Law as Rules of Behavioural Choice:

An Exploration of Jurisprudential Systems

by

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VOLUME ONE

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CHAPTER ONE

JURISPRUDENTIAL SYSTEMS SCIENCE AND THE SCIENCE OF LEGAL CHOICE

Overview

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Overview

For a legal system to be effective, it should satisfy at least two major requirements. Firstly, people who are required to obey the law should have the opportunity to find out what the law is. Secondly, the social organisation and control imposed by the law, should permit satisfaction of the needs and wants of those whom it governs, sufficient to produce a viable level of voluntary compliance. Enforcement is costly. It may be beyond the economic means of the community to deal with extensive breaches of the law or extensive failure to take the opportunities for survival which the law fashions. Widespread disregard for the law could lead to a breakdown in social organisation. On the other hand, society may become schizophrenic, in the sense of having a de lege organization noticeably at odds with a de facto organization. This can produce unnecessary problems of social confusion. While the legal system in contemporary times does not suffer chronically from these problems, it is clearly ailing. This thesis is concerned with the use of the contemporary resources of human intelligence in order to improve, firstly, lay access to the law, and secondly, the management of human survival through law.

The sort of information about the law which most people require for their daily lives is its directions as to how they are to behave. This knowledge of law is an integral part of the fundamental ethic of an effective legal system. People ought to know what they must do and what behavioural choices they have. They should also be entitled to know why. If there is reason to comply with the law, voluntary compliance is more likely. Clients usually seek legal advice in these terms. To provide this advice, the law must be viewed, firstly as rules which describe behavioural choice, and secondly, as a jurisprudential system consisting of behavioural choice and reasons for the choice. A study of choice includes the study of a lack of choice. A study of system includes a study of lack of system. From these behavioural perspectives, jurisprudential systems science and a science of legal choice may be developed.

Most of the contemporary resources of human intelligence have been developed within the sciences. It is these resources which the

thesis primarily uses to develop jurisprudential systems science and a science of legal choice. The proposals of the thesis might be seen as an extensive application of the resources of science to law. There is a long history of interaction between law and science. This is demonstrated in Chapters Two to Five of the thesis, the historical Chapters. In order to understand science, the resources of human intelligence which it contains, and how science and law have interacted in the past, Chapters Two to Five of the thesis explore the history of legal science in the context of the development of science. Also, the history of legal science is placed in the context of the development of science, so that there may be an understanding of the advice which this history contains for the establishment of jurisprudential systems science and a science of legal choice. The proposals of the thesis provide for a more extensive application of the resources of science than has hitherto occurred. This is appropriate because science now has greater resources than ever before and because past interactions have proved fruitful.

A more extensive application to law of the resources of science entails major development of legal science. The thesis poses this development of legal science by formalizing two related fields of legal science, namely, jurisprudential systems science and the science of legal choice. By developing each of these two fields, the resources of science may be used to improve both lay access to the law and the management of human survival through law. In this Chapter, the scope of legal science which would accommodate the development of these two fields, is outlined. Then the concepts of jurisprudential system and legal choice are considered. The Chapter concludes by highlighting the basis on which these two concepts are related.

In the remainder of the thesis, there are three major approaches taken to lay further foundations of jurisprudential systems science and a science of legal choice: an historical approach, an ethical approach, and a technological approach. Broadly, the history, in Chapters Two to Five, provides the evolutionary context for improving both lay access to the law and the management of human survival through law, by means of jurisprudential systems science and the science of legal choice.

The ethical proposals, in Chapter Six, which is entitled Survival Jurisprudence, are concerned largely with improving management of human survival through jurisprudential systems science. In Chapter Seven, which is entitled Legal Knowledge Engineering, the technology which is described and developed, provides for improved lay access to the law through the science of legal choice. The concluding Chapter of the thesis, Chapter Eight, poses further integration of developments in jurisprudential systems science and the science of legal choice, through lay access to improved management of human survival.

Legal Science

In order to develop jurisprudential systems science and a science of legal choice, within the framework of science and legal science, the nature of science and legal science requires clarification. Broadly, a field of study is a science if it uses scientific methodology to produce reliable information. Thus a jurisprudential systems science would use scientific methodology to produce reliable information about any aspect of the jurisprudential systems in law. A science of legal choice would use scientific methodology to produce reliable information about legal choice.

The word 'science' emerged in the middle English period (1100-1500) of language development as a modification of the Latin word 'scientia', meaning knowledge. Words are found to symbolize entities after they are identified. However, the practice of science is much older than the English word. A comprehensive description of science is given by J.D. Bernal.

> Science is so old, it has undergone so many changes in its history, it is so linked at every point with other social activities, that any attempted definition, and there have been many, can only express more or less inadequately one of the aspects, often a minor one, that it has had at some period of its growth.(1)
>
> Science may be taken, (1.1) as an institution; (1.2) as a method; (1.3) as a cumulative tradition of knowledge; (1.4) as a major factor in the maintenance and development of production; and (1.5) as one of the most powerful influences moulding beliefs and attitudes to the universe and man.(2)

> The tradition of knowledge passed on from parent to child, from master to apprentice, is the very root of science, existing from the very earliest ages of man and long before science could be considered an institution.(3)
>
> The method of science is not a fixed thing, it is a growing process. Nor can it be considered without bringing out its closer relations with the social, and particularly the class, character of science. Consequently scientific method, like science itself, defies definition.(4)
>
> Science is not a matter of thought alone, but of thought continually carried into practice and continually refreshed by practice. That is why science cannot be studied separately from technique.(5)
>
> Those selected or selecting themselves for scientific interest are likely to differ in almost all other particulars. This gives a great variety to science, but the equally necessary unity comes from the controls, unconscious and conscious, that society exercises on it. It is this socially imposed unity of science that makes it possible to see it as one co-operative effort of man to understand and thus control his environment.(6)
>
> In less obvious ways scientific knowledge and scientific method are affecting, to an ever increasing degree, the whole pattern of thought, culture, and politics. Science is now becoming a great human institution. It differs from them only in that, being more recent, it is still in its actively growing phase and its position with regard to the rest of society is not yet in equilibrium. Science has a long way to go in making its full weight felt in human affairs.(7)

There is a quality of mysticism in Bernal's views which gives the concept of science both flexibility and unity. It is against the backgound of science described by Bernal that this thesis now seeks to fashion a useful jurisprudential systems science and science of legal choice.

The term 'legal science', came into vogue in common law countries early in the nineteenth century, following the eighteenth century developments in Europe of political science and the science of morality, each of which incorporated an element of legal science. In the nineteenth century, jurists of the common law countries

strove to disassociate law from morality, and, through a positivist view of law, claimed for jurisprudence a status of legal science.(8) The primary source law, namely, legislation and judicial dicta, became the subject for scientific study. Within the bounds of legal science it might be studied for its moral or other implications. Since law is human information, legal science is probably the first modern information science.

Like science, the practice of legal science is older than the English term coined to describe it. An Oxford project to trace the history of legal science was instigated, shortly before the second world war. by Hermann Kantorowicz and Francis de Zulueta. The project was not completed due to the premature death of Kantorowicz and the onset of the war. George M. Calhoun and Fritz Schulz were invited to contribute to the history. Their works were published separately and represent the extent of the Oxford History of Legal Science as it was envisaged in the project. Calhoun's contribution was published in 1944, after his death, as the Introduction to Greek Legal Science. Schulz undertook a coverage of the Roman period and completed his work after the Oxford project was abandoned; it was published as The History of Roman Legal Science, in 1946, and was subsequently revised. In these works, the authors provided definitions of legal science. Calhoun describes, firstly, a narrow meaning of legal science.

> When 'legal science' means the specialised discipline of jurists and of the legal profession, it connotes a body of systematized legal knowledge and doctrine, generally accepted as authoritative over the area of the culture from which it springs, having a unity of its own distinct and separate from political science.(9)

Then he adds that there is a broader meaning.

> But in the broader sense ...'legal science' comprehends historical and comparative jurisprudence, the analysis of legal concepts, and the philosophy of law.(10)

Schulz defined legal science as follows:

> Commonly it is confined to systematic thinking about actual law (legal dogmatics), to the exclusion, in particular, of the law-making processes. ...

> Our conception of 'legal science' (or jurisprudence - we regard the terms as synonomous) embraces every vocational occupation with the law, its making, application, exposition and transmission.(11)

The contemporary definition of legal science is set out in The Oxford Companion to Law and reflects these views.

> Systematized and organised knowledge, from every standpoint, philosophical, historical, comparative, expository, critical, or other, of and about law in the widest sense of that word, its development, transmission, making, exposition, and application. Like every other science, it has two main branches, pure and theoretical legal science, devoted to the investigation of relevant materials and the attainment and refinement of knowledge and understanding of the subjects investigated; and applied legal science, concerned with the ascertainment of the principles and rules relevant to given problems, their applications and the results. ... The actual concepts, principles and rules of any individual legal system and the conditions for which it has been developed and in which it operates, are the main subject matter of legal science; the data to be studied, systematized, criticized, expounded or used, applied or otherwise handled. ... Pure or theoretical legal science has close connections with philosophy, history and other social sciences, applied legal science with government and politics, administration, business, finance, industry and commerce, social work and welfare, and every kind of human and inter-personal activity and relationship. ... The term 'legal science' may also be limited to systematic thinking and writing about law, as distinct from law making and application of law to practical problems, what might be better described as legal scholarship.

This definition gives emphasis to systematization and multi-perspectives in the studies of legal science. In this thesis, there is a similar emphasis in the development of jurisprudential systems science and a science of legal choice. Jurisprudential systems science is concerned not just with the systematization of the law but also with the range of systems that can be found in the law, the range of different views of each system, and the way in which these systems and views are related. Jurisprudential systems theory and analysis are developed as methodology for the science of legal choice. This systematization permits the development of multi-perspectives on law, according to

the different positions and purposes of people who seek to make informed legal decisions about their behaviour.

The term 'jurisprudence' is derived from the Latin word for lawyers, namely, 'jurisprudentes'. The Roman jurisprudentes were lawyers who, like lawyers of the English system, had a prudence about the law. They advised on human behaviour according to this wisdom which incorporated both theoretical and practical or heuristic knowledge. Their knowledge was directed in an ad hoc fashion, according to the position and purpose of the client. A comprehensive understanding of the law, its implications and applications, enabled the jurisprudentes to provide reliable information which could be acted upon. A knowledge of legal choice is implicit in the wisdom of legal practitioners. However it has never been studied systematically. A science of legal choice is a systematic study of both legal theory and legal heuristics: it is a science of jurisprudential systems which might be useful in the provision of legal services.

The purpose of science has been loosely specified, since the time of Francis Bacon, as the attainment of knowledge for the benefit of humankind. It is a domain for the advancement of human intelligence. Ex facie, it might be thought that science would be a great resource for the law. However, the law has never fully embraced a humanitarian purpose. Its punitative element has made it difficult to do so. At best, it might be thought that the purpose of the legal system is to resolve, and perhaps prevent, human conflict so that people may pursue their survival activities in a peaceful, orderly and certain fashion. Within this context the law might be regarded as beneficial to humankind. There is an approximate similarity in the purposes of science and the law. However, legal science may embrace the scientific purpose and study law for the benefit of humankind. Jurisprudential systems science and the science of legal choice are posed on this basis, although, as legal sciences, they must work through the framework of the legal system.

The legal system has had some difficulty in accommodating modern science, even the human sciences. The sciences have developed a different sort of complexity to the law and they are accompanied

by new technology which now characterises human lifestyles. The difficulty of accommodating modern science in the legal system is partly due to the way in which modern science was fashioned by the early modern scientists. As science developed from the time of Galileo, an increasing emphasis was placed upon scientific method. Unless an acceptable scientific method was used to determine knowledge, then the knowledge was not regarded as scientific. Experimentation came to be regarded as the major scientific method. Any science which did not employ experimental method was not recognised as a science by many scientists. For this reason, physics came to be regarded as the Queen of the Sciences, with chemistry as a highly respectable handmaiden. Some of the sciences, such as botany and biology, necessarily relied more on observation without rational artifice for prediction.

Psychology strove to be a science by incorporating experimentation and by orienting to the observable phenomena of behaviour instead of the mystical entities of mind and personality. Human subjectivity became a subject of scientific study. Areas of philosophy, such as ethics and reasoning also became the subject of empirical recording. The philosophical pursuit of ethics was not necessarily committed to determining knowledge for the benefit of humankind. It even questioned what this might mean. Anthropology accommodated ethics in its empirical studies of culture. Law, which was closely associated with ethics, was also made a subject of study in anthropology and also in sociology.

During the twentieth century, the experimental sciences made so many advances that it was difficult to see jurisprudence as a science. Jurists did not vigorously fashion a legal science and law sat uncomfortably between the sciences and the arts, unable to fully exploit the resources of either. At the same time, scientific knowledge ceased to be regarded as an Absolute body of wisdom and uncertainties were acknowledged. There were nuances in the physical world which could not be accounted for in monotonic theory; holistic paradigms, such as the paradigm of mechanism, could be displaced as frameworks for investigation. Standards of disproof were introduced as well as standards of proof.(12) The limits of the validity of induction were recognised. Paradoxes, such as the wave-particle paradox of quantum mechanics, reflected

the inconsistencies of different valid methodology. Thermodynamic theory committed the future to chaos, and scientific achievements, such as nuclear power, came to be regarded as major threats to human survival. Science presented neither a suitable nor a stable reinforcement for the legal system.

However, the legal system does have features which are clearly scientific. Firstly, the law uses scientific knowledge which consists of some common knowledge and some more specialised scientific knowledge. Common knowledge is scientific knowledge, insofar as it is sufficiently certain to permit reliable assumptions or predictions. Scientific knowledge which is not common knowledge, nevertheless rests on common knowledge because it uses language on that basis. Scientific knowledge may be regarded as all knowledge, including common knowledge, that is certain enough to be relied upon. It is not necessary to use all, or any particular one of the scientific methods to determine this sort of knowledge. Science, is both the pursuit and the attainment of scientific knowledge through scientific methodology.

Scientific knowledge is used in legal process, including the formulation of legal rules. The distinction between common knowledge and specialised scientific knowledge is important in the rules of evidence which provide that specialised scientific knowledge must be proved through the evidence of expert witnesses. Common knowledge is usually a matter of judicial notice. However, nowhere are the facts of common knowledge clearly stated. The extent of common knowledge seems to be bound up with the extent of commonly understood language. For instance, that people have varying heights might be common knowledge, but the height of any particular person is not common knowledge. The eye colour of a film star well known for eye colour might be common knowledge but it is not likely to be the subject of judicial notice. That a person is a film star might be a matter of judicial notice if the person is famous enough. Common knowledge is sometimes a matter of fame. Generally, in a court of law, there is no need to prove matters of common knowledge, and common sense will be received as part of a legal argument.

Although a fundamental ethic of an effective legal system is that people ought to know the law, the law itself may or may not be a matter of common knowledge. However, ignorance of the law, and mistake of law, are not defences to a legal claim. There are two paradoxes of justice which are concerned with ignorance of the law. The first paradox of justice occurs where the law is clear but a person has not informed herself or himself of the law, and acted without reference to the law, but contrary to the law. If ignorance of the law or mistake of law were a defence, there might be an incentive to be ignorant of, and make mistakes about, the law; this would undermine the legal system. So the law, fictitiously, deems itself to be common knowledge unless it provides otherwise about itself. This is not to say that it deems itself to be scientific common knowledge. A knowledge of the law does not necessarily produce human certainty. However, to the extent that it does produce human certainty, it could be thought that the law, not fictitiously, deems itself to be scientific common knowledge. Jurisprudential systems science and the science of legal choice might extend law as scientific common knowledge.

It might be considered unjust to penalize a person for a misunderstanding or breach of a law which was not known to the person. This is especially so if the person could not reasonably know the law because it was inaccessible or unpublicised. However, to allow this defence would encourage ignorance of the law and render the legal system ineffective. This would result in even greater unjustice. Therefore the law requires people to inform themselves if they want the advantages of conformity to law.

The second paradox occurs where there is no law, or no clearly stated law, to resolve a particular conflict. In some instances, a party to litigation could not be aware of the rule to be applied because the rule has not yet been formulated; the rule is only devised to settle the case. The judiciary must state a rule which, in a sense, applies retrospectively. Legislation may also be given retrospective application. It is unjust to impose legal consequences for an action or omission which did not carry those consequences at the time it occurred. This injustice is inevitable when new law is invented to resolve a conflict. Until

recently, the judiciary have denied that they make new law, perhaps to avoid acknowledgment of this inherent injustice. They have relied upon legal theory as having necessary extensions to meet new conflicts. Coherent theory, it was suggested, could only be extended in one way and all that was required, in order to know unstated law, was the intelligence to see this way. However, some extensions of legal theory depend upon lateral thinking, that is, the introduction of new principles to the theory so that extensions could be provided. If new law could not arise in this way as needed, then greater injustice would result. At these fringes of the legal system, where the law is unknown or uncertain, this paradox of justice is inevitable. The rule is determined by a selection of the least unjust result.

There is also a paradox in the ignorance of justice which rests on the limitations and diversity of human intelligence. An even greater injustice occurs where there is a rule, known and acted upon, but in litigation, this rule is overturned beause of its unjust consequences. This is not a matter of ignorance of the law. Rather it is ignorance of justice, which is an ignorance induced by the law. The law does not have a rule that laws may be disregarded if they have unjust consequences. A well entrenched rule will not be overturned even if it carries unjust consequences. The milieu of positive law, which has separated morality from law, has also separated the subject from a sense of justice. Jurisprudential systems science and the science of legal choice may consolidate and make accessible the collective human intelligence which can indicate a rational extension of the law and a more reliable method for founding rules on justice. Meanwhile, the inducement to be ignorant of justice is an inherent and necessary injustice in the legal system if justice is to be otherwise achieved in the legal system. At the fringes of the legal system, a choice of the least injustice must be made if justice is to be maintained on the whole. A fundamental choice in the legal system is to deem that the law is common knowledge, even if the law has not yet been brought into existence or if the law is to be overturned. This is clearly a fiction of the law which is used to resolve paradoxes of justice. The fiction would carry less injustice if computerized legal services were made available widely to people.

The second scientific feature of law is that it is a scientific method for achieving social control, social organisation, and social functioning. Authorized people make the law which is then knowledge that allows people to be more certain about social behaviour. Behaviour may be predicted by reference to the model of conformity to legal norms, and the model of enforcement. Thus planning for the attainment of personal goals is aided. Within the scope for human self-determination, the law assists in human survival. As a scientific method, the law is goal-directed toward the maintenance of human society. Specifically, it prevents or resolves conflict so that, generally, the achievement of some individual survival goals may be unhindered, optimized and assisted.

Finally, within the law, scientific methods are employed. The rules of evidence and procedure are concerned to ensure that facts are established and their significance is argued according to scientific method and standards. The jury system is a form of legal empiricism which establishes material facts from which to formulate rules of law. Although the law does not admit to experimentation, the rules which permit appeals and the over-ruling of precedents, and the system of legislative reform, assume an element of experimentation in the determination of cases and rules.

Other scientific features of law can be found in a closer examination of the history of the interaction of science and law. This history is set out in Chapters Two to Five. To the extent that legal information already has scientific features, there is a basis for reliable information in the development of a science of legal choice. However, further resources of science may be used to develop jurisprudential systems science and a science of legal choice so that information about legal choice, which is extracted from the certain body of primary source law, will be reliable. The resources of science may be regarded as falling into one or more of three categories:

1. ontologies of science or the descriptions of the real cosmos

2. paradigms of science or the forms which are treated as a description of the real cosmos for the time being

3. methodologies of science or the methods by which the ontologies and paradigms of science are established

These categories are not mutually exclusive. They overlap and there is a circularity, or perhaps a knotted recursion, in their spectrum. It is methodology to have an ontology, and methodology is itself an ontology. Each is a subset of the other. Paradigms may be treated as ontology and may be used as methodology. Paradigms are a subset of both ontology and methodology, and as a common subset, may link ontology and methodology: the existence of paradigms may be an ontology for the purposes of having them as methodology. This recursion is inevitable because of the relativity of the cosmos. The distinctions are used to stabilize references to relative things. They may also prevent the knotting of the ideas of scientific knowledge. Knowledge of the physical cosmos requires a stable perspective outside the physical cosmos. Metaphysics provides the range of stable perspectives through these three fundamental concepts or categories, the knotted relationships of which are both secure and flexible, as an underpinning of scientific reasoning.

Three main features of traditional legal science are evident in examining its history. They are as follows:

- natural law - an ontology
- positive law - a paradigm
- legal methodology - methodology

As in science, there is an overlap, interaction, and circularity of these categories. There may be a natural law influence in positive law and vice versa. Positive law is created, maintained and modified by legal methodologies. Both natural and positive law may be regarded as a methodology of the legal system by which court orders are derived. Legal methodology is required to determine what natural law is: the difficulty in finding such a methodology may have contributed to the preference, from the nineteenth century, for positive law over natural law. Jurisprudential systems science and the science of legal choice

may use any of these three features of traditional legal science, but they are not limited to them for their ontologies, paradigms and methodologies. Rather, they may have recourse to all the resources of science, and be used as a resource by the rest of science.

Positive law clearly demarcates primary source law as the body of information which must be studied to discover legal choice. This demarcation, in itself, provides some certainty about the law. However, considerations of natural law may be relevant to the legal decision-making processes studied in a science of legal choice. The positivist school has provided a basis for the science of legal choice by delineating primary source law as a subject of study. However, within legal science, primary source law may still be studied for its natural law origins and implications. In a science of legal choice these implications may be essential considerations. In its study of these implications, a science of legal choice may draw on natural science knowledge in the broadest scientific sense.

