguments, facts, etc.) and to leverage the astonishing progress of the semantic information retrieval system.

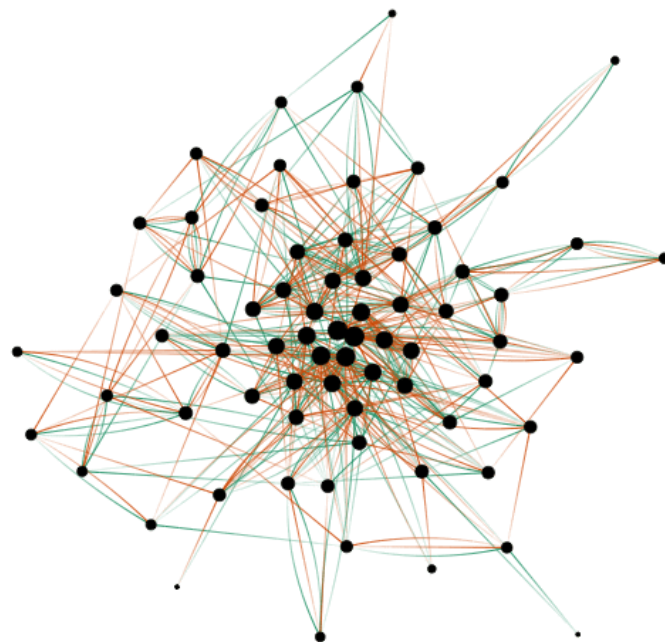
The Logic of Legal Discovery

It will change the entire legal paradigm by re-conceptualize the structure of

legal information. Sir William Blackstone, an English jurist of the eighteenth century, wrote Commentaries on the Laws of England in 1765 that were key in developing the American legal system because they provided a structure that was suitable for reading and understanding the common law. In doing this, he literally built the infrastructure for the concept of common law to develop.

This structure later evolved when the largest legal publisher, Westlaw, introduced the American Digest System Topic in the end of the 18th century to organize the entire body of American law. This system was designed in an era when less than a thousand cases a year were published. The system continued to evolve with the creation of Keycite in 1998, a case citator that provided a location within the structure for every possible legal issue. Today, with the inflation of information, traditional cognitive authority sources are struggling to keep up, and customers are craving new authority to organize the legal information.

The new legal system will be very different from the one we know because today human beings can no longer process all the data in order to build the system. The impact of the new legal system, created by an innovative technology to access and understand the law, will move us forward from a traditional, conceptual organization of the law to a less structured network of norms.



Conclusion

The only way to cope with the exponential growth of the law is to create a breakthrough technology to build a legal knowledge graph that can organize the world's legal information through a relevant, fast, easy-to-use, trustworthy tool that customers will adopt as the defacto standard. This will change the way we conceptualize and practice the law. That is why we created Doctrine, a legal information company that organizes the world's legal information in order to foster the Open Justice Around The World.