FROM JURISPRUDENCE TO JURIMETRICS: A CRITICAL EVALUATION OF THE EMERGING TOOLS IN THE JUDICIAL PROCESS

I Introduction

JUDICIAL PROCESS has emerged as an important part of the administration of justice. It is not just a legal process; it is an ethical process as well. It is no less a human process. It seeks to establish facts, determines the governing rule of law, and then applies the rule to the facts.[1] It consists of the practices that are followed by a given court system in hearing and judging the cases before it.[2]

Judicial process is the name given to the intellectual procedure by which judges decide cases. It comprehends the mental process, deliberate and sub-conscious, and all the elements in personality, profession and environment which impel towards judgment.[3] The disputes are to be decided according to a previously agreed upon set of procedures and in conformity with the prescribed rules.[4]

Developments in science and technology are also absorbed in the judicial process. The reason is that the society is always progressive; it changes faster than the law. The law has to keep pace with the scientific and technological advancements in the society. Indeed, society has become dependent on science, to such an extent that science and technologies are being utilized in all most all the aspects of human life. It is the science which is used tremendously in the courts of justice. The value of knowledge, especially for judges has also been noticed by the Indian Supreme Court in *Hindusthan Times Ltd.* v. *Union of India*,[5] where the court emphasized on the need for the judges to equip themselves with the necessary tools required to write qualitative and thought provoking judgments.

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1. Guy B Hathorn and Howord Rae Penniman, *et. al., The Government and politics in the United States* (1961).
2. Grazia Alfred D., *American Way of Government* (1957).
3. *VII, VIII Encyclopedia of Social Sciences* 450.
4. 8 *International Encyclopedia of Social Sciences* 283; for details see Manas Chakrabarthy, *Judicial Behaviour and Decision Making of the Supreme Court of India* (2000).
5. (1998) 2 *SCC* 242.

It is to be noted that the development of 'forensic science' has provided a powerful tool in the hands of law enforcement agencies and the judiciary. Anthropometry, finger prints and footprints technology, ballistics, odontology, serology were essentially developed to aid the criminal justice administration.[6] As a result the barbaric and torturous methods of detecting crime have no place in a civilized society. In this paper an attempt is made to critically evaluate the tools emerged as a result of advancement in science and technology used in the judicial process.

II Mechanical jurisprudence

Judicial process is viewed as logical deductions from the authoritative premises of the code. It is essentially deductive application of existing rules of law. The task of the judge is simply mechanical as they decide cases as per existing law. According to this theory, the values and policy preferences of judges are not involved to any significant degree in the process of interpretation. It is submitted that the scope of judicial axiology is greatly reduced. Consequently, law was viewed as coherent, complete and autonomous rational system.[7] It is highly formalistic and traditional theory of law. It is logical as well. However, logic is responsible for various kinds of unjust decisions. Every lawyer acknowledges that the law is not always logical. The life of the law has not been logic; it has been experience.[8] For Coke, reason is the life of law. Common law itself is nothing but reason. Jensen points out that deduction plays a minor and rather subsidiary role in the judicial process.[9] Philosophers such as Morris R. Cohen attacked what was called the phonograph theory of law.[10] Felix S. Cohen forcefully and repeatedly argued against the conception of law as a self sufficient and completely autonomous discipline.[11]

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6. Rajender Singh *et. al*., "Voice Spectograph as an Aid in Crime Investigation", *in Frontiers of Forensics* (1990).

7. see Frank, "A Sketch of an Influence", in Paul Lombard Sayre (ed.) *Interpretations of Modern Legal Philosophy: Essays in Honour of Roscoe Pound* 189 (1947) .

8. Oliver W. Holmes, *The Common Law* (1923). See also Max Radin, *Law as Logic and Experience* (1940); Julius Stone, *The Province and Function of Law* (1950).

9. O.C. Jensen, *The Nature of Legal Argument* (1957).

10. Morris R. Cohen, "The Place of Logic in the Law", 29 *Harvard Law Review* 622 (1916).

11. See Morris R. Cohen, "My Philosophy of Law", in Julias Rosenthal Foundation for general Law, *My Philosophy of Law; Credos of Sixteen American Scholars* 29-48 *(1987)*.