Jurisprudential systems science may view the traditional resources of legal science as jurisprudential systems. It may study these systems holistically as related sub-systems; or it may study each system severally. It may study any of these systems in relation to legal choice. Reasons for legal choice might lie in legal ontology, legal paradigms or legal methodology. Legal choice may be evaluated by reference to any of the resources of legal science or science.

The methods employed by science are many and various. They are used to increase certainty, and establish degrees of certainty about information. Information is given the status of scientific knowledge when there is sufficient certainty about it. The Latin origins of the term 'science', carry the connotation of knowledge with certainty. Scientific knowledge is the end result of an epistemologically sound method for attaining knowledge. The term, epistemology, has Greek origins associated with the study of what knowledge is and how people can know something. The spectrum of scientific methods includes philosophical methods. It covers the following:

- observation: the collection of data from experience and perception
- categorization: division by distinctions and similarities
- quantification: enumeration, measurement, statistics, graphs
- theorization: thorough and complete collection of data by inferential extension and arrangement
- systematization: stabilization and control by arrangement of entities according to their various relationships; modelling
- speculation: hypothesis posing further data or prediction
- experimentation: testing for verification, uniformity, constancy and further discovery
- instrumentation: use of instruments as ontologies to discover other ontologies

Any of the techniques of science may be used to develop jurisprudential systems science and a science of legal choice. In this thesis there will be an emphasis on the method of systematization. Jurisprudential systems theory and analysis will be developed as methodology for jurisprudential systems science and for the science of legal choice. Computers will also be used as instrumentation. The ontologies, paradigms and methodologies of computer science will be used to develop jurisprudential systems science and a science of legal choice.

Jurisprudential systems science and the science of legal choice are directed toward producing a more scientific legal system, consistently with the major goal of science, that is, for the benefit of humankind. A scientific legal system is a legal system which contains legal knowledge that can produce a high level of human certainty, or security in human society. The law may be examined for all its implications and presented fully as a system of legal choice. The science of legal choice is concerned to examine legal information in order to find implications relating to legal choice and in order to present legal choice fully in its various forms relevant to specific people in particular situations with particular purposes, so that these people may be more certain of their opportunities and how they may achieve what they want.

To produce a scientific legal system, it is not enough to sever law from morality so that it may be examined like the subjects of botany or biology. Nor is it enough to enlist the empirical surveys of sociology and law reform agencies to inform parliament of social problems which the law may have created or failed to cure; these problems may have arisen due to a lack of understanding of legal choices. Jurisprudential systems must be developed holistically to found the stability and control which can produce human certainty and security in human society.

A more comprehensive understanding of the application of science to law is required for the development of jurisprudential systems science, the science of legal choice, and a legal science which can fashion a scientific legal system. There are four ways of expanding legal science which are consistent with divisions of study suited to the development of jurisprudential sytems science and a science of legal choice. All four areas of study may assist in the creation of a scientific legal system which might enhance the potential of law for producing human certainty and security in human society. The four divisions of study are as follows:

1. Law as a subject of scientific study
   (a) as a field e.g. law as social engineering
   (b) within its field e.g. contract law is examined scientifically

2. Law as a science
   (a) the nature of scientific elements in law
   (b) the use of scientific elements in law

3. Scientific use of law
   (a) within the legal system:
   Rules of law are developed or applied by the legal profession and administrators to resolve or prevent conflicts, and to facilitate the attainment of human goals. Optimizing goal attainment might minimize conflict.
   (b) outside the legal system:

Rules of law might be managed and accommodated voluntarily by people, other than the legal profession and administrators, to optimize goal attainment and minimize conflict and loss e.g. commercial enterprises may adopt policies and practices using law as administrative technology.

4. Law as a methodology, paradigm, or ontology in another science
   e.g. sociology of law
   game science
   cybernetics (the science of control)

These views of science and legal science indicate how jurisprudential systems science and a science of legal choice might draw further on the resources of human intelligence and extend legal science. Jurisprudential systems science and the science of legal choice require an interpretation of science and a complex interaction of science and law which goes beyond established legal science. The concepts of science and legal science represent the broad theoretical basis for developing jurisprudential systems science and a science of legal choice. This broad theoretical basis is part of a spectrum of foundations for jurisprudential systems science and the science of legal choice. At the next stages of the spectrum lie, firstly, the range of jurisprudential systems, and, secondly, the nature of legal choice.

Jurisprudential Systems

A jurisprudential system is defined as a conceptual or verbal system which can be identified in or drawn from legal information. Although the thesis is primarily concerned with legal choice as a jurisprudential system, it is also concerned with jurisprudential systems which are the context of legal choice. There are jurisprudential systems other than systems of legal choice which nevertheless may be related in significant ways to systems of legal choice. For instance, the legal system itself might be regarded as a jurisprudential system; so too might traditional

legal theory, either broadly, or, in regard to some particular field of law. Systems of legal choice are derived from these other jurisprudential systems. The thesis poses, and explores through each Chapter, jurisprudential systems theory and analysis.

Jurisprudential systems and jurisprudential systems analysis have been implicit in juristic works since very early times. The thesis explores a range of jurisprudential systems which can be identified in legal information. The exploration begins with the history of law and its interaction with science. The history is set out in Chapters Two to Five. It reveals various jurisprudential systems. Next, in Chapter Six, there is an exploration of the human context in which jurisprudential systems might be devised for legal decision-making. In this Chapter, a general jurisprudential system called SUBMET is posed. Chapter Seven is concerned with specific jurisprudential systems for legal knowledge engineering.

The history extends, in four ways, the work of the Oxford project which was prematurely abandoned. Firstly, the period covered probes the pre-Greek period and goes beyond the Roman period. It is extended by reference to works covering later periods up to the English Judicature Act 1873. Secondly, the history is presented throughout not just as a history of legal science, but as a history of the interaction of law and science. Jurisprudential systems science and the science of legal choice are new interactions of science and law. In the history there is, thirdly, a search for jurisprudential systems and, fourthly, a search for early traces of a science of legal choice.

The history was examined to see if any evolutionary pattern could be identified, and to discover the evolutionary context of a science of legal choice. Broadly, since very early times, legal systems have been developed by reference to the overriding paradigm of ruler-rules-ruled. In a science of legal choice there is a new paradigm of choice which is proposed in this thesis. Its structure is technology-system-relativity. However, the new paradigm builds on the old paradigm. These evolutionary patterns might be regarded as jurisprudential systems of natural selection. In the evolution of human culture, there is an element of

conscious selection as well as other forms of natural selection. Human intervention in the evolution of legal systems is dealt with in the history. It is sometimes necessary to examine social and scientific evolution in order to understand the nature of the human intervention. The development of jurisprudential systems science and a science of legal choice increases the element of conscious selection in the jurisprudential systems of natural selection.

The development of a new jurisprudential paradigm for a science of legal choice, may be understood within the description of evolution given by Julian Huxley in 1954, within a decade of the destruction of Hiroshima by atomic warfare. He made the following observation about the emergence of human intelligence:

> The new phase of evolution thus opened up was characterised by a new relation between organism and its environment. The human type became a microcosm which, through its capacities for awareness, was able to incorporate increasing amounts of the macrocosm into itself, to organize them in new and richer ways, and then with their aid, to exert new and more powerful influences on the macrocosm. And the present situation represents a further highly remarkable point in the development of our planet - the critical point at which the evolutionary process, as now embodied in man, has for the first time, become aware of itself, is studying the laws of its own unfolding, and has a dawning realisation of the possibilities of its future guidance or control. In other words, evolution is on the verge of becoming internalised, conscious and self-directing.(13)

In the evolutionary analysis of the historical chapters, other jurisprudential systems were apparent. The life of the Roman legal system is compared to the life of the English legal system. There is a cyclic pattern in the life of each system, but it is cyclic in the sense of a spiral. The Roman legal system is one cycle. On the second cycle, the English cycle, there are points of departure. The points of departure may be explained as the different interactions of law with evolving science. The Roman legal system was influenced in each stage of its life cycle by different aspects of Greek science, as it was introduced into Roman culture. The English legal system was influenced by its interactions with a developing western science.

In Chapters Three to Five, the span of the Roman Legal System from the eighth century BC to the seventh century AD, a period of fifteen hundred years, is compared to the span of the English legal system from the seventh century AD to the nineteenth century AD, a period of twelve hundred years. A comparison is made of the legal systems and the nature and extent of their interaction with science. There appears to be five stages in the lives of these legal systems, each stage lasting about three hundred years. Each system begins with an early ritualistic period and progresses through a common law period, a theoretical period, a period of detailed casuistry, and, finally, a codification period. The English legal system is currently on the verge of, or in the early stages of, the codification period. Codification was mooted by jurists in the nineteenth century and the problem of a suitable form of codification was posed. Subsequently, digests such as Halsbury's Laws were produced to provide some of the benefits of codification.

The Chapters show that, although the progression of stages in each system appears to be similar, there is a major difference between the Roman and the English systems. The difference lies in the nature of the interaction of each system with science. The Roman system is characterised by classical science, and the English system is characterised by both classical and modern science. So it might be expected that English codification will be characterised by contemporary science. With the computer technology of the twentieth century, contemporary science offers a form of codification, through artificial legal intelligence, which would maintain for the English legal system the character of both classical and modern science. With the development of a science of legal choice, it might be that the English codification will be a codification of legal practice rather than law, and that it will take the form of a system of legal expert sub-systems.

The five evolutionary stages of the two legal systems are sequentially related, according to the interplay of systemic homeostasis, which is the constancy or stability of a system, and systemic heterostasis, which is the counteraction of the environmental forces of change through modification of the system. The environment of the legal system is human society through which

the forces of change prevail. The first of the evolutionary stages, the ritualistic stage, provides both a mystical socio-legal bond between subjects, which is homeostatic or stable, and repetitive public ritual which reinforces and maintains the homeostasis. As the system fails to satisfy the needs and wants of a growing number of subjects, heterostasis requires modification of the system. The ritual is developed into common law forms of action which are flexible. The requirements for stability or homeostasis arise to constrain this flexibility so that the forms of action are limited and maintained as homeostasis. Again there is a growth of environmental pressures requiring modifications to meet the unsatisfied needs and wants of subjects. Theory is used to open up the formulary limitations. Theory leads to the relativity of instances, and detailed casuistry is practised. Jurists struggle to maintain a cognitive map of a complex network of rules and meta-rules. Theoretical information becomes too voluminous and too complex for the mental capacities of the ordinary individual. Even lawyers and judges are unable to manage it. The law becomes so incomprehensible and uncertain that it begins to detach from human cognition and the realities of society. People feel alienated from their law. They can no longer gain access to it or understand its requirements and benefits. Yet they are penalised for misunderstandings and breaches. The law is perceived as manifestly unjust and ridiculous. Homeostasis breaks down.

This pre-codification situation is more crucial than the regular paradoxes of justice which are inherent in the legal system's fictions of law as common knowledge. Problems of chronic casuistry and detailed regulation, which are not at the fringes of the legal system, but are prodigious, cannot be rationalised as unavoidable paradox. In the pre-codification chaos, the legal profession, including the judiciary, the legislature, and the executive become confused about the law. The legal system is uncontrolled and social organization is in jeopardy. The heterostatic pressures that arise from excess casuistry and regulation, were dealt with in the Roman legal system by limiting theory, cases and regulation to the realms of the Justinian code.

In contemporary times, the signs of excess casuistry and regulation are evident. There is a legal information explosion due to an increasing volume and complexity of law, and there is a consequent alienation of people from the law because it exceeds their capacities for memory and mental processing. So far, the simulation of Roman codification through case digests and statutory consolidation has failed to counter these problems. Given the nature of the English legal system, the problem is likely to escalate. Governments are bound to produce an annual volume of law. The parliamentary system assumes that new law will be required each year, and that a certain amount of 'progress' can be made each year to improve the law. Judges inevitably produce an annual volume of precedents. The expansion of legal texts in the 1980's is a clear indication of the impending crisis in legal information. Many of the specialized texts have doubled in size. With a growing volume and complexity of law, legal processes are slowed and increasingly costlier. Already the cost of enforcing legal rights and duties is beyond the resources of the middle classes. Some of the poorer classes are better off as they are eligible for legal aid.

Roman codification does not suit the expectations of a technological age. The codification of English law must be accessible to people, and provide adequately for the satisfaction of human needs and wants, if it is to secure stability of the legal system for at least 300 years. Computerized legal services can be provided and seem to be emerging as the solution to the problem of the English codification stage. The development of these services requires a jurisprudential systems science and a science of legal choice.

The history was then viewed as potential resources for the development of jurisprudential systems science and a science of legal choice. The richest period for the development of human intelligence was clearly the earliest period of human civilization, including the ancient Greek period. To maintain the historical chronology, this early period is presented in Chapter Two in the form of a series of paradigms of human intelligence which might be useful in the development of the jurisprudential

systems of artificial legal intelligence which are required to store, process and retrieve information about legal choice.

Chapter Two is entitled, Early Legal Science. It covers the primitive and early Greek periods of science and legal science. During this period of development of human intelligence, primitive intelligence is expanded by Greek metaphysical intelligence. In primitive civilizations, ontologies, paradigms and methodologies were probably used as intelligent techniques without a conscious awareness that this was happening; they are implicit in the culture and technologies of early times. For instance, a spider might be observed building a web and using the web to catch food. The paradigm of the web is extracted as a net. Using this paradigm, a net is built, to catch fish. The net is a primitive technology which presupposes a mental understanding of the ontology of the spider's web, and the intelligence to extract a paradigm which can be used to solve the problem of catching fish. The formulation and use of this paradigm is an intelligent methodology. It creates greater opportunities for food and the satisfaction of hunger.

In mental processing, an ontology might be used as a paradigm or as a methodology. Likewise, a paradigm might be used as a methodology, or vice versa. Each of the three intelligent techniques, namely the use of ontology, paradigm and methodology, could be converted to either of the other two. An ontology might metamorphose to become firstly, a paradigm, and then a methodology, or vice versa. There might be some other order of the metamorphosis. The paradigm of metamorphosis which is inherent and observable in the life cycle of butterflies and frogs, could be inherent in or simulated by the human mind. Human intelligence was capable of and capable of reversing conceptual metamorphosis. However, it is unlikely that there was a conscious recognition of these imprints in the mind or of the practice of paradigmatic emulation and exploitation by the mind of the ontology of natural life cycles. The human intellect was forming but not yet aware of its own nature.

In the period of Greek philosophy, the human intellect developed a better grasp of the operations of conceptual metamorphosis. Greek

philosophers employed the primitive ontologies, paradigms and methodologies in a more flexible way, although they may not have been conscious of either the primitive techniques or the growing flexibility of their use. The flexibility developed by the Greek philosophers introduced a consciousness of metaphysics to human thought. There was a recognition of apperception, and an increased awareness of abstract and analogue thinking. For instance, Aristotle used the paradigm of a mountain, which is implicit in the early technology of pyramid tombs, to develop a metaphysical structure by which to order existences so that deductive reasoning and the rules of formal logic could locate 'bricks in the wall' relative to each other. The rules of formal logic, like the rules of geometry, maintained an order true to the hierarchy and true to physically possible worlds.

Primitive and metaphysical intelligence produced classical science which is a basis of modern science. These early forms of intelligence also characterised law and the development of legal information. The nature of primitive and metaphysical intelligence in science and in legal information must be understood in order to fashion artificial legal intelligence. Jurisprudential systems science and a science of legal choice, both of which are necessary to fashion artificial legal intelligence, must also draw on this early learning.

With all these historical views as a foundation for the development of jurisprudential systems science and a science of legal choice, certainty in the science of legal choice should be established concerning its historical context and its use of historical resources. Some aspects of the history also fashion the character of jurisprudential systems science and a science of legal choice.

General Systems Theory which was fashioned by Ludwig von Bertalanffy, an Austrian born Canadian biologist, and his disciples from 1940, is the science of organization and wholeness.(14) It defines a system as a group of related elements organized for a purpose.(15) Looser definitions do not require a system to have a purpose. Systems analysis is the first stage in the construction of a computer program. An analysis is first

required of the task which the computer is to perform. On this basis a system can be designed to ensure that the computer can carry out the task. General Systems Theory views everything either as a system or as part of a system. A general jurisprudential systems theory suggests that there is one holistic jurisprudential system which incorporates all other jurisprudential systems as sub-systems. In this context, a science of legal choice is a branch of jurisprudential systems science.

The significance of a holistic jurisprudential system is that it permits any particular jurisprudential sub-system to draw on the resources of any other jurisprudential system, in a systematic way. In Chapter Six, a general jurisprudential system is posed to capture all matters with which the law is concerned, and all the resources of human learning which might be of use in the development and application of specific jurisprudential systems, especially specific jurisprudential systems which are prepared for artificial legal intelligence projects. The system is called SURMET (SURvival METasystem). By locating the science of legal choice within this broad framework, it is possible to relate systems of legal choice to other jurisprudential systems in order to see any implications which might be useful. It is also possible to draw on the relevant resources of human learning in the determination, management and evaluation of legal choice.

Chapter Six contains an ethical exploration in the development of a general jurisprudential system. Firstly, there is an elementary examination of a natural goal-directed system which is posed as the client paradigm. The paradigm is derived from the science of psychology. It provides some behavioural perspectives of law and a goal-directed context for legal choice. Secondly, some of the resources of systems science are considered with a view to formalizing jurisprudential systems science, and finding some of the dimensions which the goal-directed client paradigm would require in order to accommodate a knowledge of legal choice and the opportunities which it contains. Then other resources of science, particularly Darwinian knowledge of how people can best survive, are used to produce an expanded client paradigm, the general jurisprudential system, SURMET, which has knowledge-based

survival ethics. SURMET is an information management system that could operate as a framework or paradigm for a science of legal choice. It could also serve the development of scientific social ethics for the management and evaluation of legal choice.

Through the system of SURMET, the satisfaction of individual needs and wants can be co ordinated relatively, for optimum individual satisfaction. People might evaluate and make legal choices through the co-ordinating resource of SURMET. It provides a contemporary scientific context for legal choice which can meet individual requirements. However, the co ordinating task will require computer aids. Computers can extend human capacity for memory and intelligent processing so that the real size and complexity of society might be managed.

To demonstrate the use of SURMET in developing specific jurisprudential systems, there is an exploration in Chapter Six, firstly of a concept of welfare equity in welfare administrative decision-making, and, secondly, a contract law information management system, CLIMS, for business. These two jurisprudential systems are systems of legal choice. Since SURMET is a goal-directed system, it is also suitable as a design aid in legal knowledge engineering. Legal expert systems are usually goal-directed in some way. SURMET is particularly useful for preparing data which explains or justifies an individual's choices. Legal knowledge engineering as well as the science of legal choice might be seen as nested in the jurisprudential system of SURMET. With this approach to the development of the science of legal choice, legal science is extended to accommodate artificial intelligence technology and the ethical challenges which it presents.

In Chapter Seven, the role of jurisprudential systems in artificial legal intelligence is considered. The recent history of legal knowledge engineering is examined in order to identify specific jurisprudential systems which have been developed or proposed in the course of constructing a variety of different legal expert systems. Because legal expert systems are specialised decision-making programs, legal choice is inherent in the jurisprudential systems of artificial legal intelligence.

Chapter Seven also contains a description of some methods of automating CLIMS and deals with the standardization of legal knowledge engineering systems.

The thesis itself and its historical content may be seen as jurisprudential systems within the framework of SURMET. Throughout the thesis there is a concern to establish systemic structures of law, even if at times these structures seem fragmentary. The thesis is largely an exploration of jurisprudential systems and a search for the foundations of a science of legal choice.

Legal Choice

The science of legal choice is defined as the scientific study of legal systems and rules of law in order to determine, manage and evaluate legal choices of behaviour. It is concerned with the choice of law and the choice within law. Within the realms of legal science, it is a scientific study because it draws on the resources of science. There has never been a science of legal choice. The historical exploration of Chapters Two to Five was made initially to find some early traces of a science of legal choice. However, none were to be found. The history covered is not just the history of legal science but the history of legal science in relation to the history of science. On this basis, some threads of learning, from both science and legal science, which might be relevant to a science of legal choice were discovered. Some deliberation about choice was found, as well as major development of some concepts which this thesis uses in the foundation of a science of legal choice, namely, mechanization, systems, and relativity. There are also precursors of a science of legal choice, namely rhetoric, practical reasoning, and philosophies of free will and freedom.

Aristotle regarded choice as a voluntary act, preceded by deliberation, and, a function of the deliberative intellect or purposive thought. He considered that a choice was reasonable if it achieved the goal of the decision-maker.(16) Although Aristotle acknowledged that there was a practical reasoning, he did not develop a metaphysics to account for heuristics and

non-monotonic aspects of experiential knowledge. Rather, he was concerned with the formal, monotonic logic of truth. Following Aristotle, philosophers became concerned with issues of freedom and free will which were often associated with debates about political and moral matters. They concentrated on Aristotle's idea of voluntary act, rather than the process of the practical deliberative intellect.

In the twentieth century, philosophers went back to Aristotle's definition and critically examined the distinction between, and continuity of, mental and physical acts, and whether or not choice can 'cause' actions.(17) Mathematicians developed decision theory which evaluated both complex truth decisions using truth tables, and, the overall result of many decision-makers, making many different decisions. Decision theory can assist policy formulation by determining the scope for holding some minority policy along with sufficient majority policies. However, decision theory does not extend to mathematical analysis of the sort of complex decision-making which is found in legal reasoning, although it might be developed further to do so.

Choice consists of alternatives from which a selection is made. Sometimes the selection depends upon the decision of someone and sometimes it does not; the course of events or non-human natural processes may determine the outcome. Where there are alternative possible worlds, human intervention may not always, either partly or wholly, control the selection of what happens. The human self-determination which is available, is exercised under the constraints of the legal system. These constraints sometimes take account of the processes of natural selection, so that there may be some choice about how to respond to the factors of natural selection. For instance, the freedoms and constraints of insurance law determine some possible responses to the risks of force majeure. Legal choice provides a framework for human choice.

