

# RELATION BETWEEN MATHEMATICS AND LAW “AN ANALYTICAL STUDY”

## Abstract

Law is rules of human activities it is the novel code of conduct to be followed by every citizens and human being who are living in particular nation as country where particular law has application. Although there are some laws which has universal application beyond territory of particular nation or country the laws which has universal application are considered natural laws divine laws or equity laws.

The laws of world regardless of its application is considered as science based of certain norms and rules. According to famous jurist John Salmond “Law is Science of civil law<sup>1</sup>”. Prof. Kelson the law is science of norms<sup>2</sup>. The nature of law is humanities law having distinct identity closely related to various branches of knowledge. The law is not confined merely to statue, Act, ordinances rules regulation but it is related to all sciences like political science, sociology, mathematics, chemistry and all other sciences. However during the 19<sup>th</sup> century period physical sciences, chemistry, physics, biology made marked progress by adhering inductive method to find out= exactitude causal relationship between the matter and the hypothesis. In 20<sup>th</sup> century, mathematics contributed to progressive evolution of law. The physical law of Newton gravity theory and evolution theory of Darwin were of this kind. The mathematics science has its influence of penalty as fine as well as providing pecuniary compensation to victim.

**Keywords:** Statue, act, norms, territory, jurist, inductive, adhering exactitude.

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## I. INTRODUCTION

The Jurisprudence possesses multifarious nature in application that by it is considered social science touching all sciences. The basic object of law to establish law and order and peace in society. The law does this work by application of reasoning and just full execution of norms of all science, math, chemistry, physic, political science and others.

## II. JURISPRUDENCE AND MATHEMATICS

Nyaya Shastra order of logic exercised by Vedas and Hindu jurisprudence philosophy as a certain direction to correct logic and reasons has had on the development of recent mathematics itself.

The wife of Mary Everest Boole has observed the mode how jurisprudence (Nyaya Shastra) influence their work known Boole logic substantial to other branches of mathematics and computer science.

## III. APPLICATION OF MATHEMATICS BY COURTS IN ADMINISTRATION OF JUSTICE

The mathematics is not only utilized by mathematician but it is also fruitfully utilized by judges at the time of delivering judgement particularly when judge has to assess the quantum of compensation or calculation the period of confinement in jail.

**Professor Lawrence H Tribe** observed that mathematics principles are significantly taken in to consideration in trial procedure and defining the actual civil and criminal conduct. He said “utility of mathematical methods serves accurate trial of the case<sup>3</sup>.” The system of legal proof that displaced trial by war in continental Europe in middle ages replicated a utterly numerical jurisprudence. The law typically assigned how many uncontradicted witnesses were necessary to establish various types of propositions and defined briefly substantially. The judges has to apply the discretion mathematically to ascertain numbers of witnesses to prove or disprove any contravention of civil or criminal law.

## IV. RELATIONSHIP OF LAW MATHEMATICS AND STATISTICS

In law making process adequate data given by various agencies are taken in to consideration alongwith their mathematical and statistical analysis. If parliament and government has to frame any policy for promotion of deprived sections of society than government and parliament and law making body observe the data published by women commission scheduled caste scheduled tribes commission and other allied commission. The law making body applies the rules of analysing mathematically to draw the true servse of data.

The mathematics helps to interpret the numbers of pending cases before judiciary for their speedy disposal. the states is intimately related to and essentially dependent upon

1. Nature and sources of law, P. 147- Salmond jurisprudence.
2. H. Kelson the pure theory of law extracted in Llyds introduction to jurisprudence PP. 291 to 295.

mathematics the recent modern doctrine of statistics has its basis on the theory of probability branch of more advanced<sup>4</sup>. mathematical theory of measure and integration moreover, the developments of statistical techniques and theories for application to various sciences social physical and natural are based on fitting different mathematical models to the observed and the whole process of such assumptions and the whole process of such assumptions analysis and testing is basically mathematical in character.

Mathematical contribution in Indian Penal code the Indian penal code is major penal law of India. It defines offences and prescribes punishment for the defined offence. The contribution of maths could also be seen in this code where offences are punishable with corporal punishment and fine or with both. Here math is considered in determining the quantum of fine and duration of significant role in computation of concurrent punishment. The following provisions of Indian Penal code suggests to consider theories of mathematics.