III Matching jurisprudence

The concepts are fashioned by a legal system. Concepts are necessary and indispensable instruments for the solution of legal problems.[12] They enter prominently into the formulation of legal rules and principles. The reasoning processes used in the law are to a far-reaching extent based on rules and principles embodying concepts of varying technicality.[13] It was a movement in jurisprudence quite influential in Continental Europe. Precedents are the juridical concepts which are the postulates of judicial reasoning. Deciding cases in accordance with precedents that plainly fit them is a process similar in its nature to that deciding the case in accordance with a statute. The duty of the judge is to match the colours of the case at hand against the colours of the cases spread upon his desk. Virtually, it is a matching jurisprudence. By doing this process no system of living law can be evolved. The judges are mere instruments of the law and they do not make the law.[14]

Hart has viewed the legal concepts as chess pieces, which can be maneuvered to produce certain results. As the players of chess have a choice as to their move, lawyers and judges often have a choice as to how they will move concepts.[15] The entire edifice of the law would crumble if we try to dispense entirely with concepts. However, a large number of judges and jurists would today endorse Mr. Justice Cardozo's observation that the tyranny of concept is "a fruitful parent of injustice".[16] Concepts are tyrants rather than servants. Therefore, conceptual jurisprudence does not enjoy much favour. It is submitted that the role of the judge is not merely mechanical. He does not function mechanically.[17] Judges are not merely tools for deriving legal conclusions.

Cardozo while analyzing judicial process came to the conclusion that there is an element of creation and discovery contained in the judicial process. Judicial process will not be rationalized unless forces like logic, history, custom and sociology have been valued.[18] Justice Cardozo both in his writings and legal opinions clearly exhibited the creative role a judge can play in application and interpretation of law. It is submitted that in the

12. Max Rheinstein, "Education for Legal Craftsmanship", 30 *Iowa Law review* 408 (1945).

13. Hohfeld, *Fundamental Legal Conceptions* (1923).

14. William A. Rosenbaum, John W. Spanier *et. al., Analysing American Politics: A New Perspective* (1970).

15. HLA Hart, *The Concept of Law* (2002).

16. Benjamin N. Cardozo, *The Pardoxes of Legal Science 61* (1928).

17. K.C.Joshi, "Judicial Process: Recent Trends" 34 *JILI* 72 (1992).

18. Bejamin N. Cordozo, *The Nature of Judical Process* (1921).

twentieth century judicial orthodoxy has lead to the theory of 'free legal decision'. This theory recognizes the element of human creativity in the matter of interpretation. It clearly admits that the factors like values, biases, fears, hopes and preferences for policy becomes a significant factor in the matter of constitutional interpretations. In fact, they can not be isolated from social causes because, judicial decisions are human decisions. This theory of 'free legal decision' throws light on the policy making functions of the judge.[19]

One can witness the dramatic action of the American Supreme Court in reversing its position on various constitutional issues, which left little doubt about the potentially creative role of the judiciary. In a way, the acceptance of the *Brandeis brief* as a legitimate source of legally relevant material symbolized the gradual acceptance, even among the judiciary of the idea that law is not closed and self-sufficient system.[20] A legal system is open textured in the sense that the new rules and principles can be created and old ones changed. Judges exercise the creative function in a variety of ways.

IV Towards jurimetrics

Modern jurisprudence entrenches on the fields *inter alia*, of social science and philosophy. Thus, the study of jurisprudence should be integrative, synthetic and purposive. It is in this context, Julius Stone says, "study for jurisprudence mastery over social science other than law is indispensable".[21] It is the examination of precepts, ideals and techniques of the law in the light of knowledge derived from disciplines other than law that makes the study of Jurisprudence complete. Such an approach opens unlimited possibilities to develop law in keeping with human development and contemporary knowledge explosion. Law therefore, has to be studied as an integral part of the entire field of social science. Thus, Holmes, Pollock, Brandies, Cardozo, Frank, Vinogradoff all sought to relate law to its social context. The idea of lawyers extra legal version is to remind the legal community that law is a part of total life of the society and it cannot be sealed off or divorced from other branches of knowledge.[22]

The lawyer must know how the current ethos of social trends is moving in order to make law an aid in the service of society. Lawyer should not be

19. Glendon B. Schubert, *Judicial Behaviour* (1964).

20. Leonard G. Boonin, "Concerning the Relation of Logic to Law" in Indian Law Institute, *Legal Research and Methodology* 41-52 (2001).