Usually legal choice is considered in terms of freedoms and restraints, rights and duties, rather than in terms of the range of available alternatives and the consequences, pros and cons of any possible selection. The English legal system has a

fundamental premise of freedom. Prima facie, all human behaviour is lawful. People have rights to do whatever they choose, unless the behaviour is forbidden by law, or, unless they are required by law to behave in a certain way. Restraints or duties in some areas of human behaviour may increase opportunities or rights in other areas. For instance, a restraint on assault increases the opportunities for physical safety in all sorts of activities. A little restraint may greatly expand freedom. Rules of law qualify behavioural freedom and determine behavioural choice. Restraints and opportunities in regard to the law may add to both the range of natural alternatives and the range of natural consequences. Human selection and other forms of natural selection interact.

Since time immemorial, law has been dominated by the determinism of legal theory and other ideals of justice. Uniformity has been implicit in the prevailing rules of law. However, from a behavioural perspective, theoretical determinism and the uniformity of rules contain behavioural choices. The history which is covered in the thesis describes the evolution of the human mentality and the use of human intelligence from early to modern times when the ideas of artificial intelligence emerged. Many of the resources of science which have been discussed in the historical Chapters, provide concepts and techniques for the development of the science of legal choice. These resources have been expanded in modern science since the Judicature Act 1873, and are more useful in their enhanced form. The development and use of a science of legal choice might change the domination of legal determinism and uniformity in human life, and optimize the amount of freedom and diversity which an individual could choose to enjoy.

There are two aspects of a science of legal choice. Broadly, legal choice may be a matter of cognition or a matter of ethics. As a matter of cognition, the concern is to establish an understanding of legal alternatives and the legal consequences of each possible selection. There are also other cognitive factors which are related to ethical matters of legal choice. The ethical matters arise from two considerations where there is some human control. Firstly, what alternatives should be available ? This requires an evaluation of existing and possible legal

alternatives. In relation to this question, it is a cognitive matter to determine what is not a legal alternative, what might be a legal alternative, and what consequences of alternatives can be changed. Some lateral thinking may be required. Secondly, what selection should be made from available alternatives? This requires an evaluation of the consequences of each alternative if it were selected. Legal consequences flow from legal alternatives but there may be extended consequences which are not regarded as legal consequences. In relation to this question, it is a cognitive matter to determine factors which are relevant because they would become effective if a certain course were taken. Some hypothetical thinking may be required. Once determined, these factors may be regarded as ethical implications of legal alternatives. Selection is potentially both a cognitive and an ethical matter.

Where a selection from available choices depends upon someone's decision, an understanding of legal choice, in both its cognitive and ethical aspects, permits informed decision-making. A particular situation of choice involves practical reasoning which combines the formal logic of Aristotle and the knowledge of experience, namely, heuristics. For instance, if a lessor, in a jurisdiction that permits eviction on notice without further reason, decides to evict a tenant, then the legal consequence might be that the tenant ceases to be the rightful occupier of the premises. The landlord exercises a certain welfare power over tenants. However, the children of the tenant may suffer dislocation. The distress of the children may be a direct concern of the lessor or it may not. However, the lessor is likely to have 'bad' relations with these children long into the future when they might become adult legal decision-makers who act unfavourably toward the lessor or the lessor's children. In jurisdictions where the right to evict is limited, the law controls the possibility of 'bad' relations emerging in this way. Ethical consequences may be accounted for in legal alternatives or they may go beyond legal consequences. The network of actual and potential social behaviour, the social system, is constituted through both cognitive and ethical aspects of legal choice. Not just the legal system, but also the jurisprudential system of choice must be understood for informed legal decision-making.

The legal choice of the lessor contains the lessor's welfare powers. For instance, the lessor has powers to act in the interests of the tenants by authorising, managing, and arranging payment for repairs. A tenancy system may be seen as a system for ensuring that property is maintained even though residents are transient. People who do not want management responsibilities and need temporary tenure, have this opportunity. The lessor is paid for management services through the rental system. Tenancy law, supported by the services of estate agents, ensures that people may be fairly mobile if they so require. Where the lessor has an unqualified right to evict tenants, there is also a power to act contrary to the tenant's interests. The lessor may impose a level of mobility on tenants which is detrimental to their personal welfare. The fixed term tenure might be a legal choice for the tenant, but may not be offered as a market reality. The investment mobility of the lessor might be hindered if fixed terms reduced the number of potential buyers when the lessor wanted to sell. Legal choice determines welfare priorities, and the scope and stability of the social niches, which people hold relative to each other.

An informed decision-maker may be able to select goals from the consequences of each of the alternatives which are available. The selection of goal then determines the selection from alternatives. Where goals are imposed on, or selected in some other way by, a decision-maker, the task may become a matter of ascertaining which alternative or consequence will achieve the goal and then selecting the appropriate alternative accordingly. In either case there is a constant flow from alternatives to consequences, which is static knowledge. The decision-maker may reason with, or in the same direction as, the flow, or backwards, against the flow. The flow may be represented as the time factor which separates alternative from consequence, or the condition factor which relates the alternative, as the pre-condition or antecedent, to the consequence.

In the legal domain, the deliberative process of choice may be purely metaphysical, or, it may occur through interaction with other events. It may be that for some people, there is no deliberative process at all. They are not conscious of legal

choice and/or they give no consideration to it in the events of their lives. A consciousness of, and the use of, legal choice may be an empowering form of behaviour. Since ignorance of the law is no excuse, people may be deemed to have actual conscious control of legal decision-making. However, there are some areas of law which are open-textured, that is, incompletely specified, and therefore it is difficult to frame legal choice comprehensively so that it could be understood in behavioural terms. This is particularly so with new areas of law. There are also some areas of law which presuppose a lack of deliberation so that a lack of choice seems ostensibly part of the requirements which establish a right. The modern law of negligence is a new area of law which was initially laid down with an open texture, in very broad and fuzzy terms. It also entails a lack of deliberation on the part of the tortfeasor as the basis of the right to damages. However, some choice structure has already emerged in negligence, especially if it is couched in the choice structure of all torts, or as an alternative remedy regarding other areas of law. Primarily, there is a choice of conforming to standards of care, or risking a liability for negligence. There may be alternative ways of conforming to the standard in a given situation, each having the same consequence of no liability; likewise there may be alternative ways of breaching the standard, all leading to the end result of liability, but perhaps some producing greater liability than others.

Judicial decision-making may be viewed as behaviour which involves legal choice and which might modify legal choice. The consequence of completed litigation is one or more than one court order. The types of orders which are possible are generically few. In both the criminal and the civil jurisdictions, most orders which are made, are for the payment of money. Otherwise there are orders which require or restrain certain behaviour; in the civil jurisdiction these orders are injunctions, and in the criminal jurisdiction, these orders are usually either a gaol sentence, an attendance order, or a community service order. Otherwise, orders are of a declaratory nature. So there are, essentially, three modes of law enforcement. The orders sought by a litigant are specified in the proceedings. They limit the range of goals from which a judge may select.

The rules of law are the reasons for any particular order which is selected by the court. It may be that the relevant rule which results in the order is obvious to all. In some cases, there are issues of law to be resolved through a careful consideration of alternative rules. A judge must select relevant rules for consideration, and then select the rule or rules to be applied. In selecting the rules, the consequent court orders follow.

Except in cases where the issue of law is the only issue, the court must make findings of fact by determining alternative facts and selecting the appropriate ones. The court must do this in order to establish the rules which might apply. Litigation is concerned with human conflict, so the facts of a case usually involve facts of human behaviour. Rules are stated by courts on the basis of findings of material facts. A subsequent case which has the same material facts, must conform to the precedent. In the course of stating rules, the courts may use general and abstract terms to represent material facts. General and abstract terms sometimes suppress the behavioural content in a rule in favour of abstractions which can be applied to non-monotonic behavioural situations that nevertheless share a common priority.

For instance, interests in real estate are a condensed description of behavioural models of owners and non-owners in respect of identified land. Legal choices must be found in the behavioural models of property rights and duties. The term negligence is an abstraction which might cover many different activities, each with a common component of failure to use a certain reasonable deliberative process. The rules of negligence and negligence cases contain, respectively, a generalized description of behaviour and more precise models of particular instances of negligence. Legal choice must be derived from the descriptions of alternative behaviour which will or will not meet the required standard of care. Damages are awarded, essentially, because the tortfeasor has not behaved intelligently.

The dicta of Lord Atkins, gives the duty not to be negligent the moral appearance of care,(18) which is associated with an emotional attitude or bond. However, a failure to feel this bond

is not an ingredient which must be proved to establish an entitlement to damages; nor is it something which must be felt to avoid liability. Certain behaviour will presuppose conformity to the reasonable deliberative process, other behaviour will not. The law judges on the basis of the behaviour. However, a conscious reasonable deliberative process is required to be certain of avoiding liability.

Instead of a bond of Christian care, the court might just as easily have associated the requirement for rational thought with the cost in human and monetary terms of failure to meet this standard. However, the judiciary has long been reluctant to determine rules on the basis of economic theory. To introduce economic theory to the common law is to invite equity into the economic organisation of society. Since equity carries a maxim of equality, a redistribution of wealth might ensue to the detriment of the political and judicial powers in charge of law-making.

In 1932, when Lord Atkin formulated the law of negligence, people were motivated, in an open-ended way, by Christian morality. The judiciary appealed to Christian ideals to justify, and motivate conformity to, the new law of negligence. The Christian ethic of care might have motivated legal choice. However, motivation must be reconciled with rationalisation. The achievement of Christian ideals has never been optimized by means of rationalization of the limited resources of individuals: the Church provides no scientific management or co-ordination of the relative activities of its devotees, in order to achieve the ethical goals which it sets for individuals. Legal choice which is based on Christian ideals is not thereby integrated with a system which ensures the best method of attaining those ideals. The judiciary provides no such management services either. However, prior to 1932, the insurance industry was given legal protection in contract law. With the introduction of the law of negligence, insurance companies raised large amounts of capital. They have tempered the cost of failure to exercise care and created a limited private social security system. This amounts to a co-ordination of those who are potentially liable for failures to meet the cost of actual failures. However, the insurance industry which probably receives the most information about instances of negligence, does not set

standards to minimize risks, or ensure co-ordination of activities to minimize failures. It makes no recommendations about legal choice, nor imposes standards through the private law of contractual terms. A certain number of catastrophes are required to maintain the motivation to insure, and precluding liability if the standard is not met usually disadvantages the victim of the negligence. It is extremely difficult to rationalise human resources through a system of legal choice.

In the judicial process, there is some science of legal choice fostered in the practices of some judges. A judge may select relevant rules or create a new alternative rule. If the behavioural model which is established by the facts of a case, has no counter part in general or specific models of precedent. a new rule might be required to incorporate the new behavioural model into the law. A new rule must be consistent with other rules. Sometimes it may be necessary to abandon an old rule in order to introduce a new rule. The new rule, either alone or through other rules as well, will be given the consequence of a particular court order. In this way, a behavioural model is placed relative to other behavioural models in law. The logic of rules must be consistent with behavioural possibility and suitability. Some judges make their decisions by reference to the relative behavioural models contained in the generalizations and abstractions of the rules of law. Others prefer to intuit deciding factors by concentrating on a particular aspect of a legal concept or a particular aspect of a behavioural model without reference to the whole system of rules or the whole system of behavioural models; they deal narrowly with a case. This removes the problems of complex reasoning where rules may interlock in complex patterns or several sets of alternative behavioural models are inter-connected. Some judges admit to reasoning backwards by, firstly, selecting the order which they prefer, with little reference to the chain of legal reasoning between the evidence and the possible orders, and, secondly, finding a single path back to the evidence; this path may be found in terms of rules, behavioural models, or some combination of the two. Again, complexities are avoided.

In order to fully understand the element of legal choice in judicial decision-making, the distributive as well as the retributive model of law must be considered. The law is more than reasons for a court order. It is also a reason for certain human behaviour that follows from a court order, or that occurs outside the context of litigation. Through this behaviour, the law forges legal bonds in human relationships, social habits, social personalities, and social organisation. The law has a distributive effect. The powers of enforcement, which might be represented as the enforcement models of litigation, may be instrumental in achieving a level of compliance with the distributive models of behaviour which are to be found in the rules of law. A certain level of compliance is necessary, if these models are to serve as a reliable basis for planning future conduct. The distributive models of behaviour are sometimes referred to as legal norms. As well as being described as a behavioural model, a legal norm may be expressed as a rule or a complex of rules. The science of legal choice is concerned firstly, with the alternative behavioural models in law, or alternative behavioural legal norms, and, secondly, with the system of models which ensures the efficacy of each model. It must draw these models from the rules of law. The model of legal choice is an abstract model of the system of behavioural models, and may itself be used in the behaviour of judicial or non-judicial legal decision-making. The structure of rules of law may assist in the design of models of legal choice.

The model of legal choice, may contain sets of interlocking legal alternatives flowing to legal consequences. A decision-maker could select goals from either the range of alternatives or the range of consequences. However, there must be a consistency between the selection of goals and the choice structure. A decision-maker can not select an alternative from one set of alternatives and a consequence of another set of alternatives if these are inconsistent; the selection of an alternative necessarily carries the selection of the consequence which flows from it. The selection of one alternative from a set of alternatives may carry the consequence that the chooser then has another set of alternatives to consider. The flow of alternatives and consequences may amount to a network or an hierarchical

structure. These choice structures can be interpreted in terms of behavioural models. Hierarchical structures may contain hierarchies or priorities of behavioural models. A decision-maker may select one model of real behaviour over a period of time. However, there may be uncertainties about whether or not this model can be achieved due to variables beyond the control of the decision-maker. These variables might be due to natural events which cannot be prevented, or to the power of self-determination of another decision-maker who is involved and who may or may not be an informed decision-maker. If a variable selected as part of the decision-maker's behavioural model fails, then another behavioural model may be imposed upon or selected by the decision-maker. There may be opportunities to control the displacement of a selected model, and, the particular alternative model which will be imposed on the failure of a variable. There may also be some opportunity to select a default model. To keep optimum control, a decision-maker needs to understand the whole system of legal choice. This information could be made available in regard to any field of law, through the development of a science of legal choice.

The law can only be fully understood and evaluated by reference to the model of legal choice which it implies. A starting point for analysis of legal choice might be domestic law. Usually a person has a home base at any time, where satisfaction of the most essential human needs takes place. These most essential needs are the need for food, toileting, rest, shelter, clothing and sex. A certain amount of work takes place within and outside the home to sustain the home. Most adult individuals have to work to survive. The law offers a range of choices about a home base. Apart from the various tenures of real estate, various domestic relationships carry a legal bond. Where people choose to cohabit as spouses, there is also a range of alternatives. A man and a woman may make their own domestic arrangements, within the constraints of traditional marriage and statutory divorce law; or, they may live together in a de facto relationship with or without an express cohabitation agreement. They are free to agree the terms of a cohabitation contract, within the constraints of contract law.(19) They may agree to live together until one dies. If one party is in breach of this promise, aggravated damages for disappointment

and distress may be available to the other party. These damages are not available in traditional marriage. The right to such damages may reinforce the relationship in difficult times. A cohabitation contract allows for modification through further choice as variations are negotiated. Domestic arrangements may be made to support or suit a person's work environment. An individual may have difficulties if there is some conflict between the domestic and work requirements. Social needs and wants must also be co-ordinated with domestic and work requirements. An individual must co-ordinate the satisfaction of various needs and wants, and also co-ordinate this satisfaction with the methods of providing satisfaction. An extensive analysis of legal choice may assist in domestic planning and the attainment of an optimum quality of life.

Informed decision-making is particularly important in planning and managing business activities. Through a science of legal choice, legal information could be streamlined to facilitate business decision-making. For instance, in a contractual transaction, various alternatives arise. In the early stage of the transaction, the offeree may receive a valid contractual offer. There are five alternative responses within the potential control of the offeree, out of nine alternative possible worlds. Firstly, the offer might be accepted unconditionally, the consequence of which is that there will be a contract. Secondly, the offer might be accepted conditionally, the consequence of which is that the offeree has rejected the offer and made a counter-offer, so that negotiations are continued. Thirdly, the offer may be rejected without any counter-offer, so that negotiations may be discontinued. Fourthly, the offeree may make enquiries of the offeror to clarify the terms or circumstances of the offer; the consequence of an enquiry is that there is an opportunity for further negotiations without a rejection of the offer. Fifthly, the offeree may do nothing, in which case, the offer will lapse after a reasonable time and negotiations may be discontinued. These five alternative responses will be available for a reasonable time or until the occurrence of one of the four alternative possible worlds over which the offeree has no control. These remaining four alternatives are as follows: firstly, the offeror may revoke the offer before it is accepted; secondly, the

offeror might die; thirdly, the offeree might die, and fourthly, the offer might become unperformable due to some event beyond the control of the parties. The law is not settled on the matter of termination of an offer by the death of the offeror. However, only a party to whom an offer is made can accept it. In the event of the offeror's death, the remaining alternatives may or may not be available in law. This uncertainty about alternatives would flow on as uncertainty of their consequences. Rules of company law, would also be relevant if the offeror were a company, especially if the company went into liquidation. Where the legal capacity to contract could change after an offer, such as where a party becomes bankrupt or an enemy status, other uncontrollable possible alternatives might apply on the basis of rules of legal capacity. Flowcharts may represent the model of legal choice. On the basis of this model, a system of behavioural models might be designed. The behavioural models may have some common juncture such as a valid offer. Some may share a common juncture in alternatives and some in consequences. Flowcharts and behavioural models may form the basis of design of a computer program.

Speed of response by the offeror is a form of counter to the risks of occurrence of an uncontrolled alternative. This speed might eliminate some of the controlled alternatives but those eliminated might not be consistent with the offeree's goals anyway. An understanding of this contract choice pattern permits control over the course of negotiations; various sequences of offer, counter-offer, request for information etc. are available depending upon the requirements of the parties. A clear understanding of the legal choices by both parties enables either party to avoid the unsettled areas of law and the costs which could result from conflicts involving these uncertainties.

Traditional legalist contract theory does not present these choices coherently. In fact, the legalist presentation, which might be suited to preparing legal argument in a traditional way, sometimes makes the extraction of choice extremely difficult. The rules of law are not arranged to suit the arrangement of relative behavioural models. For instance, rules may become dislocated from the sequence of a contractual transaction. This can be seen in the rule of mistake which makes void ab initio, a contract

based on an offer which was impossible to perform. This rule has two factual elements. Firstly, the facts which make the offer impossible to perform. These occur before acceptance. If they occurred before the offer was put, then the offer would not be valid. Secondly, the discovery by the parties of their mistake; these facts occur after acceptance. If they occurred before acceptance there may be fraud or misrepresentation on the part of the party who knows of the mistake and can not possibly perform. This fraud or misprepresentation does not make the contract void ab initio; a right to sue on the contract is preserved for the innocent party, albeit at the risk of losing entitlements in certain circumstances. Legal argument could follow more closely the arrangement of behavioural models but some rhetoricians might want to disguise the situation that might become apparent if this were done. Traditionally, the mistake rule is argued metaphysically, as an element which vitiates the contract. This means that there never was a contract in law. A contract is acknowledged for the purposes of arguing that it does not exist. However, a party who wishes to plan the management of a contractual transaction needs to know the point at which the rule might first arise in a real transaction so that counter measures may be taken at the appropriate time. An offeree may run a routine check on performability before acceptance.

In legal decision-making, there is a range of possible decision-makers. One view of this range is as follows:

1. subjects of the legal system
2. non-subjects affected by the legal system
3. administrators and bureaucrats
4. paralegals
5. lawyers
6. judges and magistrates
7. parliamentarians and politicians

Specific areas of legal choice may apply to:

- all members of all seven classes
- all members of some classes
- all members of one class only

- some members of all seven classes
- some members of some classes
- some members of one class only
- a single member of each class
- a single member of each of some classes
- a single member of one class only

Within each of these seven classes of decision-makers, there are legal classes, according to the area of law which applies to the decision-making situation. Thus, in a contractual transaction, there is an offeror and an offeree. For specific sorts of contract the parties are given other legal roles, such as Buyer and Seller for a sale contract, Insurer and Insured for an insurance contract, Borrower and Lender for a loan contract, and so on. In a tenancy, which is a hybrid of contract and property interests, there is a lessor and a lessee; and in a marriage, which carries statutory status, the parties are husband and wife. The legal classes of decision-makers are described in terms of legal status or legal roles. Even the modern law of negligence was founded upon the status of 'neighbours'. In regard to a neighbour, a person has alternative behavioural models some of which will constitute negligence and some of which will not constitute negligence. There are guidelines about what to do in respect of different activities. A person who is conscious of these alternatives may optimize control of negligent liability.

Legal status carries legal roles, each of which has its own set of legal choices. Thus legal status adds many dimensions to legal choice. The interlinking of roles constitutes the interlinking of the choices attaching to these roles. The freedoms, rights and duties of legal status determine the legal conduct and scripts of the behavioural model fashioned by law. The interlocking of the conduct and scripts of various roles amounts to the theatre of legal choice. This theatre is a design aid for legal expert systems. Systems may be built to advice on the various perspectives of different legal roles. Through legal status, the law contains a system of related rights and duties which provide a framework for human relationships and human interaction. Parties in a legal relationship may have common and/or different goals which may direct their conduct toward each other, and may involve

third parties. For instance, in a contract for the sale of goods, the buyer's goal is to obtain the goods from the seller, and the seller's goal is to obtain the price from the buyer. There may be subsidiary goals or targets which will assist them to achieve this. Thus, the seller may have a subsidiary goal of delivery to the buyer and insurance to cover loss in transit. Decisions to take up or not take up legal rights and duties, to exercise legal rights or carry out legal duties in a certain way, or to not exercise legal rights or carry out legal duties, are legal decisions. Legal rights and duties are vehicles of human choice and human behaviour.