- **Section 57:** In calculation fractions of terms of punishment (Imprisonment) for life shall be reckoned as equivalent to imprisonment for twenty years. Section 57 of Indian Penal Code 1860 does not in any way limit of punishment of imprisonment for life to a period of twenty years. This section is only for calculating fractions of term of punishment and provided that imprisonment for life shall be reckoned as equivalent to imprisonment to twenty years.
- **Section 65:** The terms for which the court directs the offender to be imprisoned in default of payment of a fine shall not exceed  $\frac{1}{4}$  of term of imprisonment which is the offence be punishable with imprisonment as well as fine. Section 65 has application to all cases where the offence is awardable with imprisonment as well as fine I.e., cases where fine and corporeal punishment can be awarded and also those where the punishment may be awarded either fine or imprisonment but not both fine and imprisonment.
- **Section 69:** If before the expiration of terms of imprisonment fixed in default of payment such a proportion of the fine be paid or levied that the terms of imprisonment suffered in default of payment is not less than proportional to the part of the fine still unpaid the imprisonment shall terminate.

This section provides punishment in default of paying fine. If the convicted pays fine in jail for remaining period his imprisonment shall be terminated. This section provides calculation of proportional punishment. Here court has to calculate like mathematician the proportion fine and imprisonment. If the fine imposed on an accused is paid while he is in jail for default of payment of fine, his confinement in jail will promptly terminate and if a proportion of the fine be paid during imprisonment a proportional commutation of the jail will take place.

- **Section 73:** Whenever any person is convicted of an offence for which under this code the court has power to sentence him to rigorous imprisonment the court may by

3. Harvard Law Review Lawrence Tribe April 1971 vol. 84 no. 6.

4. S.C. Gupta and Kapoor fundamental of mathematical statistics Sultan Chand and Sons Publication Education 2016 P.I.5.

its sentence, order that the offender shall be kept in solitary confinement for any portion or portion of the imprisonment to which he is sentenced not exceeding three months in whole, according to the following scale that is to say-

- A time not exceeding one month if the term of imprisonment shall not exceed six months.
- A time not exceeding two months if the term of imprisonment shall exceed six months and shall not exceed one year.
- A time not exceeding three month if the term of imprisonment shall exceed one year.

Solitary imprisonment amounts to keep the offender (prisoner) thoroughly alone (isolated) from any contact with the outside world. But here is direction to court to calculate and consider maximum duration in isolation. The calculation of period mathematically is object of this section which close relation between mathematics and Indian penal court.

- **Section 74:** In executing a sentence of solitary confinement such confinement shall in no case exceed fourteen days at a time with intervals between the periods of solitary confinement of not less duration than such periods and when the imprisonment awarded shall exceed three month the solitary confinement shall not exceed seven days in any one month of the whole imprisonment awarded with intervals between the periods of solitary confinement of not less duration than such periods.

Section 74 of Indian penal code limits the solitary imprisonment when the substantive sentence exceeds three months to seven days in month solitary confinement should be awarded at intervals.

The above provisions of Indian penal code prescribes the maximum period of isolation to be calculated.

## V. CONCLUSION

Famous jurist- Salmond said-“Law is science of civil law”. It is also considered as social and humanitarian law like other science I.e, physics, maths, chemistry, political science. The law is required to establish law and order in society therefore with existence of law society is like engine without break, ultimately law is for human being and society. Former justice of Supreme Court A.R. Laxmanan said-law is made for man , man is not made for law. The main objects of the law maximum pleasure to maximum numbers- (jurist Bentham) the other branch of knowledge has the same object irrespective of its contents. Almost all subject research invention are done for human being. The mathematics as science contribute to society in calculation of data statistical analysis and scientific conclusion of counting. It audits the account and paves the way scientific conclusion of phenomenon so that ultimately it is for society and human being so that law and mathematics are correlated to each other. It assists to court and legislative to analyze the data of all Govt. department and pending and disposed of litigation. It does scientific analysis of numbers of old and recent laws.

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