21. Julius Stone, *Province and Function of Law* 25 (1947) ; see also Paton, *A Text Book of Jurisprudence* (1964).

22. See O.W. Holmes, *The Common Law* (1881).

mere legal technician knowing legal texts, legal machinery and procedure. He should be a social physician so that law can give healing touches to society. The lawyers and judges, therefore, must go beyond the letter of the law to find social policy which lie at the bottom of law. The Supreme Court of India has emphasized upon the need on the part of the government to present to the court relevant socio-economic data in support when ever welfare legislation is being questioned. According to Krishna Iyer. J.,[23] welfare legislation calculated to benefit weaker classes, when their *vires* is challenged in a court, *brandies brief* can be employed in support of the legislation. It is submitted that courts cannot on their own adventure into social research outside the record unless *brandies brief* is pressed into service by the beneficiaries.

The modern problem of jurisprudence is a problem of using innovations in science and technology for an efficient system of law and justice. It is here *jurimetrics* assumes significance. Jurimetrics is a new idea. It has been generally defined as "scientific investigation of legal problems". It is a new challenge to orthodox jurisprudence. It is a movement taking place in jurisprudence.[24] While jurisprudence is mere speculation about law jurimetrics is scientific investigation of legal problems. It is gaining voice in the modern age of science and technology. It is a claim for modern science, technology and sociology to be effectively used in law and applied in the administration of justice to make both law and justice fuller, real and up to date with the advancing tide of human knowledge from other spheres.

Recently, attempts to predict judicial behaviour have taken a mechanical turn for which the term jurimetrics has been invented. It takes the form of different kinds of investigations into legal phenomena by using symbolic logic, behavioural models and mechanical aids.[25] Boolean algebra is used to analyse complex set of facts, prediction of behaviour has moved away from that of individual to that of groups, and the use of computers is being explored increasingly. According to Lee Lovinger, the founder of jurimetric research, the next step forward in the path of man's progress must be from jurisprudence to jurimetrics. His clarion call is for adoption of new techniques to solve legal problems.[26]

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23. See *B.Benarjee* v. *Anita Pan,* AIR 1975 SC 1145; *State of Kerala* v. *Roshana*, AIR 1979 SC 765.

24. P.B. Mukherjee J, "Law and Technology: Jurimetrics", *in Law and the Common Wealth 513-19* (1971).

25. Kayton, "Can Jurimetrics be of Value to Jurisprudence", 33 *Geo.Wash.LR.* 287 (1964-65); Meyer "Jurimetrics: the Scientific Method in legal Research" 44 *Can B. R.* (1966).

26. For details see Loevinger Lee, "Jurimetrics, the Next Step Forward", 33 *Minesota Law Review* (1949).

Brandeis brief

The major problem in modern jurisprudence is therefore, how far other branches of knowledge including physical and social sciences can be harnessed to the service of law and jurisprudence. A theory of quantitative analysis of judicial process is developing in modern jurisprudence. The modern age is bringing forward unmanageable mass of authoritative materials for application in the field of law. In a sense use of such materials for modern jurisprudence is implicit in *Brandeis brief.* Similarly, *block* analysis and *scalo gram* analysis are the two methods used for qualitative analysis of judicial behaviour.[27]

The most important result of the *Brandeis brief* and of the decision in the case of *Muller* v. *Oregon*[28] is that it sets the course for future lawyers to use social science arguments and data in courts. The data placed before the court was extra-legal consisting of statistics concerning social conditions, to prove its arguments. The lawyer while employing *Brandeis brief* is acting as a social physician. In *Brandeis brief,* social science facts, studies, surveys, reports and opinions are adduced as evidence in constitutional adjudications. Similarly, filing of *amicus briefs* or *intervener briefs* are not uncommon. On the Indian side, *Olga Tellis,*[29] *A. P. Pollution Control Board* v. *M.V.Nayudu*,[30] courts have used experts to appreciate technical and scientific evidence.[31]

Tape-record evidence

The judiciary has relied on the data recorded on some medium or the other in a manner prescribed by law, as evidence to decide cases. The medium of recording data has varied from stone, clay, metal, parchment and paper over the past centuries to audio-visual tapes and computer disks in modern times. The law of evidence traditionally relied on oral and documentary records of facts. But with the advent of science and technology, evidence law too has been modified to keep pace with the changes. In today's world, the nature of crime in the society has also changed which

27. Julius Stone in his Work on *Law and Social Science* brings out the pioneering work of Glendon Schubert in the prediction of judicial behaviour; see also Schubert, Glenden B.(ed.), *Judicial Decision Making* (1963).

28. 208 US 412. Subsequently, *Brandeis brief* became standard practice in the US. *Brown* v. *Board of Education*, 347 US 483 is a landmark in this direction.