Legal choice represents opportunities for the determination and realisation of goals by individuals in society. If people are not fully informed of their legal choices, then they may not be aware of their opportunities in a free society, and nor could they comprehensively criticize a lack of opportunities. Before there can be any evaluation of existing legal choice, the cognitive matters must first be established. It is necessary to know the legal and ethical alternatives and the legal and ethical consequences of any selection before the possible selections can be evaluated relatively. Through legal choice, there is scope for both diverse and uniform ethics, so that the nature of human survival and the evolution of human life may be determined by full and intelligent use of the scope for human self-determination.

A science of legal choice is necessary in legal knowledge engineering. Most legal expert systems are concerned with automating legal choice as legal decision-making. If legal choice is the subject of legal knowledge engineering, then computer aids may be constructed to provide people with appropriate access to legal information about their choices and the opportunities which they provide for satisfaction of personal needs and wants. In Chapter Seven, the nature of legal choice in artificial legal intelligence is demonstrated historically and through the development of CLIMS (Contract Law Information Management System) as a contract law expert system.

The discipline of artificial legal intelligence requires a clear and precise formulation of legal choice. If artificial

intelligence technology is used as the form of English or international codification of law, then a science of legal choice is essential to codification. The importance of choice in artificial legal intelligence reflects the nature of human intelligence. In the processes of making a selection, human intelligence may be seen and evaluated. There is a recognition in the field of legal knowledge engineering that the discipline required in the tasks of legal knowledge engineering, produces a clearer, more extensive, and more controllable view of the law. This recognition was clearly stated by Donald H. Berman in his invited talk, The Marriage of AI and Law - a New Analytical Jurisprudence, given in 1989 at the opening of the Second International Conference on Artificial Intelligence and Law.(20)

More aspects and more perspectives of the law are discovered as a legal expert program is constructed and confined so that it will work accurately. The computer is like an empty mental space and nothing can be taken for granted or left unstated, if it is relevant. A raised consciousness of the law occurs. From this raised level, new opportunities for human intelligence appear. Significantly, there is a clearer view of intelligent ethics in relation to the law. The discipline of artificial intelligence which must mirror human intelligence, raises human consciousness about intelligence and creates a spiral of escalating intelligence.

Conclusion

The science of legal choice and jurisprudential systems science are developments of legal science which entail an enrichment of legal science through other sciences. The two sciences overlap in the areas of jurisprudential systems of legal choice and choice of jurisprudential systems. Jurisprudential systems of legal choice are concerned with the choices which the law envisages or allows, and could be regarded as micro legal choice. Choice of jurisprudential systems, includes the choice of legal system or the choice of modifications in the legal system, and might be regarded as macro legal choice. In both the micro and macro domains, legal choice covers both the processes of conscious and natural selection. Jurisprudential systems science is essential to

a science of legal choice and vice versa. The thesis explores an historical background and a common goal-directed context for the two sciences. Within the framework of SURMET, information systems may be designed to provide people with appropriate legal information for their purposes. These systems may contain specific advise on legal choices. To facilitate access to this information, intelligent computer programs may be constructed to simulate legal services.

The interaction of science and law in the development of jurisprudential systems science and a science of legal choice, in this thesis, is extensive. Not only are the resources of science used in the development of the two fields of legal science but these developments add to the sciences on which they draw. Artificial legal intelligence which is enhanced by jurisprudential systems science and the science of legal choice is a branch of artificial intelligence. The thesis uses computer science and seeks to establish jurisprudential systems theory and analysis, and some of the foundations of a science of legal choice within the field of artificial legal intelligence. The client paradigm draws on the science of psychology and forms the basis for a cognitive system which adds to the systems studies in psychology.

In drawing on the resources of human intelligence which exist in science, the law might be made more accessible to the ordinary person. At the same time, the law need not be reduced to the capacities of some average person. It may be maintained and developed by a collective of specialists to suit the requirements of a vast and complex society of mobile people. The collective of specialists who produced the ancient Justinian code did not have the scientific resources which are available to the English legal system and which the English legal system has helped to promote. A computer codification need not be adopted as the law. It may be used as a new form of customary law.

The Darwinian paradigm of human psychology is probably as ancient as the species. Its constancy may make it a suitable basis for a conscious intelligent information system by which to co-ordinate the co-adaptation of persons belonging to human society. Science has also been established as the constant manifestation of human

intelligence which now characterises, irretrievably, the lifestyle of modern humankind. Law, too, is ancient as a method of human survival, but it has not before been fully developed to serve in the intelligent system of human survival. With the contemporary resources of science, especially artificial intelligence, law can now be developed as an intelligent survival system. The informed decision-making which such a system could make possible, might promote conscious selection as a control over natural selection to produce greater certainty in the advancement of human civilization.

Footnotes

(1) Science in History, Volume 1, The M.I.T. Press, Cambridge, Massachusetts, Illustrated Edition, 1969, 1983 Reprint, page 30.

(2) Ibid. page 31.

(3) Ibid.

(4) Ibid. page 35.

(5) Ibid. page 41.

(6) Ibid. page 46.

(7) Ibid. page 56.

(8) See for instance, Amos, S., The Science of Jurisprudence, Longmans Green & Co., London, England, 1872; Reddie, J., Inquiries Elementary and Historical in the Science of Law, Longman, Orme Brown Green and Longmans, London, England, 1840.

(9) Clarendon Press, Oxford, England, page 1.

(10) Ibid.

(11) Clarendon Press, Oxford, England, page 1.

(12) See Popper, K.R., The Logic of Scientific Discovery, Hutchinson, London, England, 1959.

(13) Huxley, J., Hardy, A.C., and Ford, E.B. (eds.), The Evolutionary Process, George Allen and Unwin, London, England, 1954, page 13.

(14) Bertalanffy, L. Von, General Systems Theory: Foundations, Development, Applications, Penguin Press, London, England, 1968. See also: Laszlo, E., System Structure and Experience. Toward a Scientific Theory of Mind, Gordon and Breach Science Publishers, New York, U.S.A., 1969; Laszlo, E. Introduction to Systems Philosophy: Toward a New Paradigm of Contemporary

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(15) See definition of 'system' in Bullock, A. and Stallybrass, O. (eds.), The Fontana Dictionary of Modern Thought, Fontana/ Collins, London, England, 1977.

(16) Nichomachean Ethics Book 111.

(17) See Franks, O.S., Choice, P.A.S.(1933-34); Evans, J.L., Choice, Philosophical Quarterly (1955); Glasgow, W.D., On Choosing, Analysis (1957) and The Concept of Choosing, Analysis (1960), and Daveney, T.F., Choosing, Mind Oct. 1964.

(18) Donoghue v Stevenson [1932] A.C. 562, 580; [1932] All E.R. 1, 11.

(19) See Barton, C., Cohabitation Contracts, Gower Publishing Co. Ltd., Aldershot, England, 1985; Gray, P.N., A New Lease of Life: Preceedent for a Cohabitation Contract, 123 New Law Journal, 591, 596,(1973).

(20) Held at Vancouver, Canada. The talk was not a published paper of the Conference proceedings.

CHAPTER TWO

EARLY LEGAL SCIENCE

Introduction

The Primitive Period

The Greek Period

Conclusion

Introduction

Every rule of law is paradigmatic. Its form is a paradigm, and so is its content. Usually, a rule of law describes in general and sometimes in abstract terms, the essential or material facts which will carry a prescribed jurisprudential consequence. To understand how the rules fit together, there must be an understanding of how the paradigms fit together. This understanding is essential in legal knowledge engineering, especially in building the user interface and in tasks requiring an evaluation of the law. In the written law of very early civilizations, rules were clearly stated, using simple paradigms. Some of these provisions are today regarded as Draconian. However, the reason that they are considered Draconian is not because they used simple paradigms. Rather, they are Draconian because of the severe penalties which they imposed. With the rise of Greek philosophy, there was a search for the paradigms of justice, ideal personalities and an ideal social organisation. Legal judgements were delivered through the filter of arguments which employed philosophical paradigms. Contemporary English law is a mixture of practical and philosophical paradigms. In order to discover, evaluate and manage its paradigms of legal choice, the practical and philosophical paradigms must be considered.

This Chapter examines two periods of history, a primitive period and the Greek period. More is known of the latter so the coverage is more extensive. The historical examination is concerned with some of the paradigms which are manifest, as human intelligence, in early science and law. These paradigms were probably drawn from ontologies and used as methodologies. However, the speculation or logic required to establish how the paradigms may have been drawn from ontologies and used as methodologiess, is not a major concern in this work. In this period, there was no theory of paradigms or conscious awareness in terms of paradigm. Nevertheless, the thought and practices of the periods can be interpreted as paradigmatic. Such an interpretation assists understanding of the interaction and overlap of science and law. However, it is important to remember that paradigms exist in the realities which may be framed as ontologies and methodologies. The law is formulated as paradigms as a method of preserving law

so that it can be applied to real fact situations, which have corresponding paradigms, as required.

Thomas S. Kuhn, in his book, The Structure of Scientific Revolutions,(1) put forward the idea that communities at any time have a collection of paradigms, represented in their shared beliefs and their core of solved problems and techniques. He makes the following observation about the paradigms of the scientific community:

> Scientists work from models acquired through education and through subsequent exposure to the literature often without quite knowing or needing to know what characteristics have given these models the status of community paradigms.(2)

Kuhn was concerned to establish an awareness of the limitations of scientific investigation due to the underlying structures and assumptions which may not be questioned. The legal system is also subject to underlying structures and assumptions which may require revision. It was also pointed out by Kuhn that community paradigms may be abandoned, or substantially modified or supplemented if they cease to be workable. Peter Goodrich has considered Kuhn's views in relation to the legal system by examining the contradictions in legal theory which have accumulated to make it unworkable.(3) This thesis is mainly concerned with the substantial supplementation of legal theory through the paradigms of jurisprudential systems science and a science of legal choice, as new working paradigms of the legal system. Incorporated in legal intelligence are jurisdprudential systems and an understanding of legal choice and informed legal decision-making. Emphasis may now be given to this view of legal knowledge. A substantial supplementation of paradigms in the legal system must be established from the very broadest views available. This Chapter is concerned with the paradigms of human intelligence, especially as they occur in legal intelligence, so that they may be reviewed from time to time and used where necessary in the design of a computer environment for the legal domain, and specific legal expert systems. If legal expert systems are to be constructed for the benefit of lay users, the paradigms of human intelligence itself must be understood from a

viewpoint which will permit the development and programming of artificial legal intelligence.

In the history of human intelligence, law and science have used common paradigms of human intelligence, and, through the exchange of paradigms, both law and science have struggled to determine whether and, if so, how, human society might be made more secure. Modern science, law, and human intelligence have been shaped by the early ontologies, paradigms and methodologies. They constitute major resources and limitations for human survival. The thesis is concerned to establish further potential in the use of these resources to develop the certainty and quality of human survival. Legal knowledge engineering and artificial legal intelligence technology should have regard to all available resources to ensure that the fullest range of legal expert systems can be offered to users. The paradigms of intelligence assist in an holistic systematization of rhetorical perspectives of law, all or any of which perspectives may be used in the determination, management or evaluation of legal choice.

The paradigms which are identified in this Chapter are dealt with, approximately in the chronological order and context in which they were posed, so that it is possible to glean the dialectic of philosophers across the centuries as they expanded the resources of human intelligence. It is also possible, in this way, to understand the interaction of law and science from very early times. Sometimes this order and this context itself adds to an ontology, paradigm or methodology. In ascertaining historical facts, throughout the thesis, the information presented by historical authors is treated at face value. The accuracy of the historical account is not considered. Such a study is beyond the scope of this work, although it might extend the ideas of the thesis. However, matters which, erroneously, have been thought to exist, and therefore have been acted upon, might be as significant as existent matters which have been acted upon; ideas in history may also be systemically useful whether or not they represent something that has existed, and whether or not they have been acted upon accordingly.

The Primitive Period

Primitive paradigms may be found in the various practices and produce of early cultures. Despite the growing wealth of information from anthropological and archeological studies, it is apparent that only fragments of early cultures can be glimpsed. Some major losses of information have been discovered in the course of investigations, such as the losses which occured in the destruction of the Minoan civilization in about 1400 B.C., probably due to an earthquake, the loss of an encyclopaedic history in thirty three volumes written by a Greek women, Pamphyla in the first century A.D., and the losses which occured in the destruction of the library at Alexandria by the orders of the Caliph Omar in 642 A.D. Evidence of very ancient civilizations in Australia has recently been discovered, and in Europe, there has been a recent discovery of what appears to be a prosperous town of 8,000 B.C. at Lipesky Var on the Danube. Other fragments of history, such as Stonehenge and evidence of Etruscan civilization in Italy indicate that there is a great deal of missing information. In law, there are also losses from the Roman period such as the lost work of Cicero, De iure civili in artem, and the lost works of the Berytean (now Beirut) law professors of the age of Justinian.

Little is known of the migration of peoples which might have carried learning. If further information were available, it might be possible to examine the global gradation of variations in human culture. As minorities discovered new metaphysical horizons, they may have migrated to find or found societies where their views could prevail. Even now it is interesting to compare the variation of thought, from Australian aboriginal culture, moving west, through Indian culture, to European culture. The aboriginal culture excelled in its affinity with the environment. No place was depleted of resources or polluted by over-occupation. Tribes were itinerant and constantly refreshed by the visual changes of their journeys. Even their main hunting weapon, the boomerang, disclosed a masterly, if not scientific, understanding of the nature of the physical world. In terms of modern scientific theory, it presupposes an understanding of aerodynamics. They regarded dreaming as the origins of their intelligence and

culture. In India, permanent settlement was practised and mastery of the cosmos was pursued through sensual meditation, a form of conscious dreaming and perception of the nature of energy. In Europe, permanent settlement with intermittent migration became customary. Emphasis was placed on rational contemplation in order to understand the world. Rational contemplation is concerned with the minutiae of discrete entities, their order, and the natural laws in the universe that provide the key to human understanding and control of the world.

Memory and interest underlie human intelligence. It may be that memory and the ability to process memory produces dreaming, and that, in turn, the experience of dreaming produces a consciousness of alternative hypothetical worlds or realities. Human beings can imagine the world independent of their own real time situations. This imagination leads the human intelligence to paradigms of infinity and eternity. Memory and imagination also produces the experience of a consciousness separate from physical reality, a paradigm of mind. Human beings have a conscious curiosity about themselves and their environment. While sleep and dreaming may be indications of the unconscious and subconscious domains of intelligence, curiosity and experience are evidence of its conscious domain. The interaction and combination of aspects of the conscious and non-conscious domains of intelligence, produce further manifestations of human intelligence. Jurisprudential systems ultimately rest on this paradigm of fragile human intelligence; legal choice must be suited to it.

Both inherent human characteristics and environmental experiences probably shaped early conscious and unconscious ontologies, paradigms and methodologies, including ontologies, paradigms and methodologies of the mind itself. The experience of seeing reflections in a pond might have provided a further paradigm for understanding the mind. The word reflection is used commonly for reflections in water and for mental contemplation. The importance of this paradigm is immortalized in the Greek myth of Narcissus. A human being has the ability to process different experiences where these experiences share a common paradigm; this is the process of analogy.

Societal communication habits permitted the collection of experience so that it could be further processed in a cultural dialogue. In this cultural dialogue there was a pooling of consciousness of real and hypothetical worlds which probably produced more than the sum of the several contributions. As ideas combined, no doubt new ideas and new arrangements of ideas were posed. The human imagination and ability to speculate probably led to the many primitive inventions of these early times. Language, counting, mythology, superstition, ritual, and law were fashioned as well as a variety of useful implements. Although it is difficult to make assumptions on the basis of the limited evidence of early cultures, nevertheless, these early inventions indicate something of the ontologies, paradigms and methodologies that were the conscious and unconscious metaphysical growth of primitive human intelligence.

Early settlements flourished along the banks of large river systems such as the Tigris, the Euphrates, the Nile and the Ganges. Human intelligence may have been imprinted with the overall form of its physical environment.(4) A river paradigm can certainly be identified in legal knowledge, as will be shown in Chapter Seven, as a major proposal of this thesis. The river paradigm is identified as a major metaphysical structure for determining, managing and evaluating legal choice. With settlement, crops were cultivated. Permanent buildings were constructed. Cities grew up as the population increased. The size of constructions increased. Architectural and town planning developed. Storage, a sort of physical 'memory', came with the reaping of crops. Social organisation became more complex for stationary lifestyles. Human mental faculties were required to produce and deal with these advances in human life.

Irrespective of empirical research into early human life, there is a logical sequence required in the development of human inventions and artefacts. Just as the cart did not come before the horse, so metal work did not come before fire. The development of human intelligence can be traced by reference to a necessary logical sequence. In this Chapter, major conscious or unconscious paradigms of primitive intelligence are grouped under the categories of inventions and artefacts, namely, language,

counting, implements, mythology, superstition, ritual, and law. Within each category there is some evidence of logical sequence but no attempt is made to establish a rigorous, comprehensive logical sequence. Such an analysis might be required for a more specific study. These major paradigms contain some of the fundamental paradigms on which the legal system is based.

Upon examination of the major paradigm of each category, clusters of sub-paradigms may be found. Community paradigms take on the structure of a crystal of mirrors, rather than a single reflection in a pond. There might be some logical sequence in the cluster. Also, the logical progress in one category may have been due to interaction with the resources or logical progress of another category. The system of paradigms and any associated ontology or methodology, may be regarded as primitive paradigms for a science of legal choice and legal knowledge engineering. Some of these primitive paradigms can be discovered in modern legal information and are used in artificial intelligence design techniques. It might be possible to specify and systematize jurisprudential primitives and their use. Such an exercise is beyond the scope of this thesis which merely explores the field and raises the potential in this approach.

The Paradigm of 1. Language

Broadly, language entails a paradigm of signs or symbols, which presupposes or contains both a paradigm of meaning, and a methodology of using signs or symbols to represent or notify something. Perhaps the primitive language paradigm which is closest to the most elementary computer language, microcode, is contained in Australian aboriginal art which has undergone closer investigation in recent times. The various formations of dots which surround recognisable hieroglyphics, sometimes arranged in lined columns or other patterns, are a form of writing; the position of each dot in relation to each other dot and in relation to the lines of demarcation and the hieroglyphic drawing, signifies a particular meaning.

An analysis of language reveals clusters of sub-paradigms which are studied as fields of linguistics and as linguistic philosophy.

Signs or symbols must have definitions. These definitions particularize paradigms. In a sense, semantics is a study of paradigms. Through language, paradigms may be freed from their realities and used as methodology in relation to some other reality. In his philosophical study, The Miraculous Birth of Language, R.A. Wilson, examines the space-time paradigm in language.

> To accomplish this task of elaborating a new supra-sensuous world, patterned after the sensuous world of nature, man, with his newly emerged conscious mind, had to have for his new world-building material supra-sensuous symbols, freed, in some way or other, from the sense-limiting media of space and time. Specifically, he required time-symbols lifted above the evanescence of time, and space-symbols released from the fixity of space.(5)
>
> Language by conventionalization and by amalgamation of the forms of time and space is freed from the limits of both; and in language, and in language alone, the mind has attained its full freedom, has created an efficient instrument for the elaboration of its new world. Hence all the intercourse of life is carried on in language as it alone expresses freely the double world of space and time in which man lives.(6)

It is not clear exactly what Wilson meant by 'amalgamation of the forms of time and space' in language. Language is certainly used to model whole or fragmented things and events which occur in real time and space so that they may be conveyed to people. It makes possible generalizations, abstractions and fictions. The amalgamation referred to by Wilson might require unravelling in order to program artificial legal intelligence.

Human communications generally presuppose mental space and various time frames. Some meaning is concerned with actual events, some with hypothetical matters, and some relates knowledge which is an aggregate of past realities projected into the future. Knowledge statements may take a contingent rule form, such as 'if x then p', or, they may be expressed as generalizations, such as 'all x are p'. For example, a knowledge statement in contract law might be expressed as, 'if there is a valid contract then it will be enforced', or as, 'all valid contracts are enforceable'. The sense introduced by the verbs, 'may' and 'might', compound

permission, freedom and uncertainty about the future. Where compounds of meaning contain potential ambiguity, an intelligent program must clarify the ambiguity. The metaphysical primitives of language must be understood in order to build a computer language or program which can deal with natural human language. In addition to the problems of primitives in language, a legal knowledge engineer is concerned with the primitives of legal language, especially the generalizations, abstractions, and fictions which are either defined with gaps, that is, open-textured, or not clear in their boundaries, that is, fuzzy.

Some computer scientists take the view that the difficulty of dealing with meaning in language is too great to produce a program which can deal with natural language. They are especially opposed to the construction of lay user legal expert systems. This school is here termed the J.B. Priestly School, since the thinking of its adherents reflects the views of J.B. Priestly which were popular in the 1950's, when the members of this school of thought were young adults and likely to have been greatly influenced by Priestly's views. As children they had not enjoyed the benefits of refrigerators, television, and the family car. Priestly warned of social dangers in mechanization.

Certainly the task of emulating human meaning is extremely difficult. It could not be done within the framework of current levels of understanding of the problem. Much innovative development would be required. However, lawyers communicate with lay people in their daily work and part of the skills of legal practice is to translate legal meaning to lay people. If legal meaning could not be conveyed to lay people, then the legal system would be ineffectual. It may be that some empirical study of practitioners' skills and client forms of communication will have to be undertaken. It may also be that contemporary language should be more precisely developed, or that people who wish to take advantage of legal expert systems should learn to communicate with the program correctly.

The Paradigm of 2. Counting

The early human practices of collecting, accumulating, and valuing things may have provided a basis for a counting paradigm. This paradigm covers a cluster of sub-paradigms such as lists, enumeration, measurement, addition and multiplication, subtraction and division, accounting, and monotonic and non-monotonic calculation according to algorithms. Implicit in the counting paradigm are the distinctions which create discrete entities, and rules about ordering. Tools were invented to assist counting and signs were developed to represent numbers and forms of calculation.

Joseph McCabe describes the ancient civilization of Babylon (now Iraq), in his book, The Evolution of Civilization.(7) Astronomy and elementary mathematics (square and cube roots and fractions) were developed in Babylon, geometry (literally, earth measurement) in Egypt, and navigation in Phoenicia (now in Syria). The early legal systems used counting to reckon relative entitlements according to universal rules of law. It was common to prescribe penalties in terms of quantities of compensation. For example, Rule 209 of the Hammurabi Code of Babylon, c.2090 B.C., according to the translation of Chilperic Edwards states as follows:

> If a man strike the daughter of a Freeman and cause her foetus to fall, he shall pay ten shekels of silver for her foetus.(8)

Some penalties presribed a quantity of grain or stock. The mathematical-juristic paradigm of equality was implicit in penalties of mutilation such as the eye for an eye provisions.

The Paradigms of 3. Artefacts
4. Useful Implements

The paradigms of decoration and tool are implicit in primitive artefacts and implements. Artefacts such as decorative statues, demonstrate experimentation with paradigms. The paradigm of artefacts is tantamount to a paradigm of analogy. Art is the recognition of a paradigm and its reproduction in an artistic medium. Scientific methodology is inherent in early technological

activities which produced inventions. Discoveries are confirmed by repetition of an inventive or manufacturing process. The paradigm of precedent is inherent in this practice. Deliberate variations in the process constitute experimentation. Speculation and the formation of hypotheses are incorporated in the selection of an original or alternative process. Information about the constancy of nature which could be controlled by human intervention expanded through these practical activities and provided a basis for expectations, predictions and planning. The paradigms of prediction and planning were given a scientific context.

Some of the earliest paradigms of mental faculties are represented in the inventions of nets, weaving, scales for balancing weights, canal cutting, the storage and distribution of surplus production, modelling clay, moulding of metals, sailing, navigation by sun and stars, mapping, surveying and plans to scale, joinery, wheels and bearings, doors, levers and pulleys, the bow and arrow, bricklaying, pyramids, and the calendar. Language, and the various forms of counting no doubt developed along with these thought paradigms as knowledge and skills increased. The paradigms used in early inventions may have been derived from environmental images such as the spider's web, the bird's woven nest, logs in a see-saw position, soil erosion by water, the hoarding of food by ants, foot imprints in mud that might fill with water, the passage of a leaf blown across a puddle, and so on. The paradigm of relative positions is implicit in navigation and surveying; the paradigms of balance and equality are essential to scales; the paradigms of fit and interlocking are evident in joinery, and so on. Human intelligence may be, not only imprinted, but also moulded by interaction with its physical environment. Environmental images and interactions may still be a source of useful paradigms. The paradigms implicit in theory can be recognised in primitive technology. Other inventions may have developed from the emulation of several environmental images together, some of which might be used cumulatively. The combined use of paradigms is also still a potential source of invention. Primitive environmental images such as a web or net have been used metaphysically to structure knowledge to suit the processing

environment of computer hardware. This is discussed in Chapter Seven. Legal knowledge also may be treated in this way.

As curiosity and imagination led to hypotheses and goals, so methodology was needed and developed to test the hypotheses or attain the goals. Scientific activities could be seen to escalate from the creation of primitive stone implements and artefacts, fire and cooking utensils to the construction of cities, ships and, with the invention of the wheel, carriages. In this escalation, the evolution of human intelligence is apparent. A primitive curiosity promoted a vast scientific imagination. As methodology was developed, new aspects of ontology appeared. From these new aspects of ontology, further developments in methodology could be made. Bernal states this simply as follows:

> Through the practice of tool making and tool using, men learned the mechanical properties of many natural products, and thus laid the basis of physical science.(9)

The full impact of this statement might be appreciated if it is applied to the development and use of the boomerang which depends upon a delicate conformity to aerodynamic principles both in its design and its use. The basis for chemistry, claims Bernal, lies in culinary practices.

> Further, once containers which could hold liquids for long periods were in use, the slower chemical changes of fermentation could be noted and used. From this new knowledge came, ultimately, the general idea of transforming materials by dipping or embedding them in reagents of which were the first triumphs of the arts of the tanner and the dyer. Thus already in the Old Stone Age the set of practical recipes was built up from which rational chemistry was to arise.(10)

It is also suggested by Bernal that the paradigm of cause and effect was grasped with the introduction of agriculture.(11) For the first time, there was a long interval between productive labour and the rewards with the fruition of the crop. This paradigm of indirect benefits may have provided the basis for fashioning the division of labour, and social organisation through the particulars of rules of law. Transformations in nature were observable with the seasons and the aging processes which affected

life and the environment. Human control over transformations in the creation of new entities or artifacts increased with the early chemistry which extracted metals such as gold and silver. There was an association of the paradigms of transformation and purification in this activity.

In the first of the four volumes of his Science in History, published in 1965, Bernal describes the extent of human inventions and civilizations during early times.(12) He is particularly concerned to establish the importance of human tradition in the development of science. The learning practices which applied to expand and transmit early technology, were also used in the development of superstition, mythology and ritual. Developments in technology and 'dreaming experiments' interacted. The accumulation of information, including law, as a body of human learning, passed from generation to generation by educational practices. As it passed, it evolved through the contributions of educators and inventors from time to time.

The Paradigms of

5. Mythology
6. Superstition
7. Ritual

The paradigm of signs is also implicit in mythology and superstition. Certain events were regarded as a sign of some other impending event and a warning that counter measures should be taken. In signs there is a basis for the command paradigm, 'if x, then do y, or else z'. In modern law, strategic control might be formulated in commands such as, 'if you are a party to a valid contract, perform your obligations or else you may have to pay damages'. Cause and effect, and also control, could be made out in the command paradigm. H.G. Wells makes some interesting observations about this in his book, A Short History of the World.

> There is no sort of savage so low as not to have a kind of science of cause and effect. But primitive man was not very critical of his associations of cause with effect; he very easily connected an effect with something quite alien to its cause. 'You do so and so,' he said, 'and so and so happens.' You give a child a certain berry and it dies. You eat the heart of a valiant enemy and you become strong. There we have two bits of cause and

> effect association, one true, one false. We call the system of cause and effect in the mind of a savage, Fetish; but Fetish is simply savage science.(13)

The primitive scientist, he said,

> ...felt his way to effectual practice through a multitude of trials and misconceptions, with fantastic and unnecessary elaborations and false interpretations at every turn.(14)

Wells links law and science in primitive times in two statements. Firstly, he says:

> The early priest was really not so much a religious man as a man of applied science.(15)

This is followed by a description of the priest-ruler, common in many early civilizations.

> ...the priest ruler was the greatest, most splendid of beings.(16)

The rule and command paradigms could also be viewed as paradigms of hypothesis. Superstition might be seen as an early science whereby hypotheses were adopted as beliefs and rituals tested the beliefs. Ritual formed the basis for an elaboration of both primitive scientific method and legal procedure. It might be viewed as a paradigm of constancy or stability. Myths amounted to fictitious stories, but they contained a paradigm of coherence. Mythological fiction provided an explanation for superstition, ritual, and natural phenomena. These primitive practices contain some of the characteristics of scientific experimentation and explanation. Primitive mythology, superstition and ritual may be regarded as precursors or aberrations of scientific thinking. As a trilogy, they may be the precursor of the framework of a legal system containing legal theory, coercion and procedure.

A detailed account of ancient superstitions and mythologies is contained in Frazer's monumental work, The Golden Bough, published in 1922.(17) From his accounts, it would seem that the purpose of superstitious experimentation and practices was to discover the requirements of supernatural powers, which might assist humans to

control and improve their chances of survival. There was an attempt to identify signs of what was to come, or pose hypotheses through mythological fiction, and to reproduce favourable signs, or meet the requirements suggested by the myth, in order to ensure favourable consequences. What is remarkable is the great variety and number of myths and superstitious practices. However, some practices had common elements which suggested a common paradigm. For instance the practice of making human sacrifices to ensure a successful crop, was carried out in various ways in many parts of the world. Frazer gives an account of another form of sacrifice to the Syrian goddess of fertility, Astarte of Hierapolis.

> The greatest festival of the year at Hierapolis fell at the beginning of spring, when multitudes thronged to the sanctuary from Syria and the regions round about. While the flutes played, the drums beat, and the eunuch priests slashed themselves with knives, the religious excitement gradually spread like a wave among the crowd of onlookers, and many a one did that which he little thought to do when he came as a holiday spectator to the festival. For man after man, his veins throbbing with the music, his eyes fascinated by the sight of the streaming blood, flung his garments from him, leaped forth with a shout, and seizing one of the swords which stood ready for the purpose, castrated himself on the spot.(18)

The myth of Astarte promised the man a mystical union with the goddess which would result in a good crop from the soil. The practices of the festival probably served to control sexually troublesome people. Through primitive paradigms of myth, superstition, and religion, social control was achieved.

The early human mental capacity for ideas can be gauged from the diversity and extent of primitive fictitious thought. The Larousse Encyclopaedia of Mythology also contains an extensive coverage of mythology from parts of the world other than Australia.(19) The anthropological study of the mythology of the Australian aborigines has been promoted since federal legislation established an entitlement to land rights on proof of certain traditional associations with the land. Early aboriginal studies may be found in the work of Ashley Montagu, The Natural Superiority of Women, where superstitious practices, such as the subimsision of adolescent males at initiation ceremonies in order

to simulate the cleansing process of menstruation, are put forward as evidence of irrational cultural experiments.(20)

The violence, inhumanity, injustices, and social subterfuge of early primitive rites are part of the origins of modern systems of justice and science. Superstition, with its associated ritual and mythology is an early form of customary law. The evolution of science and the English legal system may be a progress from barbaric characteristics toward their opposites. Perhaps the separation of science and law was necessary in order to assist this progress. The law also went through a long period of banning many superstitious practices. Heresy and witchcraft were once severely punished. However, nowadays there is freedom to practice social behaviour which produces, in the psychological state, paradigms of barbaric physical cruelty. The law, which favours an objective behaviourist view, has not yet come to terms with all the reflections in Diana's mirror.(21) Artificial legal intelligence may assist further progress in this regard.

The Paradigm of 8. Law

Law has its origins in the customary practices which were developed to promote human society. The paradigm of the tribe is implicit in customary law. Human laws were determined to some extent by a primitive paradigm of the laws of nature. The environment contained discrete entities such as sky, earth, trees, clouds, rain. These entities were placed in a certain order. The sky is above the earth; clouds are in the sky; rain falls from the clouds at intervals; trees grow upward from the earth to the sky and rain assists their growth. Human life too has natural order. Women give birth to children; people require food to grow and stay alive; people grow old and die, and so on. Natural order and processes could not be avoided. A certain order is inherent in human life. It could be extended by the human order of social customs and habits founded on the inherent human order. The relationship between human laws and natural laws was not clear, but human laws followed the natural conditions of life.

The legal practice of making human sacrifices, such as sacrifices to ensure a good crop, was an attempt to regulate nature according

to some hypothesis about natural power; the practice was a form of experimentation through law. The hypothesis was that the human sacrifice was a method of controlling nature and making it more favourable to human society. Exploitation of fictions about supernatural power is probably the origin of legal power. The god of the crop had to be satisfied. Myths could be posed as events or explanations through which human regulation could be justified and sustained; however, in this way, also, experimentation could be conducted in relation to the natural laws which governed human life, in order to see if postulated regulation was an effective control. Mythology and superstition were just as much aberrations of legal science as of other matters of science. Rituals were sometimes the subject and sometimes the process of law. Law was thereby bound up in this precursor of scientific method.

The integration of science and law further appears in primitive totems and taboos which characterised early social organisation. In order to encourage particular plants or animals to flourish and multiply, a tribe or a sector of the tribe might adopt an image or symbol of the particular plant or animal as a totem. Dances which imitated or celebrated the totem might also be performed. The totem was a means by which the tribe hoped to impose their desires upon the subject of the totem. The relationship between members of the tribe, including their economic relationships, was devised by reference to the totem membership of individuals. Totem membership determined the sharing of food and ornaments. The crop was shared out amongst the members of the totem, in different proportions, according to membership entitlements. Counting was necessary to make the distribution. In the primitive paradigms of the totem, the paradigms of counting, sharing, and inequality, are knotted together. This is the totem knot. The inequality may have preserved individual differences and preferences along value yardsticks such as the yardstick of 'unselfishness', 'favouritism' and 'power'. This knot still exists in the legal system today. In psychology, it is studied in a fundamental way as the politics of the family. The totem knot, as a basis of the legal system, confined the development of the legal system along a path which precluded a science of legal choice. A science of legal choice looks for alternatives in all aspects of the legal system. The totem powers which received a larger share of production,

controlled the legal system and would not favour the development of a science of choice. Any science of legal choice could only progress covertly by testing alternative hypothetical superstition in sequence to see if nature could be manipulated in some way, like people could be manipulated.

Different totem groups might exchange food and ornaments. The totem system provided the paradigms of division of labour, distribution of wealth and social classes. Barter freed up the ritual exchanges required by the rules of totems and provided a new basis for the development of the totem paradigm. Coinage provided the transition from barter to the modern monetary system. In contemporary times, a totem paradigm may be recognised in the tokens of money, objects of law, as the universal wishbringer and instrument of social organisation. For what money cannot buy, it can compensate. Fiction and fact appear to be systemically integrated in the metaphysics of money. It is both a fiction and a fact that a certain amount of money is equal to a certain amount of produce.

Compliance with the totem rules was reinforced by reference to powers vested in certain persons, objects or animals which were regarded as sacred or taboo. There were also rules of behaviour in relation to taboos, infringement of which carried penalties. In the use of mythological fictions, totems, and taboos, spirits were recognised. The idea of spirits was essential to religion and might be regarded as an aberration or precursor of notions of natural force or energy in science, as well as the origin of legal power. According to Bernal, some myths which personified the forces of nature can be recognised as the prototypes of scientific theories; recognition of the theories is possible if the myths are retold without the gods. He intimates that a lack of scientific vocabulary might have been the reason for the personification of forces in myths.(22) In the social organisation effected by totems and taboos, spirits provided the power and coercion for an effective legal system. The paradigms of totem and taboo also contain the potential power of thought. This is examined by Sigmund Freud (1856-1939) in his essays on Totem and Taboo, in which he draws the following conclusion:

> What characterizes neurotics is the fact that they prefer psychical to factual reality and react just as seriously to thoughts as normal persons do to realities.(23)

This is the basis of a paradigm of legal bluff which is rarely acknowledged. The bluff effects compliance with the law even though the law might be ostensibly harmful or stupid. However, regardless of whether the original purpose, the mythological hypothesis, of a totem was born out in the legal experiment, the other function of the totem, namely social organisation usually brought overall benefits. Bernal takes the view that the original hypotheses in totems may have seemed verified on the balance of probabilities.

> Until science had advanced to the point at which the major part of the environment that mattered to mankind was controllable rationally by direct action - and that achievement is a very recent one - it was, however, very difficult to check the failure of the spirit theory to give man any practical control of Nature. The spirit way seemed no worse than any other, and, by a judicious combination of faith and probability, could even be imagined to work very well. People usually recovered from diseases, crops usually grew, and the sun could be counted on to rise every morning.(24)

Law was a method by which human control could be exercised to coordinate the activities of a technological society. However, it can not be assumed that the primitive technology preceded the invention of law or vice versa. However, human control could be achieved through rules and early legal science was concerned to provide rules which would effect this control.

The paradigm of a rule of law was well established in early times and is clearly evident in the code of laws created by Hammurabi (circa 2081 BC) for the Babylonian Empire. This codification of customary precedent which was inscribed in rock is believed to be based on an earlier Sumerian code from the Dynasty of Ur (2465-2347 B.C.). The contents of the code are set out and discussed by Chilperic Edwards in his work, The World's Earliest Laws.(25) Many of the concepts and rules used in the code indicate that it is a predecessor of English law. It covers entitlements to property, particularly marriage and inheritence

laws, as well as provisions for punishment of offences, including the offences of perjury and incest. Contracts are regulated in the area of employment and marriage. It is interesting to note that in marriage contracts, negotiated between husband and father of the wife, provide a price to be paid to the father and also terms which will apply for the benefit of the wife which she might have negotiated for her own benefit. Children could be disowned. Marriage is more in the nature of a modern cohabitation contract than a modern marriage. There is also extensive regulation of slavery which provided some rights and protections as well as duties for the slave. The rules in the Hammurabi Code are stated clearly in an 'if...then' format, which describes behaviour and behavioural consequences. There are few abstract concepts. For instance, negligence of a builder is provided for as follows:

> If a builder has built a house for a man and his work is not strong, and if the house he has built falls in and kills the householder, that builder shall be slain.(26)

Other provisions spell out the various instances of 'an eye for an eye justice'. There are also provisions regulating hiring contracts, medical and veterinary contracts, boat-building contracts, and feudal relationships concerning the use of land. There is some price-fixing regulation as well as penalties for breach. The obligations of parents and children in adoption arrangements are set out with consequences for breach. Wet-nurse contracts are regulated. Even the origins of a Rylands v Fletcher (27) action are evident.

> If a man has opened his irrigation ditch, and, through negligence, his neighbour's field is flooded with water, he shall measure back corn according to the yield of the district.
>
> If a man has opened the waters and flooded the planted field of his neighbour, he shall measure back ten gur of corn for each gan.(28)

Aristotle, in his Metaphysics, comments upon these early times as follows:

> At first he who invented any art whatever that went beyond the common perceptions of man was naturally admired by men, not only because there was

> something useful in the inventions, but because he was thought wise and superior to the rest. But as more arts were invented, and some were directed to the necessities of life, others to recreation, the inventors of the latter were naturally always regarded as wiser than the inventors of the former, because their branches of knowledge did not aim at utility. Hence when all such inventions were already established, the sciences which do not aim at giving pleasure or at the necessities of life were discovered, and first in the places where men first began to have leisure. This is why the mathematical arts were founded in Egypt; for there the priestly caste was allowed to be at leisure.(29)

This view of the development of science confirms the emergence of scientific contemplation as a conscious practice which was held in high social esteem. However, the willingness of society to allow leisure to the wise, implies a fundamental contract between the working class and the learned class, such that the benefits of learning during the leisure period, would be passed back to the working class. As technology developed, surplus wealth accrued to leaders and administrators. This wealth provided the opportunity for contemplative leisure which was independent of the working class. Learning served the wealthy and turned away from practical science. Slavery, rather than a fair distribution of the fruits of learning, was introduced. Even though production was greater through technology, and the opportunity for intellectual pursuits was ensured, some sectors of society were unnecessarily disadvantaged.

With the expansion of inventions, the cultural communication of technology, and the escalation of human intelligence, primitive scientific ontology, paradigms and methodology were refined. The number of paradigms, although they were probably used unconsciously, no doubt expanded with experimentation, as the patterns of nature were observed, imprinted on the human psyche, and transposed into new perspectives. With this refinement of human intelligence, ontology could be posed as hypothesis and methodology for the process of invention. There may not have been an articulation of the distinction between ontology, paradigm and methodology in these early times, but primitive practices presupposed an understanding of the distinction. The integrated structures of science and law in early times are only determinable

from the framework of reasoning inherent in the known phenomena of primitive technology and social organisation. From historical fragments, it might be possible to infer or construct systemic human intelligence which may be treated as the basis for further development of civilization.

In the course of scientific contemplation, the systemic structures of human mental faculties could be examined. Interwoven elements of conscious and unconscious reasoning could be unravelled to reveal new opportunities for human control through interaction with the environment. Primitive systemic mental faculties might be regarded as integrated by metaphysical knots of conscious and unconscious reasoning; these knots were the kernels for development of more extensive systemic structures. The primitive integration of law and science through common ontologies, paradigms and methodologies, compounded the synthetic or knotted nature of evolving human intelligence. Through the processes of human learning, in language, counting, mythology, superstition, rituals, technological inventions and law, the knots of rational structures of ontology, paradigms and methodology were passed down and further processed by unravelling and reravelling as a system of collective consciousness and unconciousness.

To some extent the historical record of human development is the story of the emergence of scientific personalities, both in the individual and the collective dimensions. Human intelligence predisposes people to a scientific lifestyle and the development of scientific personalities. It is possible to understand the conscious accumulation and refinement of scientific ontologies, paradigms and methodologies, including those of legal science, as a collective consciousness of human society, a counterpart of Carl Gustav Jung's (1875-1961) collective unconscious.(30) The collective consciousness may be subject to the fashioning processes of any person. At the same time it constitutes the basis of human agreement about meaning and strategies for human survival, which might influence individual behaviour. On this view, legal systems have been developed as part of an evolving, systemic, collective consciousness.

The Greek Period

Most of the paradigms which will be dealt with in this period are found in the works of philosophers. The Greeks had no theory of paradigms but they did use them, either explicitly or implicitly. The paradigms are set out in a chronological order in the context in which they were posed. Major paradigms may contain sub-paradigms or sub-theory. Overall, Greek philosophy is a science of metaphysics, that is, a study of knowledge that goes beyond the recall of environmental images and sense perceptions. The mental storage system of human beings, which is their knowledge, results from the sorting of experience so that new experiences may be accommodated by reference to accumulated experience. The Greeks used the methodology of speculation to formulate comprehensive complex hypotheses about the real world, which often amounted to holistic ontologies.