29. *Olga Tellis* v. *Bombay Municial Corporation,* (1985) 3 *SCC* 545.

30. 1999 (2) *SCC* 718.

31. For details see, T.K.Naveen, "Use of 'Social Science Evidence' in Constitutional Courts: Concerns for Judicial Process in India", 48 *JILI* 78-93 (2006).

calls for adopting some new measures to cope up with the situation. Tape recording is one of the measures adopted by the judiciary for dealing with the cases conveniently.[32]

Tape-recorded conversations, speeches were documents as defined by section 3 of the Evidence Act.[33] Tape-recorded conversation is a relevant fact admissible under section 8 of the Evidence Act. Also the I.T. Act, 2000 which incorporated electronic records as a piece of evidence by amending section 3 of the Indian Evidence Act, which now says that "all documents including electronic records produced for the inspection of the courts..." Tape-recorded conversations as an evidentiary value in the court of law are one of the positive and effective changes with the growth of technology.

It is further submitted that photo technology and video conferencing too have an immense utility in the judicial process. Courts in America have already accepted voice identification evidence based on the analysis of voice print. Similarly, conversations of tapped telephone are useful to expose links between terrorists, underground dawns on the one hand and politicians on the other.

Use of computers

One of the major problems in the Judicial administration is storing of mass of data and materials and using them in the judicial process. Here the importance of the computer is felt as a urgent need of the hour. Computers play an important role in the administration of justice. The customary mechanisms and the tools adopted by the judicial process were old and relatively slow to change. Therefore, there is an urgent need to adopt the new technology in court management and maintenance of records if the judicial process had to keep pace with the dynamic changes in modern society.[34] In view of increasing globalization of the legal profession, use of computers in this profession too has become the need of the hour. Lawyers can no longer ignore technology such as internet if they want to succeed. Judges welcome computer generated exhibits.[35]

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32. For more details see Rajesh Punia, "Tape Recorded Conversation – Nature and Relevancy as an Evidence", *Cri.L.J. 1-5* (jour 2008).

33. *Ziyauddin Burhanuddin Bukhari* v. *Brij MohanRamDa Mehta, AIR* 1975 SC 1788; see also *Ram Singh* v. *Col. Ram Singh, AIR* 1986 SC 3.

34. See Gurjeet Singh, "Use of Computers in Legal Profession", 39 *JILI 312-23* (1997).

35. Dong Levy, "lawyers Learn to get Technology on their Side", *The Times of India* 13, 29 April 1997.

Inventions, discoveries and technologies not only widen scientific horizon but also pose new challenges for the legal world. Technology in recent times had an increasing effect on the content of our laws. Particularly the information technology has posed new problems in jurisprudence. The law is inadequate to deal with the I.T. As a result necessary amendments to the Indian Evidence Act, 1872, the RBI Act, 1934, Indian Penal Code and Banker's Books Evidence Act, 1891 were made in order that electronic record, digital signatures and computer printouts may be proved and admitted in courts of law.[36] Laptops are being increasingly used as evidence in the judicial process.

DNA finger printing

The contribution of forensic science on the administration of justice is indispensable. Orthodox methodology of crime-detection has now become obsolete. The application of DNA technology has heralded a new dimension in the administration of justice. DNA finger printing is an authoritative technique that is capable of distinguishing every human individual from the other individual. In the US, DNA findings are admissible under the law of evidence. In maternity, paternity disputes, rape and murder cases DNA test has enormous applications. The technology is also used for personal identification. The quality of criminal justice can be highly upgraded if DNA technology is applied properly.[37] New technologies and applications based on DNA continue to emerge. These range from the use of new genetic systems and the new analytical procedures to the typing of DNA from plants and animals.[38]

Polygraph, brain mapping and narco analysis

In today's world of science and technology, man has found various tools that the law enforcement agencies can use to battle crime. The forensic psychology can be used as one of the important tools in investigation.[39] *Polygraph-lie detector, P-300* – Brain mapping tests and narco analysis are the advanced scientific tools in the hands of the law enforcement agencies.

Modern techniques like *polygraph* and brain fingerprinting are non invasive methods that will detect deception without causing physical or

36. For critical study see Yatindra Singh, "Cyber Laws" 44 *JILI* 190-204 (2002).

37. For details see Dr. Durga Pada Das, "DNA Finger Printing and its Impact on the Administration of Criminal Justice", *Cri. L.J.* 377-9 (jour, 2005).