The Paradigm of 1. The Vedas

From about 1600 B.C., early Aryan people moved into the north of India, bringing their Sanskrit language, and into the Mediterranean, bringing their Greek language. Hammond in his History of Greece to 322 B.C. describes in detail the migration of the Hellenic peoples into the regions of early Greece.(31) Their learning in extensive poetic systems, bardic recitations called epics, sagas or vedas, met with the cosmological and other discoveries of the civilizations of the south. The word 'veda' means knowledge or science. Sanskrit became the sacred language of India and the Vedas of India, written between 1500 and 500 B.C., form the basis of Eastern religions which are still practised extensively.

The Vedas were written in three parts which represent the authority for law-making, the dogma of law, and the system of learning and application. The oldest part, the Hymns, enshrined a pantheistic religion and the forms of praise or worship of the gods of nature.(32) Their poetic form is ritualistic and this no doubt assisted memorizing and hypnotic learning. Next, the Brahmanas, written in prose by the Brahmanic priesthood which developed as the keepers of the religion, consists of dogma,

mythology and philosophy. Finally, the Sutras give instructions on the nature of the Vedas. The term, 'sutra', means 'line' or 'string'. The Sutras are connected rules that are strung together. They provide instruction on the grammar and interpretation of the Hymns and Brahmanas, as well as directions for the ceremonial and sacrificial use of the verses, including calendar information. The three parts distinguished three requirements for a legal system and constitute the vedic paradigm. The works contained a view of the cosmos which fostered a sensuous experience and understanding of the world and human affairs. In the east, the learning of the Vedas led to the mysticism of Eastern religions such as Buddhism which developed meditative practices to foster wisdom. This Eastern learning has been examined by the physicist, Fritjof Capra in The Tao of Physics.(33) He suggested that the same ontologies and paradigms of physics were apparent in both Eastern intuitive learning and Western scientific learning. Only their methodologies were different.

After Greek cities were established as states in the Mediterranean, a new direction in poetic learning began. Greek law appeared in written form as early as the 9th century BC in the poems and hymns of Homer and in the poems of Hesiod; like the Vedas, these poems facilitated the learning of the law. Hesiod described the origins of the cosmos as Chaos which separated into elements, each with its own internal harmony or balance. This cosmogony captured the political change which the Greeks were undergoing. The poems established valour and heroic ideals as an inspiration to the Hellenic people, and opened the way to social ideals. They contained some moralizing on justice, injustice, and right or wrong conduct. In the one system of ideas, the Hesiod paradigm, physics, natural harmony, and law were associated. In Chapter Six, the information system, SURMET, poses a synthesis of the Vedic paradigm and the Hesiod paradigm for the purposes of a design aid for artificial legal intelligence.

The Paradigms of
2. Themis
3. Nomos
4. Dike

The customary law of the Hellenes originated in time immemorial and was maintained by hereditary custodians who learned and knew the ancient customs and traditions. Twelve elders acted as arbiters in blood feuds and ratified treaties by oath. The ancient jurisprudential concepts, themis, nomos and dike indicate that, there was a distinction drawn between morality and law, and between law and legal methodology. Themis might be regarded as the moral thread of law, which is understood in the modern notion of justice. The goddess Themis is represented as holding a sword in one hand and a pair of scales in the other. Nomos referred to the laws which were originally matters of custom, usage or convention but, with codification, came to mean statutory enactment of positive law. Finally, Dike, which in early times meant the way of the ancestors, came to mean a legal decision or a lawsuit; the concept was akin to methodology or the application of law. The paradigms of themis, nomos and dike are recognisable in modern English law.

The Paradigms of
5. Harmony
6. Order
7. Equality

From early times, the Greeks adopted three ideals which indicated the standards by which their laws would be evaluated. These ideals describe the sort of culture which the Greeks sought through law: harmonia meaning harmony, eunomia meaning order and isonomia meaning equality. These three juristic and cultural ideals approximate the notion of 'common' as it was used by the Greeks to describe their laws. 'Common' in this sense represented human co-operation. In ancient Greece, 'common law' meant the ideal acceptable generally to people, their common goals.

Lycurgus introduced eunomia as a sweeping reform in Sparta in the period 825-800 BC. The reform recognised the equality of male citizens who graduated from the state educational program, usually at the age of thirty. They became members of the Assembly which elected a governing council to propose laws for the Assembly to ratify, and a judicial body to supervise the social system. Family lineage and wealth were abandoned as determinants of the political power to create social order. Eunomia was achieved in

different ways by each of the different city states, according to the nature of the populace. Athens abolished kingship and became a republic. The goddess Eunomia was worshipped as the goddess of good order. She was the daughter of Themis. These family relationships of the deities promoted an understanding of the relationships of ideas in legal theory. Spartan eunomia promoted an attitude of impartiality.

Athens became a well organised centre of Ionian culture and sent out colonists to found settlements on many Aegean islands and along the coastline of Asia Minor. In the 9th century BC, the Ionian city states on the Asiatic coast were established. By 700 BC, writing was in common use. In the 7th century BC, coinage was officially standardized, following quickly on the invention of state currency in Lydia (now part of Turkey). Codification by authorised lawmakers, called archons, began in Athens with Dracon's code of 623 BC. of Athens. These laws were extremely harsh, especially the laws of bankruptcy. They were used by the wealthy classes to enslave debtors. Exploitation by usury became rife and soon the vast majority of citizens were indebted to the rich. This pattern of usurpation by usury, in conjunction with laws which favour exploitation by the rich, is repeated many times in history. Sometimes the legal system is reduced to a game like poker: people may win by the money rules, not by luck and the substantive rules of the game. With the increase in legal costs which must be paid in advance for litigation, the legal system is 'pokered'. The Australian novelist, Xavier Herbert, referred to these usurpers as the robber barons, so that the syndrome may be identified as the Robber Baron paradigm in law.(34)

To relieve the situation which had arisen following the Draconian code, Solon (638-558 BC), one of the seven wise men of Greece, compiled another code to replace the work of Dracon. For the first time, citizens were given the right to prosecute offences on their own behalf or on behalf of others. Debts on the security of the debtor's person, which could result in slavery of the person, were prohibited. Habeas corpus was made available to all classes of citizens. This equality of rights in personal liberty and judicial procedure was known as isonomia. Solon raised extra taxes on the wealthy to buy freedom for enslaved debtors in Athens

and abroad and cancelled outstanding debts on the security of the person. He restored a balance in the distribution of wealth. The export of natural products, except those in surplus, was suspended to assist the readjustment of wealth. Governing power was distributed so that there was an oligarchic element and a democratic element, and a number of checks and balances. People were given power according to their abilities and experience, not just according to wealth. The Athenian version of eunomia was represented in these constitutional reforms of Solon, over two hundred years after Lycurgus. Sparta was a Dorian city state and the reforms of Lycurgus reflect a sacrifice of the freedom to be diverse, which the Ionians valued, in favour of a disciplined, communistic equality. However, both societies kept slaves, and the Spartans maintained a secret service surveillance over their slaves.

The Paradigm of 8. Natural Law

In Solon's reforms there was an acknowledgement of the distinction between natural justice and human justice. This distinction marks the beginning of an ostensibly separate development of law and science. According to natural law, people might suffer hardships such as illness or natural disaster, or receive benefits such as a good crop. However, human laws were required to regulate the relationships between citizens. The individual was given certain responsibilities in regard to personal conduct and society was required to understand how its parts might function harmoniously, according to 'social justice'. This philosophy was expressed by Solon in his poems. He appealed to reason, liberty, moderation and humanity, and he established reason and honour as virtues above wealth. State laws were no longer used to experiment with human control over natural forces. The undisciplined society of Athens was the source of legal authority and coercion.

Family law remained largely a matter of religion or natural law. In each home, the family worshipped Hestia, goddess of the hearth. If family members did not fulfil their household duties, such as caring for the elderly, divine punishment of the whole family would follow. Where there is a breakdown in family relationships, families usually break up or become grossly unhappy. This

distress might make family members less capable in their daily lives in and out of the home, so that other personal disasters might be likely. There was no control over this disintegration through the state laws. Even today, the real issues between family members are not addressed in law. Impartiality does not intrude upon family disputes, which continue to be subject to the primitive form of reason, namely, emotion. The mystical family bond which is thought to be the foundation of social bonding was sustained by the wrappings of a primitive domain of human relationships. Female intelligence was trapped in this primitive domain and stunted by the natural forces of inequality in power. In contemporary times, family members are 'counselled' from the disturbed states produced by this primitive domain, to a rational understanding and settlement of their family disputes. This sort of dispute resolution is now an alternative in non-family disputes as well.

The Paradigm of 9. Impartiality

Following the practice of Hammurabi, the Greek civil and criminal codes were set forth on stone near the various magistrates chambers for all to see. Legal archives were established. It was recognised that the law was information which should be open to inspection and readily accessible. In the written form it could be studied, and applications of it could be considered in regard to actual or hypothetical cases. The written laws might be changed overtly and were not susceptible to covert changes to suit biases from time to time. It was more difficult to introduce bias in the iteration and application of the law when its form was fixed and manifest. By putting law into the written form, impartial administration was fostered.

Major characteristics of western legal science are derived from Ionian philosophy which was developed between the 7th century BC and the 3rd century BC. This philosophy is marked by an impartial speculation about natural law. Greek philosophers were acquainted with Babylonian astronomy and sought to formulate theories of the cosmos which, although largely a matter of supposition, were posed without reference to mythology or superstition. In these early Greek philosophies it is possible to identify complexes of macro

and micro paradigms which have influenced the structure of human thought to the present time. The centre of this beginning of Greek theoretical science was Miletus, an Ionian city of Asia Minor, located on what is now the western coast of Turkey.

The Paradigms of

10. Scientific Metaphysics
11. Generalization
12. Theory
13. Holism
14. Continuity
15. Cycle
16. Flow

The first of the Ionian philosophers, Thales (c.640-550 BC), a contemporary of Solon, is regarded as the father of science. At this time, prose composition was in its earliest stage of development. So it was not the writings of Thales which influenced the development of human consciousness; rather, it was the remarkable things which he did. From the Saronic cycle which had been devised in Babylonian astronomy, he successfully predicted an eclipse of the sun. He also successfully predicted a plentiful olive harvest and by early investment in crops, made a substantial gain. These successes demonstrated the profits of science and the power of knowledge.

Not only did Thales employ the scientific practice of prediction from past observation but he also developed the paradigm of theory which integrates methodology and ontology. He formulated geometrical generalizations which he then used to calculate distances. Further, his theoretical speculations instigated the development of a comprehensive ontology in the nature of scientific reality. In this, the holistic paradigm is evident. He suggested that there was a primary substance which he maintained was water, that flowed in a cycle through sky, air, earth, plants and animals. This ontology systematized unity and change in the nature of existence. In the words of Charles Singer:

> As with every Ionian thinker, the ultimate object of the thought of Thales was to find a formula for all things. He thus set himself the task of

> discerning constancy amidst the diversity and variety of nature.(35)

Thales sought to explain things as different manifestations of water due to changes in temperature; this was an exploration of cause and effect. In adopting this systemic explanation of different natural phenomena, he discarded the superstitions, mythologies and religions of the primitive cultures which surrounded him; he instigated the pursuit of science which Singer has called 'The Religion of Science'.(36) By generalization of problems and their solutions, and by the development of a comprehensive reality, he extended the potential for human understanding and control and demarcated the science of metaphysics as preferable to 'dreaming experiments' for the evolution of human intelligence. His macro paradigm of water or flow in the context of a theory paradigm has been influential in the representation of knowledge, including legal knowledge, and in the conceptual modelling of the physical world. The modern flowchart is an advanced form of Thalian thought. The paradigm of a cycle or spiral has also been useful in modelling artificial intelligence, especially in the use of recursive processes. The holistic paradigm of Thales reconciled, in the physical world, the three ideals of the legal system, namely, harmony, order and equality.

In the legal system of modern times, and in legal knowledge engineering, Thalian paradigms are identifiable. The legal system, including both the body of law and legal expert systems, is a metaphysical entity which has been scientifically worked out. It is holistic, with a theoretical content. The theory contains continuity and cycles as well as flows. For example the doctrine of precedent provides for continuity in the development of law and cyclic application in similar cases. The legal system adopted the Thalian paradigm of the cosmos but did not incorporate the cosmos according to Thales; with Solonic limitations, it had no need for cosmic definition or control.

Hammond saw a parity in the Solonic legal system and Ionic science; he observed:

> Thus in Milesian philosophy the universe was explained as a group governed by its own immanent principle or elemental substance, even as the state appeared to Solon to be a group governed by its own immanent principle, Eunomia.(37)

The Paradigms of
17. Eternity
18. Infinity
19. Transformation,
20. Conflict
21. Balance

A pupil of Thales, Anaximander (c610-545 BC), wrote a treatise, the first known prose work, On the Nature of Things, carrying on the ontological exploration which Thales had instigated. Anaximander extended the metaphysical scope of Thales' concept of a primary substance, and thereby expanded scientific reality. He conceived 'to apeiron', the unlimited or the indefinite, an eternal, infinite, indeterminate substance which had no sensible qualities; it was undifferentiated in quantity and quality and could be known only through thought. This was a paradigm of fuzzy thought. However, the indefinite became differentiated and observable through the transformations which its motions rendered necessary in accordance with natural law. By rotation, the indefinite separated into four elements, earth at the centre, then water, then air, then fire. This differentiation temporarily converted the indefinite to determinate substances which would eventually return to their primary state; thus a cycle occurred. Natural law was thus conceived as a process and provided the paradigm of deterministic legal process, rather than choice.

Anaximander maintained that everything arises from and returns to an infinity. The elements, by virtue of their sensible characteristics, such as hot, cold, moist, dry, were in opposition to each other; yet their quantities, as maintained by natural law, perpetually redressed any imbalance between them. Quantity could redress imbalances in quality. In the cosmic conflict of opposing elements, the primary substance was neutral. Bertrand Russell cites an extract from Anaximander's work which describes his mechanistic picture of reality:

> Into that from which things take their rise, they pass away once more, as is ordained, for they make reparation and satisfaction to one another for their injustice according to the ordering of time.(38)

The cycle from and to infinity covered the range of existences from the macroforms to the microforms. With human limitations of perception, it might be possible to imagine that the infinity of microforms coincides with the infinity of macroforms where neither can be observed. In this way, infinity would belong to a closed system. The only remaining form of infinity would then be time which would be equivalent to perpetual existence or indestructibility. If a holistic system is closed, then ipso facto it is indestructible, although it may be in constant change to remain partially perceptible. Where there are no environmental pressures, purpose of change might produce change.

The legal system in modern times has no need to accommodate infinity and eternity, but it maintains laws from time immemorial. It certainly deals with conflicts by reference to a notion of balance represented as the scales of justice. By its power, it can produce transformations to resolve conflicts. Legal expert systems represent the details of this paradigm in the law. To do so, they employ the products of computer science the theories of which might be concerned with physical microcosms and the nature of macrocosms.

The Paradigms of
22. Fitting Inequality
23. Fitting Interaction

Anaximander's view of justice was common in Greece: everything and everyone should be given the place and function to which each is suited as a matter of fate or necessity, or conformity to the inevitable. Inequality follows from the increased work of developing and maintaining permanent settlements together with the consequent division of labour and specialisations of work. In the Anaximander view, places and functions are disturbed by vigour or energy which causes strife; emphasis is placed on balance, rather than similarity, as the determinant of equality. Anaximander's paradigm of interacting and balanced elements can be seen in legal systems which differentiate and seek to balance the respective

interests of the members of the jurisdiction. The jurisdiction and power of the law might be regarded in one sense as 'to apeiron' viz. a neutral reality which is differentiated but provides a balance if states of conflict arise.

The Paradigm of 24. Evolution

Although Anaximander's primary substance moved eternally in a cycle of transformations, nevertheless, Anaximander posed a theory of evolution explaining the formation of the earth and the nature of the transformations which the cyclical motions produced; he maintained that life developed from slime, initially in the form of fish which were followed by animals and then human beings. Although these ontological contributions were purely speculative, Anaximander displayed the scientific skills of abstraction and modelling from careful observation; he is regarded as the first person to make a map with details of the land surface.

The philosophy of Anaximander contains a wealth of macro paradigms. His concept of 'to apeiron' might be regarded as a predecessor of the later notion of ether. As investigations of quanta in modern physics reduce matter to empty space and measurements of movement, so the speculation of Anaximander seems vindicated. He conceived the extent of infinity, and the inevitable conflict and evolution in motion. These vast physical realms provide perspectives for locating human choice and the law in rélation to the physical cosmos of science.

The Paradigms of 25. Hylozoism
26. Quantity/Quality Relativity
27. Thought/Non-thought Relativity

Following the work of Anaximander, further exploration of reality and potential ontology was undertaken by Anaximenes (c. 590-525 BC). If the primary substance could be understood only through thought, then the question requiring consideration became: where is thought to be placed in reality ? How is methodology to be located in relation to ontology ? Anaximenes was a hylozoist: he maintained that living substances were a part of material processes. Qualitative differences in the nature of substances

were due to quantitative differences in the primary substance. The term used by Anaximenes to describe the primary substance was pneuma, meaning breath or air. This of course, readily accommodated the nature of human thought. The primary substance of breath or air became transformed into the great variety of entities through the gradation of the processes of condensation and rarefaction which Anaximenes had observed. Thus, fire was rarefied, water condensed, earth a further condensation and stone an even further condensation. Thought was treated as soul which Anaximenes conceived as the breath of life. Where soul occurred, primary substance remained pure. On this view, the basis of ontology is also the basis of methodology and this basis has both conceptual and material existence. This paradigm of the systemic integration of thought and the material world provides a framework for an holistic philosophy of human choice and control. There may be pure thought in the form of knowledge that allows pure thought to direct other forms of existence. A cycle may be set up where there is direction from pure thought to other existences and feedback to pure thought.

The English legal system certainly used the Anaximenes paradigm of thought as the fundamental substance. Substantive law is largely founded on thought states, agreement (contract), care (negligence), trust (trusts) and good or bad intent (crime - mens rea). Even the concepts of proprietary interests or estates is notional. With these concepts the judiciary sought to fashion personalities that would not have conflicts and that would achieve optimum conditions for human life. The law corrected failings to keep to these thought states. In the correction of these failings, the rules of law grappled with thought/non-thought relativity and quantity/quality relativity. Hylozoism does not solve the problems of relativity.

The Paradigm of 28. Thought Methodology

In Ionia, where these three early Greek philosophers, Thales, Anaximander, and Anaximenes resided, Olympic mythology was the prevailing religion. Consequently, there was little religious restriction upon the development of a scientific mentality. However, in other parts of Greece, a barbaric religion was

practised; it was derived from the Thracian religion associated with the god, Bacchus, whom the Greeks called Dionysus. The discovery of the altered mental states of alcoholic intoxification, lead to the belief that wine was a medium by which the god, Dionysus, entered the worshipper. The mental state of drunkenness, which occurred through Bacchic ritual, was originally called 'enthusiasm'. When subsequently the Dionysian religion was reformed by Orpheus, the ritual of getting drunk was replaced by a token nip, and the mental communication with the god was induced by a contemplative practice called 'theory'. This meditative practice is the origin of the modern concept of theory, although the practice of using theory is much older.

Unlike the eastern form of meditation which is concerned with the sensing of the quality and activities of energy states, western theoretical meditation proceeds through rational connections of metaphysical forms of energy. In rational contemplation, the ideas that effect categorization, speculation, theory, systematization and sometimes quantification may be formulated. The eastern and western forms of meditation might be engaged in through either or both of the two hemispheres of the brain. Eastern meditation is primarily concerned with the personal state of the meditator; western meditation is primarily concerned with the state of the external world. Each might act as a check or balance on the other, enabling internal conversations and debates which might provide a unified direction for a person's behaviour and survival. The modern legal system officially requires the western form of contemplation, but it is possible that the eastern form might be used covertly by legal decision-makers as well.

The Paradigms of 29. Discrete Entities
30. Patterns

The next major Greek philosopher, Pythagoras (c.570-500) who was also an Ionian, travelled extensively and eventually settled in the south of Italy where he established a reformed Orphic cult, known as Pythagoreanism, the beliefs of which included a numerical perception of the universe and a ban on eating the numerical vegetable, beans. Through Orphic meditation, Pythagoras discovered that the universe could be conceptually divided into

equal dots, which might then be seen to be arranged in patterns; this resembled the method of counting then in use, whereby numbers were represented as dots, arranged in various patterns, depending upon the number of dots. In this philosophy, the paradigm of discrete entities, as distinct from the paradigm of continuous entities, and the paradigm of patterns was expressed through the precision of mathematics.

Pythagoras realised that a given number of dots might be arranged in various geometric shapes so that there was a numerical equivalence between certain shapes such as cubes and squares. Further, any shape could be represented as a number; if the component dots of two shapes were constant, then the shapes could be compared in numerical terms. Shapes placed in some order or arrangement, might be represented as an order or arrangement of numbers. In this way, Pythagoras introduced demonstrative deductive argument through a link between geometry and numbers and provided a basis for measuring an area. Furthermore, time could be measured in the same way by reference to the duration of musical notes. If the numbers of the shapes of the universe were treated as musical measurements, then, Pythagoras maintained, universal harmonies could be discovered. This was a remarkable conversion of structure to function by the application of a common measure for structures of space and structures of time. The duration of a note could be equated with a physical structure or vice versa, so that time and sound could be understood in a common metaphysical measure of the physical cosmos.

In the time of Pythagoras, mathesis meant 'learning' and 'mathematikos' meant 'fond of learning'. In the late sixteenth century, these terms which had been adapted into Latin, were introduced into the English language with the current meaning of mathematics. Mathematics, in the modern sense was a metaphysic suited to both time and space representations of the real world. It provided new ways of representing and comparing physical entities precisely. The Pythagorean numbers paradigm may be seen as the primitive of the number-cruncher view of computers. A legal expert system may be understood, in the workings of the computer, as a number-crunching process.

The Pythagorean cult carried on the Orphic tradition of political equality between men and women, and adopted a philosophical lifestyle whereby property was held in common by the members of the group. However, superstitious rules of conduct governed petty matters. Through the Pythagorean practice of theory, the concept of theory came to mean the results of that practice rather than the behaviour of contemplative search. In the world of modern science, covert intellectual meditation is associated with mysticism, speculation, and metaphysics as distinct from the overt practices of sense-perception and communication which are thought to be more reliable as a basis for negotiation of human understanding and agreement. Overt practices may properly limit the scope for negotiation of a common understanding, but speculative premises may be relevant to the negotiation; furthermore, common understanding must be reconciled with covert states if there is to be commitment to the agreement. The Pythagorean cult may have applied their notion of equal discrete entities to their membership in the belief that equal status and property might assist the negotiation of social agreement, and, thus, harmony and order.

It could be said that Pythagoras used a mathematical paradigm to develop the concepts of the primary substance of Thales, the Indefinite of Anaximander, and the pneuma of Anaximenes, and thereby produced a paradigm suited to further development as atomic theory and quantum theory. As Charles C. Gillispie, recognised:

> The Pythagoreans may themselves have been the ones to make the first statement of physics as we know it.(39)

This view is supported by Russell (1961); he observed of Pythagoras:

> He presumably thought of the world as atomic and of bodies built up as molecules composed of atoms arranged in various shapes.(40)

Gillispie further put the view that relativity is the progeny of Pythagorean ontology. However, Pythagoras did not distinguish his

own contemplative practice from his mathematical pictures so as to develop a paradigm or model of relative perspectives.

The Paradigms of
31. Quantitative/Qualitative Proportions
32. Physical/Metaphysical Duality

In the detail of the mathematical world devised by Pythagoras, the concept of relative proportions was treated as significant. This paradigm of proportions has been useful in reconciling discrete and continuous entities. Not only was Pythagoras concerned with the relative proportions which comprised geometric shape, but he was also concerned with proportion of qualities in relation to the state of a shape or form. Thus he explored the possibility that various proportions of qualities in the human body, such as hot, cold, dry and wet, could produce health or disease. Qualitative differences were capable of quantitative description in accordance with the precision of numbers and their patterns. Pythagoras regarded numbers as not only having a physical existence but also a conceptual existence independent of the physical world, like souls. He regarded souls as immortal and believed in reincarnation. Like souls, Pythagoras' numerical dots were also eternal. This permitted numbers to be treated as abstract or ideal concepts. Singer describes this duality of the existence of numbers as follows:

> The human mind, it must be supposed, is somehow attuned to the processes of nature. We live in a world that is susceptible of mathematical expression. Thus the theoretical investigations of mathematicians correspond in some degree to the findings of the physicists and astronomers. Such is the nature of things, though why this should be so is a mystery. Perhaps it is not even the business of science to discuss this mystery. But consciousness of a correspondence between the workings of our minds and the workings of nature is illustrated by this doctrine of Pythagoras.(41)

Mathematical principles were treated as the basis of physical principles as well as the basis of principles in concepts such as justice, reason and opportunity. Quantitative qualities and quantities of qualities were implicit in harmonies. Numbers could obtain characteristics and qualities by virtue of their physical manifestations. This duality paradigm maintains the link between

the conceptual and the material world but at the same time frees the conceptual world from the limits of actual existence so that it might also encompass potential worlds in relation to actual existence.

Those quantities which did not obey Pythagorean proportions were regarded as irrational. The limitations of mathematical description as an ontology, are dealt with succinctly by John Losee as follows:

> The Pythagorean natural philosopher believes that mathematical relations which fit phenomena count as explanations of why things are as they are. This point of view has had opposition almost from its inception, from a rival point of view. This rival point of view is that mathematical hypothesis must be distinguished from theories about the structure of the universe. On this view, it is one thing to 'save appearances' by superimposing mathematical relations on phenomena, but quite another thing to explain why the phenomena are as they are.(42)

To the extent that mathematics has increased not just the understanding of the physical world but also accurate prediction about, and control of the physical world, it might be said that there is a dimension of control in the abstract existence of mathematical concepts and principles, by which a reality may be created. In this regard, the creation of computers through the application of mathematics to physical existences, now imbeds mathematical equivalence in all data processing, including the processing of information in a legal expert system. It would be interesting to relate this mathematical dimension of the law to the ordinary use of monetary mathematics as a measure of legal rights and duties expressed in court orders. The legal system certainly resolves human conflict and produces order and harmony through the adjustment of proportions of entitlement by money orders. The equality underlying this proportional adjustment is the equality in monetary units. In a computer program, the equality is in the bits; as the units are combined in certain proportions, so they become symbolic. Two mathematical metaphysics might meet in this way, one symbolic, one modelling reality.

The Paradigms of 33. Democracy
34. Argument

In the milieu of Ionian inquiry, the Ionian state of Chios, early in the sixth century B.C. introduced a democratic form of rule; similar democratic systems were subsequently adopted by other Greek states, and their colonies abroad, mostly in the fifth century B.C. Cleisthenes introduced a form of democracy to Athens in 510 BC. It was based on electorates called demes. Equality of voting rights was a form of isonomia. The social order which established governing rights by vote was a form of eunomia. The priestly classes ceased to hold power exclusively, and there was a recognition that law could be a matter of choice. The democracy paradigm is the precursor of a paradigm of relative legal choice. The minority acceded to the choices of the majority, so that a form of lay legal dominance replaced the priest-kings. Rule by the majority was known as demokratia. Law suits were heard by courts, which comprised a selection of ordinary citizens, much the same as modern juries. These citizens' courts decided both issues of law and issues of fact, but recorded their decision by ballot in favour of one or the other of the parties. No reasons were given, but reasons might be found in the arguments presented on behalf of each party. Through this adversary procedure, the development of legal science was promoted.

The Paradigms of 35. Perpetual Change
36. Measure of Change
37. Becoming
38. Tension
39. Balance of Opposite Forces
40. Elements

The next Ionian philosopher who contributed significantly to the development of the concept of scientific reality was Heraclitus (c. 540-475 BC). The emphasis which he focused on was a prevailing characteristic of reality which, when further refined, contributed to the picture of relativity. Heraclitus maintained that everything is in a state of flux or ceaseless change: 'there's nothing is and nothing was but everything's becoming'. He saw perpetual motion and change which produces a multiplicity

of things, as the significant feature of the eternal primary matter. However, Heraclitus also perceived an orderliness of natural events: all changes, he claimed, occur by measure. This regularity is the basis of universal reason either in or side by side with primary matter. The appearance of the universe at any particular time was the transitive state of the relative balance between opposing forces; the world was a continuum of opposites. Tension between opposites was the occasion of force. This force operated in a cycle, beginning and ending with fire, as the fundamental substance. Strife passed through all the four elements of air, water, earth, fire; everything, like flame, is born by the death of something else. Reality is comprised of the oscillations of this cyclical continuum, which is modified by various degrees of stress. Motion prevents any one form of existence from permanently prevailing over others; cosmic force constitutes cosmic justice. In strife, opposites combine to produce a motion which is harmony; thus unity is formed from diversity by the combination of opposites. Things are drawn together and drawn apart by the nature and functioning of the whole; the one is made up of all things and all things issue from the one. The way up and the way down is one and the same. In the notion of unity, all things are right; opposites are not wrong. Heraclitus posed an ideal human personality based on his model of nature: the person who achieved power through self-mastery was to be esteemed. Self-mastery depended upon the ability to combine the opposites in oneself. Power could then combine the opposites in other persons and matters. Opposites could be combined through an understanding of the ordering principle which steered all things through constant change. This ordering principle was the logos, the plan or formula. Natural law was seen as a plan or formula.

The reconciliation of unity and diversity through power or the management of forces or energy, is a paradigm which is identifiable in the development of law. Some rules of law may be regarded as uniform or unity rules; others are diversity rules. The two sets of rules work together to maintain each aspect of society and so that there will be an order in social functioning. In the English legal system the adversary system is used to elicit all the elements of a case in order to determine the principle of

law which will steer the parties through a change. Through the legal process, justice becomes real. Implicit in the philosophy of Heraclitus, there are elements of both control and tolerance in the maintenance of unity and diversity. There is also an underlying paradigm of impartiality in his scientific reality. The view of Heraclitus that opposites are not wrong introduced an impartiality which paved the way for an understanding of paradoxical dimensions of thought in relation to the physical world. The usefulness of macro paradigms is limited by these paradoxical dimensions.

The Paradigms of
40. Appearances
41. Independent Metaphysics
42. The Reality of Ideas

During Heraclitus' life, the Persians took control of parts of Ionia and destroyed the major centre of philosophy, Miletus in 494 BC. Thereafter some of the Ionian philosophers wandered about the other small independent states of the Hellenic world spreading their influence. One of these philosophers, Xenophanes (c. 570 -480 BC) settled in Elea, in the part of southern Italy known as Magna Graecia, where he established a school of philosophy. The next philosopher to make a marked contribution to the development of scientific reality, Parmenides (c. 540-480 BC) was Eleatic. Parmenides has been acknowledged as the inventor of logic but Russell maintains that what he really invented was metaphysics based on logic.(43) Parmenides shifted the emphasis in metaphysics from existence to truth. He sought one stable metaphysical perspective, namely truth. If it was true that something existed then it existed; otherwise it did not exist. He then assumed that existence is synonomous with truth, not appearance. However, truth itself might have an appearance which is not real truth. This opened the way for the development of logic as the form of reason which would determine truth. Logic presupposes truth; the goal of logic is to establish what is and what is not true. Many of the views of Parmenides run counter to the Ionian developments in scientific methodology and ontology. However, there is an important thrust in his understanding of reality. He maintained that the appearance of motion, change and the discreteness of things was illusion. In Parmenides'

philosophy, truth was not an idea that identified correct representation of real things in the space time amalgam of human language. Truth assists in the process of converting experience to knowledge. Instead Parmmenides' truth was itself the real world and, accordingly, the real world became purely metaphysical. It may have been an inevitable part of Orphic reforms, for the unreliability of the senses to be recognised. The altered mental states of drunkenness may be regarded as evidence of how the senses are unreliable and an indication that an unreal mental state is preferable to reality.

Whereas Pythagoras, who was a contemporary of Parmenides, had freed the concept of numbers and human thinking ability from the physical world, giving them, conceptually, an existence of their own, Parmenides freed reality from human perception; he maintained that the reality underlying appearance, was a solid, ubiquitous, motionless, voidless, changeless, ageless, undifferentiated, indivisible, material sphere. This was the sphere of absolute truth. Everything else was illusion. As the sphere revolved, pairs of opposites emerged. These were harmonized by the creative force, Eros. The senses could not reveal this as they were untrustworthy; only the ideas of reason could lead to the erotic harmony of truth. Thought provides a constant existence; it is the most reliable basis for understanding reality. Meanings of words continue to exist irrespective of the permanency of the physical world which they might label; recollections provide an ongoing existence to past events. Parmenides saw that thought could act as a static constant, thereby stabilizing reality, but he did not explore the problems of conceptual relativity. The paradigm of thought as the control over appearances, was established but there was no extensive investigation of how thought might exercise this control. In Chapter Seven, Permenides sphere of truth is used to model contract law as a world of rivers. This model is a design aid for programming artificial legal intelligence.

In Parmenides' philosophy, the groundwork was laid for the development of an appreciation of alternative systems of thought, which in the twentieth century, is represented in Einstein's special theory of relativity and Kuhn's theory of paradigms.

Choice depends upon the recognition of alternative future worlds and how each might be achieved. Linguistic philosophy, especially as it was expounded by Wittgenstein, also has origins in Parmenides' philosophy. Language has its own relativity; a word varies in meaning, depending upon its context, that is, the other words used before and after it, and depending upon the physical environment in which it is used. The problem in legal expert systems is to create a program based on machine language to suit user purpose, given the relativity of user language. A computer language with varying logical forms may be difficult to develop and even if it were achieved such language could be inefficient and ineffective; the rigorous limitation of communication to what can be feasibly programmed, may produce clearer human communication and a common logic. The legal system, through its hearings of evidence is able to reduce various human communications to the common logic of legal theory.

The distinction between appearances and reality has been vindicated in modern psychological studies of perception. In some circumstances, the appearance of objects on sight is different to the actual state of the object when examined more closely. There are clearly paradigms of sight interpretation which are unconsciously preferred at certain distances, even though they are inaccurate. Modern science museums display various exhibits which demonstrate this. Sometimes where an object is ambiguous, such as the well known drawing of a young woman which can also be seen as an old woman, both will be seen if perception occurs for sufficient duration. Usually, the larger face will be seen before the smaller face. Similarly a drawing that might be seen as a box, is usually viewed as a box; the preference is to see the drawing as a box initially viewed from the outside, and then as a drawing of the inside of a box. There is a natural tendency to explore alternative interpretations of images. Three dimensional image preference in the interpretation of a drawing will persist even if the drawing creates something which is not a physical reality, such as the devil's tuning fork. The paradoxical drawings of Escher demonstrate this. Paradigm preference and paradoxical shapes may be useful as design aids in legal knowledge engineering.

The Paradigms of 43. Illusory Reason
44. Rhetoric

The distinction between appearances and reality is of fundamental importance to the modern theory of relativity. All things are relative to each other. Since each thing is differently located, each thing will always have a different view of all other things. The relativity of things entails relative perspectives of things. Relative perspectives are of major importance in developing relative choice and the resolution of conflict concerning selections. The theory of relativity was not to emerge for more than two thousand years after Parmenides. More immediately, Parmenides' philosophy promoted an amoral view of reasoning. Since only appearances could be perceived, any appearance was as valid as another. Therefore, reasoning skills could be used validly to create any illusion or appearance. This attitude was taken up by the schools of rhetoric which trained orators who were employed by litigants. Parmenides philosophy also fostered the revival of religion in preference to science.

The Paradigms of 45. Paradox
46. Dialectic

Zeno of Elea (c. 490-420 BC), a disciple of Parmenides, approached the notion of conceptual relativity through the recognition of paradoxes in the ontology of the infinite divisibility of space and time in a dynamic changing world. Space can not be divided without a time dimension since division is a process and a process requires time. Time can not be divided without a space dimension, since time can only be measured by reference to some matter. Zeno's paradoxes were largely concerned with divisibility and motion. What he regarded as paradoxical might now be seen as the dimensions of the physical world, or the different methods of conceptual access to the physical world and their limitations. In A Dictionary of Philosophy, A.R. Lacey describes Zeno's paradox of the Moving Rows

> The paradoxes of motion seem intended to argue that space and time can be neither atomic (made of indivisible points and moments) nor continuous. The Moving Rows paradox seems to argue that if both

> space and time are atomic there is a maximum velocity, namely one point per moment - but anything moving at this velocity relative to one object can always be shown to be moving faster relative to some other object, so there is no maximum velocity. The argument can be made to cover the cases where only one of space and time is atomic. Aristotle, however, who is our source for this paradox, treats it as simply confusing relative and absolute motion.(44)

Clearly, motion is relative and speed is a factor to be taken into account in determining this relativity. As suggested by Einstein, if the fastest speed is the speed of light, then this may be a constant by which to measure the relative speed of other things. Furthermore, different systems of measurement may be related to each other by application to the constant of the speed of light. Zeno's paradoxes examined some of the difficulties of accurately portraying reality in a space and time knowledge amalgam.

The Grain of Millet paradox is perhaps easier to appreciate: a single grain makes no sound when it falls but a thousand grains do make a noise. How can the combination of no sounds make sound? Clearly, the range of human hearing is limited. It is not a reliable yardstick at the point of one grain falling as it can not detect the sound. It may become a reliable yardstick at the point at which sounds are detected. The limits of the sense of hearing as a measuring device does not indicate that there is nothing to measure outside this range. Some other measuring device will be required to resolve the paradox. The form or shape of human hearing may then be measured by its range across sound.

Zeno also devised dialectic reasoning whereby, through drawing distinctions, similar and different matters could be identified and related. The practice of dialectic became a systematic question and answer method of reaching knowledge or information. The order in which questions were asked could determine the nature of the knowledge or information obtained. The dialectic paradigm might be used as a design aid in legal knowledge engineering. The process of separating what is the same and what is different and determining the significance of the distinction is essential in the legal reasoning which must be emulated in a legal expert system. Further, the sequence of questions and any answers which

trace this legal reasoning is the basis of the user interface in the program.

The existence of a paradox may be regarded as an indication of the logical limits of any distinction and the relationships which are consequent upon this distinction. The paradox paradigm might indicate the edge or shape of a conceptual model and the interface of adjacent, different models. The problems of relativity, revealed in the paradoxes, indicate that there may be dimensions of legal relativity in legal choice, and that appropriate jurisprudential methodolgy is required to deal with the problems of these dimensions.

The Paradigms of

47. Logic
48. Impossibility
49. Experimentation
50. Chance
51. Chance Variation
52. Randomness
53. Fitting Combination
54. Forces of Attraction and Repulsion
55. Necessity

Zeno demonstrated in his paradoxes that the dynamic cosmos had appearances which contained impossibilities when analysed by logical thought processes. Either the appearances or the logic must be rejected. The pursuit of this dilemma, can be seen in the direction taken by the next major Eleatic philosopher, Empedocles (c. 493-433 B.C.). He was more influenced by Ionian science than by Orphic mysticism. By holding his finger over one end of a tube and dipping the other end into water so that the water did not enter the tube until he removed his finger, he demonstrated that air exists. Further, he suggested that light takes time to travel; it travelled so fast that it could not be observed as travelling. He also believed that diet was related to behaviour and that the body was permeated with a life-giving fluid. By reference to Heraclitus' notion of tension, Empedocles developed a theory of evolution. He saw love or attraction, and hate or repulsion as the opposing forces; these forces were on an equal footing with the four elements, air, water, earth, and fire.

Attraction drew the four elements or roots together; repulsion separated them. When drawn together, only some novel combinations prove to be stable or viable. These combinations occur at random. In this chance variation, only the fittest combinations survived. The four elements were mixed in different proportions to produce changing complex substances. Attraction and repulsion occur in cycles. Although these forces are everlasting, the compounds which they produce are only temporary. Earth, water and air, represent matter in its solid, liquid and gaseous states. Fire creates differences in temperature and weight. The addition of fire increases heat and reduces weight. Empedocles envisaged regulation of an evolving nature by Chance and Necessity rather than by purpose.

Through his philosophy, Empedocles constructed a paradigm of the constancy of forces underlying the changeability of appearances. He also fashioned in the changeability of appearances, paradigms of variability and evolution. The evolutionary principle of survival of the fittest in relation to the regulatory processes of necessity and chance, provided the major framework for Darwinian evolution in the nineteenth century. Stabilizing macro-paradigms are evident in contemporary science and legal science. The use of multi related macro paradigms produces theoretical dimensions which can be severed from any micro paradigms posed in association with them, and examined in sections. If all the sections can be shown to be correct then it might be assumed that the whole is correct. Then it is unnecessary to justify the whole. Legal theory certainly depends upon its macro rationale to imbue its micro decisions with justice. Legal choice must be framed according to these paradigmatic tiers.

The Paradigms of
56. Dominant Element
57. Mechanism
58. Divisible Molecules

Athens successfully led the defence of Greece against the advances of the Persians and liberated Ionia. Pericles lead the rebuilding of Athens. He restored the public buildings which had been destroyed in the wars with the Persians, and built the Parthenon. Athens then experienced a period of peace and

patronage of the arts. The next Ionian philosopher, Anaxagoras (c. 500-428 BC) spent about thirty years of his life in Athens, from about 462 to 432 BC but was eventually driven out due to religious and political interests. Anaxagoras considered that everything is infinitely divisible and infinitely diverse. At any level of division, the sections of matter contain some of each of the four elements, and portions of opposites such as hot and cold, black and white. The appearance of the section will be in accordance with the predominant element. At micro-levels, it was 'seeds', comprising all four elements that would combine to produce macro-appearances. The notion of 'seeds' modified the earlier concepts of elements which combined in macroforms to produce appearances. Anaxagoras also maintained that mind, nous, is a uniform, pure substance, separate from the elements; it is infinite and autonomous. Some things contain some mind. Where it exists, it has control. He regarded mind as the primary cause of physical changes; it is the source of all motion and causes a rotation whereby the heaviest objects take up the central position, with the lightest things around the circumference. Differences in mental expression are due to bodily mediums by which it is confined. Anaxagoras did not limit reality to the determinations of Necessity and Chance; for him, things occurred mechanistically by virtue of the combination of seeds, whilst motion, from which combinations arose, was the effect of mind substance. There is evidence of the scientific skills of Anaxagoras: he accurately recorded the limits of human senses where they failed to detect size, heat, sound and so on. He also formulated a theory that the moon shines by reflected light, such an idea being the last straw for the Athenian political powers of the day.

The philosophy of Anaxagoras produced an interesting combination of the macro paradigms of force and mechanism. Force produced the opportunity for mechanistic processes. These paradigms are recognisable in Newton's theory of gravity in the eighteenth century. It is interesting to note the universality and powerfulness of nous which is separate from the physical elements. Mind is not confined to human beings. Even at this point in Greek philosophy, the possibility of spiritual inhabitants in non-human forms of matter had not been entirely abandoned. Human thinking

was not isolated from the forces of life or motion observed in non-human entities. However, there was no attempt to compare the nature of human thinking with these other forces of life. Such a comparison is now required in producing artificial intelligence.