38. For a critically analysis, Dr. G.V. Rao, "DNA Analysis in Prosecution Cases: Criteria for Consideration", *Cri.L.J.* 289-93 (Jour, 2005).

39. B.R.Sharma, *Forensic Science in Criminal Investigation and Trial* 204 (2005).

mental injury to the subject. The results of polygraph and p-300 are simply graphs and the reading of experts. Hence, it is purely assessment of opinions and their subsequent opinions based on their reading and understanding of such graphs. In these tests, the person being tested is not required to make any statement. Art. 20 (3) of the Indian Constitution does not hit these because there is no element of compulsion involved.

In USA the forensic science is frequently used in the criminal justice system. In *Daubert* v. *Merrell Dow Pharmaceuticals Inc,*[40] the US Supreme Court held that scientific, technical or other special knowledge would assist the trial of fact to understand the evidence or determine a fact in issue. Subsequent to *Daubert* many states have applied the same standard for determining the admissibility of expert testimony of scientific evidence.[41] Now-a-days narco analysis- truth serum test is widely performed on suspects and accused, by forensic scientists at the behest of investigating agencies. Courts grant permission to subject the suspects to this technique and accept the revelations as admissible.[42] Narco analysis has been used by the US in fighting the war on terrorism. In *Indiana Police* v. *Edmond*,[43] it has been held that truth serum may be administered without any warrant or a probable cause.

The judiciary in India has given its seal of approval to the practice of narco analysis in *Jitu Bai Babu Bai Patel* v. *Gujarat*.[44] The Supreme Court in the instant case has taken the view that conducting narco analysis test on the accused at the stage of investigation does not violate constitutional guarantees under articles 20 (3) and 21 of the Indian Constitution.[45] It is submitted that narco analysis has come under a cloud. It has increasingly becoming a dangerous short cut for investigation. Infact, India is the only country in the civilized world where narco analysis is being used by the investigative agencies. Other countries have tried, tested and discarded narco analysis citing reasons ranging from unscientific, unreliable to unethical and barbaric. It has been questioned on legal grounds too has violating

40. 209 US. 579.

41. See *United State* v. *Scheffer* 523 US 3003.

42. Dr. B. Umadethan, "Medico-legal Aspects of Narco Analysis", *NUALS Law Journal* 21-32 (2008).

43. 531 US 32 (2000).

44. (2005) 10 *SCC* 545; for details see Jacob Joseph, "Human Rights Implications of the use of Narco Analysis in Criminal Justice Administration in India", 2 *NUALS LAW Journal* 96-111 (2008).

45. In Dec. 2007, the Indian Supreme Court admitted a batch of petitions challenging the use of narco analysis, brain mapping and lie detector tests during the police investigation and seeking framing of guidelines in this regard. The apex court has reserved its verdict on the said petitions.

human rights.[46] Further, the test is causing pharmacological as well as psychological torture. A new technique called brain electrical oscillation signature (BEOS) is being projected as a more effective and non-invasive method in crime-investigation. BEOS can read relations of the brain even if the suspect remains silent and pinpoint the guilty person present among many suspects at the crime scene. It is further submitted that the legal system imbibe developments and advances that take place in science as long as they do not violate fundamental legal principles and are for the good of the society.

V Concluding remarks

From the aforesaid discussion, it is concluded that the orthodox jurisprudence metamorphosed into jurimetrics. In fact, jurimetrics took off with employment of *Brandeis brief* in the judicial process. The scientific tools developed are immensely useful in the dispensation of justice. Even the orthodox methodology gave way to scientific tools. The tools are scientifically proven and techno-driven. The tools are justice-friendly. These tools are the legal resources serving as raw materials in the judicial process with a quality end-product namely justice.[47] In fact, it is machine-made justice.

The bench and the bar is expected to rise to the occasion with the tremendous rise in scientific inventions and strides in technological innovations. In UK, Skills for Justice Wing is assisting the justice sector in having a work force with world class skills and developing tools to improve the skills of the work force.[48] It is worthy of emulation in India too.

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46. N. Bhanutej, "Rape of the Mind", *The Week* 24-7, 21 September 2008.

47. Salmond argued that they are only contingent. However, HLA Hart remarked that legal sources are the authoritative sources of law.

48. Steve Batty, "Developing Skills in the Justice Sector", 41 *Policy and Educational Developments, Journal of Association of Law Teachers,* 220-23 (2007).

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