The Paradigm of 59. Indivisible Atoms

Contemporaneously with Anaxagoras in Athens and Empedocles in Elea, Leucippus (c. 500-430 BC) of Miletus carried on the scientific rationalist philosophy of Ionia by developing the concept of atoms, meaning indivisible entities, as the fundamental entities of the microcosm, so small as to be invisible. The work of Leucippus was fully propounded by Democritus (c. 460-370 BC) of Abdera in Thrace, who is known as the father of physics. Democritus travelled extensively and gained a reputation as the most knowledgeable philosopher of all his contemporaries and predecessors. He wrote the earliest encyclopaedia of science, comprising over sixty works. In his interpretation of reality, Democritus retained the notion of permanency and unity, which Parmenides' ascribed to a primary permanent entity but, instead, he attributed these qualities to a plurality of entities, called atoms. With this pluralism, he was able to retain also the ideas of motion and ceaseless change which was posed by Heraclitus. Democritus claimed that the only ultimate reality consisted of, firstly, these atoms, which vary in size and shape, and , secondly, empty space. Compound bodies were made up of atoms, and the differences in compound bodies were due to shape, size and arrangement of the atoms of which it was composed. Whereas the Pythagoreans conceived a world of equal dots, and Anaxagoras posed unequal divisible molecules which he called seeds, Democritus envisaged an indivisible atomic world of inequality. His atomic entities can be represented by patterns which have been explained through an alphabetic analogy as follows:(46)

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This atomic alphabet paradigm can be used to explain the nature of a legal expert system. The data and processing of the legal

expert system may be viewed from two perspectives. Firstly, they symbolize legal meaning, and, secondly, they are themselves physical phenomena. The paradigm shows the importance of both perspective and arrangement.

According to Democritus, atoms moved about spontaneously in all directions with a propensity to enter temporarily into combinations and associations, thereby creating phenomenal changes; when they thereby become entangled, they formed composite bodies of various kinds. Then composite bodies might collide and break up. There are an infinite number of atoms, each indivisible, impenetrable, incompressable and indestructible; these atoms are notionally but not physically divisible. The 'secondary' qualities of entities, such as colour, sound, taste and smell are human illusions (nomos) and not part of the nature (physis) of atoms. This ancient paradigm of atoms is recognisable today in quantum theory and electronic theory which made the invention of computers possible. It is in this microcosm that human intelligence is now modelled artificially.

The Paradigms of
59. Perception
60. Cognition

Democritus regarded thought and perception as physical processes. Perception was considered to be of two sorts, that of the senses and that of understanding. In the twentieth century, this distinction is drawn between perception and cognition, in the study of psychology. The distinction underlies the processes of observation and rationalisation, respectively, in scientific methodology. In the ethical decision-making process of legal choice, the distinction is also important. Perception is required to maintain, develop and apply cognition. A perception of choice is necessary, but so is an understanding. Cognition may direct perception to information which completes the understanding. This decision-making process is inherent in contemporary judicial reasoning.

The Paradigm of 61. Logos

Thought was regarded by Democritus as a kind of motion, causing motion elsewhere. Mechanical laws rather than purpose were seen to govern atoms; necessity or natural law determines the behaviour of atoms. Democritus introduced a multi-faceted paradigm of thought or purpose (logos), as a physical process, which caused motion, and mechanistic natural laws or necessity (ananke) which determined the nature of the motion. He thereby formulated a paradigm which distinguished and related closely causation and determination. This paradigm might be regarded as distinguishing instigation and continuation. Such a paradigm is useful in the design of automated decision-making processes which make mechanistic selections from a sequence of sets of alternatives, in order to reach a pre-determined goal. The concept of logos is useful in relating goals to rules in an expert system. The concept was used by early Christian theologians to fashion the identity of their god; it can just as easily be used to model the automated 'will' in artificial intelligence.

As far as the observation or appearance of qualities and processes is concerned, Democritus maintained that, at the microscopic level, these phenomena could be explained by quantitative variations, that is, the macroform qualities and processes were explained by microform quantitative variations. In this there was a recognition that, at a certain macro-level, certain states were experienced by people but, on reduction of the elements of this level to microforms, the terms of reference required adjustment. The nature of the adjustment required the substitution of quantity for quality. The atomic paradigm of Democritus placed quantity and quality on the same continuum from macrolevel to microlevel, while at the same time maintained different qualities at the macro and micro level. Implicit in this is a paradigm of appearances as a form of substance. The spectrum of macro to micro levels adds to the dimensions of relativity. Certainly the law uses a paradigm of quality/quantity continuum in assessing damages such as the quantum for a broken leg, although the experiences and consequences of a broken leg occur at the same macro level as money. Physical and jurisprudential consequences are placed on a continuum of correspondence, while each has various qualities.

The paradigm of atomic units or discrete entities is consistent with quantitative and qualitative evaluation, with macro-micro continuums, and with continuums of correspondence. The atomic theory might be regarded as the triumph of Ionian science. It provided stability at the micro-level which might support stability at higher levels. However, it was, at the time, as vulnerable as any unsubstantiated speculation.

The Paradigms of 62. Relative perspectives
63. Relative meaning

Democritus visited Athens but, like Anaxagoras, did not sustain popularity with the Athenian citizens. One of his disciples, Protagoras of Abdera (c.500-430 B.C.) was the first of the sophists, teachers who charged a fee. In Athens and elsewhere as an itinerant professor, Protagoras taught the semantics of diction; this raised the problems of the meaning of meaning. Protagoras introduced the questioning of meaning to science and philosophy. He argued that the human senses determine reality. His doctrine was that 'man is the measure of all things'. This established the subjectivity of cognition and cultivated a multi-perspectiveness and a practice in alternative forms of reasoning. Truth was relative to each person's perspective. Such a view contributed to developments that lead to Einstein's special theory of relativity.

Due to the requirement to present arguments in the democratic courts, the study of rhetoric emerged. It originated in Syracuse where one of the earliest Greek democracies was established. The Greek city of Corinth founded a colony at Syracuse in 733 B.C. and a democratic form of government was adopted there following the Ionian model. By the middle of the fifth century B.C., Corax of Syracuse and his pupil Tisias, had begun to teach rhetoric as the Art of Persuasion. Another Sicilian, Gorgias, who was a highly skilled orator visited Athens on a political mission. He taught that if anything exists, it is unknowable and incommunicable. By the second half of the fifth century B.C., the sophists, the teachers of Athens, had established schools for litigants and lawyers. A lawyer became known as a pragmaticus. Antiphon opened the first Athenian school of practical legal training and this

produced a number of specialists, known as the attic orators, amongst them Theodore of Byzantium, Thrasymachus of Chalcedon, Lysias, Isaeus, Isocrates and Demosthenes.

The Paradigms of 64. Subjectivity
65. Probability

The schools of rhetoric developed the first law books which contained exercises in argumentation based upon fictitious cases and deliberative models. Students were trained to compose orderly speeches, with suitable divisions of subject matter, exploring the relevant aspects of a case from perspectives favourable to the litigant. Personal abuse, emotive appeals, disguised misuse of dialectic, and elaborate discourse might be used as well as concise and valid argument. A significant feature of the discipline was that it explored probability arguments as well as arguments seeking to establish some absolute truth or falsity. It could be thought that the variability explored by Empedocles was extended in these studies of probability. Truth and falsity were linked by probability on one continuum. Some paradoxes in justice or the inescapability of some circularity in legal reasoning was also demonstrated in rhetoric studies. J. Walter Jones describes two popular examples:

> We meet again and again the pleader whose first appearance is in the action against him by his former tutor on a promise to pay the fee for tuition when he wins his first case; and another favourite is the case of the captors who agree to release a soothsayer's daughter if he correctly foretells whether they will release her or not - he prophesies that they will not.(47)

The Paradigm of 66. Knowledge

Most of the citizens of Athens participated in the democratic legal system, so that they were well informed and active in community matters. The office of the state leader was called the strategia. Hammond gives a vivid description of the state of affairs at the height of Pericles' leadership.

> The 1,400 magistrates at home and overseas, for the most part changing annually and appointed by lot, carried out the details of administration in a wide

> variety of fields. They worked often in committee, but each had to undertake responsibility and undergo an audit at the expiry of his office. The 6,000 Heliasts, selected by lot and often sitting in jury throughout the year, dealt with a wide range of cases affecting the Athenians and the Allies. Thus the citizens possessed an experience of the details of political and judicial administration which has never been paralleled in an ancient or a modern state. Moreover, this experience was spread through all classes in the citizen community by the use of the lot, the rotation of office, and the disregard of the property qualification except in the candidature for a few magistracies.(48)

Freedom of thought, speech and education added to the sense of equality among citizens. The democracy placed its trust in the intelligence of its citizens. People were judged by their character rather than their wealth. Private interest and public duty were integrated. Discussion preceded action and action was based on the will of the people. Artists such as Phidias represented the principles of proportion and composition in paradigmatic statues of human beauty and harmony. Moral dilemmas, human psychology, and human decision-making were studied in the plays of Sophocles, Euripides, Aristophanes and other playwrights.

Contemporaneously with Protagoras, in Athens, Socrates (469-399 B.C.), a pupil of Anaxagoras, who was highly skilled in the practice of questioning and cross-examination, gathered a following of young disciples. Socrates, who apparently wrote nothing, posed the limits of human knowledge: what can people know? He claimed to know that he knew nothing and maintained that the goal of learning should be to develop a good character and continual good conduct. This created an intellectual environment which did not favour speculation about a constant reality. It shifted the emphasis in philosophy from the community to the individual and from physics to metaphysics and morality. The philosophy of Socrates, may be regarded as the origin of other philosophies which were developed in Greece and subsequently proved to be of considerable influence in the Roman civilization; these were the philosophies of skepticism, cynicism and stoicism. Socrates also influenced the major works of Plato and Aristotle.

Following the death of Pericles from the plague, in 429 BC, there were class rivalries and persecutions which were aggravated by the effects of the escalating plague, and by Athen's defeat in war with the Spartans and the continuing hostilities. This weakened the democracy and eventually an oligarchy took charge and directed changes to the constitution to give the administration of the state to those best fitted to finance and fight the Peloponnesian war. The courts ceased to be impartial and jurors were bribed. During this period, two philosophers, Thrasymachus and Callicles propounded a view of natural law and natural justice which was later evident in Charles Darwin's theory of evolution: the law of nature is the law of dominance. While social institutions and morals restrain the interests of the stronger to some extent, nevertheless, laws are made and justice is delivered in the interests of the stronger; there are no impersonal standards by which to resolve contests for power. Sometimes the dominant are the democratic majority, sometimes they are the oligarchic minority. Critias added to this the critical view that religion was invented by a shrewd man who knew that the religious beliefs were in his own interests.

This philosophy was developed to an extreme in Hitler's nazism which claimed that, if the weak were favoured in any way, this would produce a weak species. Therefore weaknesses should be actively hunted out and put down by the dominant. The views of Thrasymachus and Callicles may have reflected the realities of an advanced democracy under the pressures of war and plague, but such a philosophy is contrary to the older Greek belief expressed by Anaximander, which emphasised balance rather than dominance as the natural law which prevails and renders natural justice. This period in Athenian politics culminated in the persecution and execution of Socrates for his corruption of youth. The dominance philosophy indicates the paradox of democracy. If democracy was invented as a solution to the imbalances of dominance, it progressed to a new vehicle of dominance. A consideration of the views of all does not necessarily entail a rational decision. There must be a goal or a constitution which constrains the ethical boundaries of democratic decisions, to ensure a rational consideration of all views.

The Paradigm of 68. System

In the early period of Greek antiquity, speculation was presented in a systematic way as philosophy. It could be thought that the juxtaposition of macro and micro paradigms was the methodology by which these philosophical systems were made out. The concept of system was represented by the Greek words 'syn-histemi', meaning to make to stand together, and these words were used to form the word, 'systema', meaning things joined together as a connected or composite whole. As Nicholas Rescher points out:

> The term (systema) figures in Greek antiquity to describe a wide variety of composite objects - flocks of animals, medications, military formations, organized governments, poems, musical configurations, among others.(49)

Paradigms were used to create metaphysical systems to deal with the space-time amalgam of human language and the problem of establishing reliable knowledge that expanded on, and facilitated access to, experience. The Greek concept of intelligence, gnome, had not yet been examined in the light of its philosophical activities. Socrates raised human intelligence to a level where it might examine itself.

The Paradigm of 69. Doubt

With their methodology of dialectic, the Greeks developed systemic consciousness in relation to a systemic physical cosmos. They had fostered multi-perspectives in thinking and the conceptual skills to manipulate ideas from various positions. The schools of rhetoric were largely responsible for these advances and they were practised most extensively as Greek legal science. In the context of law enforcement, the methodology of rhetoric was, on the one hand, a thorough investigative tool, and on the other hand, a patent opportunity to manipulate the course and results of an investigation, to any given purpose. The result was doubt. The sceptics and the cynics took up this reality of doubt and developed a critical theory as the basis of their philosophy. Other philosophers sought to further reconcile a systemic human consciousness with a systemic cosmos.

The earliest school of higher education, analogous to a modern university, was founded in Athens by the Attic orator, Isocrates (437-338 B.C.), who was a pupil of Tisias at the first school of rhetoric in Athens. During the fourth century B.C. four major schools of philosophy were established in Athens. These schools were known as the Academy of Plato (429-347 B.C.), founded in about 387 B.C., the Lyceum of Aristotle (384-322 B.C.), founded in about 335, the Stoic School known as the Porch, founded by Zeno of Cyprus (362-264 B.C.), in about 310 B.C., and the Garden of Epicurus (342-270 B.C.), founded in 307 B.C. Each of these four schools maintained a distinct philosophy and carried on some of the ideas of the earlier Ionian and other philosophers. Although the four philosophies were distinct, there appeared to be some overlapping of ideas in some aspects of the schools of thought. With the advent of these schools, scholarship flourished in Athens; books were more readily available. The established learning became a major basis for further development of both law and science. Political conditions and social relationships were still unsettled. Litigation in the people's courts was verbally as vicious as the colosseum sports of the Roman era.

Plato (429-348), who was a disciple of Socrates passed his youth in Athens during the period of political turmoil and outbreaks of plague that followed the death of Pericles. After the execution of Socrates, he travelled extensively and spent some time in Italy in the company of the Pythagorean mathematicians. On his return to Athens he established the Academy where he taught almost continuously for the remainder of his life. His philosophy is expressed in his Seventh Letter, a letter to the relatives and friends of Dion, and through his philosophical dialogues; it is difficult to determine how much of these works are fictitious and to what extent the parties to the dialogue express Plato's original thoughts. Certainly, the thoughts which they express are an indication of Plato's understanding of philosophy. These works contain a wealth of information from which to develop an understanding of human intelligence, how it might be characterized in a science of legal choice, and how it might be automated. It is therefore worth examining some of the detail of Platonic

philosophy. At the same time, it must be considered that the philosophy of Plato was instrumental in hindering the development of science in Europe. Therefore it should be carefully considered.

In the Charmides dialogues, where Plato uses the character of Socrates to conduct a philosophical discourse, it is clear that Plato is aware of the concept of the science of science and he comes close to a recognition of the Cartesian cogito as a premise which might found a theory of knowledge. In conversation with Socrates, the charming young philosopher, Charmides, defines wisdom as:

> ... the only science which is the science of itself as well as of the other sciences.(50)

In his reply, Socrates expands this view as follows:

> And this is wisdom and temperance and self-knowledge - for a man to know what he knows, and what he does not know.(51)

The dialogue explores the problems of, firstly, separating knowledge from the subject of knowledge and, secondly, apperception as a characteristic of self. Socrates advances the view that a knowledge of knowledge assists in the learning process.

> ... wisdom viewed in this new light merely as a knowledge of knowledge and ignorance, has this advantage:- that he who possesses such knowledge will more easily learn anything which he learns; and that everything will be clearer to him, because in addition to the knowledge of individuals, he sees the science, and this also will better enable him to test the knowledge which others have of what he knows himself.(52)

In legal knowledge engineering, the knowledge of law can only be programmed if there is sufficient knowledge of the nature of this law in relation to the nature of computers.

In his Seventh Letter, Plato states that there are three instruments for gaining knowledge, the name, the definition, and the image of things. Paradigms are one sort of image. Plato distinguished knowledge of things and the things themselves. The souls of things are the things themselves not concrete objects. The space-time amalgam in human language is given the mysticism of the primitive spirit. Through the use of soul, Plato transcends time; he is able to place everything of past, present and future existence into the one state of existence. This notion of soul could be regarded as a prototype of the notion of paradigm itself. The concept of paradigm provides a sort of geometric approach to irregular or complex things. It is a streamlining method for qualitative or quantitative/qualitative matters. The collective of souls is also a prototype of the collective consciousness or community paradigms. Plato's view can be understood in the following extracts from the Seventh Letter:

> If you wish to learn what I mean, take these in the case of one instance, and so understand them in the case of all. A circle is a thing spoken of, and its name is that very word which we have just uttered. The second thing belonging to it is its definition, made up of names and verbal forms. For that which has the name "round," "annular," or "circle," might be defined as that which has the distance from its circumference to its centre everywhere equal. Third, comes that which is drawn and rubbed out again, or turned on a lathe and broken up - none of which things can happen to the circle itself - to which the other things mentioned have reference; for it is something of a different order from them. Fourth, comes knowledge, intelligence and right opinion about these things. Under this one head we must group everything which has its existence, not in words nor in bodily shapes, but in souls - from which it is clear that it is something different from the nature of the circle itself and from the three things mentioned before. Of these things intelligence comes closest in kinship and likeness to the fifth, and the others are farther distant.(53)
>
> ... it is not the mind of the writer or speaker which is proved to be at fault, but the defective nature of each of the four instruments. The process however of dealing with all of these, as the mind moves up and down to each in turn, does after much effort give birth in a well-constituted mind to knowledge of that which is well constituted. ... After much effort, as names, definitions, sights, and other data of sense, are

> brought into contact and friction one with another, in the course of scrutiny and kindly testing by men who proceed by question and answer without ill will, with a sudden flash there shines forth understanding about every problem, and an intelligence whose efforts reach the furthest limits of human powers.(54)

Plato's notion of soul could be represented as an ontology of a paradigm. Through the insight of human intelligence, paradigms of any existence can be discovered. Insight amounts to an understanding of the paradigm. It is paradigmatic thinking. To see 'inside' something is to see its paradigms. Plato's notion of insight seems to occur through a meditative process of human intelligence which incorporates eastern and Pythagorean forms of meditation but progresses to apperceptive rational contemplation.

In the dialogue in Laches, the character of Socrates considers the notion of science in relation to time.

> ... there is not one knowledge or science of the past, another of the present, a third of what is likely to be best and what will be best in the future; but that of all three there is one science only: for example, there is one science of medicine which is concerned with the inspection of health equally in all times, present, past and future; and one science of husbandry in like manner, which is concerned with the productions of the earth in all times.(55)

The time and space dimensions of language make science possible, and may have been developed either as a scientific innovation in language, or as a reflection of the scientific characteristics of human perception and cognition. Time may be synthesized in knowledge statements such as 'all valid contracts are prima facie enforceable in a court of law'; this means that every time there is a valid contract, then prima facie it is enforceable in a court of law. Alternatively, time may be accommodated in contingent rules such as 'if there is a valid contract, then prima facie it will be enforceable in a court of law'. Where time is a significant factor it is stabilized by knowledge statements which generalize the time factor, e.g. 'unless otherwise provided in the terms of the contract, the contractual obligations are fulfilled if they are performed within a reasonable time', or, 'all writs served within a year will sustain proceedings'. The

neutralization of time in knowledge makes knowledge the basis of certainty or security in human life. Knowledge is a technique for stabilizing social conduct. It provides an indication of the predictable phenomena in the world, so that people can devise survival behaviour by reference to reliable factors. Legal knowledge is scientific in this sense because it indicates the sort of social behaviour which is likely to occur, and provides both a degree of certainty and the forms of survival behaviour.

There is a brief discussion of the distinction between being and becoming in the Protagoras dialogues.(56) This leads into a discourse on the problem of appearances.

> Do not the same magnitudes appear larger to your sight when near, and smaller when at a distance? They will acknowledge that. And the same holds of thickness and number; also sounds, which are in themselves equal, are greater when near, and lesser when at a distance. They will grant that also. Now suppose happiness to consist in doing or choosing the greater, and in not doing or in avoiding the less, what would be the saving principle of human life? Would not the art of measuring be the saving principle; or would the power of appearance? Is not the latter that deceiving art which makes us wander up and down and take the things at one time of which we repent at another, both in our actions and in our choice of things great and small? But the art of measurement would do away with the effect of appearances, and, showing the truth, would fain teach the soul at last to find rest in the truth, and would thus save our life. Would not mankind generally acknowledge that the art which accomplishes this result is the art of measurement ?
>
> Suppose, again, the salvation of human life to depend on the choice of odd and even, and on the knowledge of when a man ought to choose the greater or the less, either in reference to themselves or to each other, and whether near or at a distance; what would be the saving principle of our lives? Would not knowledge? - a knowledge of measuring, when the question is one of excess and defect, and a knowledge of number, when the question is of odd and even ?
>
> ... seeing that the salvation of human life has been found to consist in the right choice of pleasures and pains, - in the choice of the more and the fewer, and the greater and the less, and the nearer and the remoter, must not this measuring be a consideration of their excess and defect and

> equality in relation to each other? ... And this, as possessing measure, must undeniably also be an art and science ?(57)

Plato combines the paradigms of relativity and appearance in order to substantiate the importance of measurement as a basis for choice. Legal choice, must be provided in a relative world, within the context of the maxim that all people are equal before the law, that is, that in similar circumstances, everybody has the same legal choices. An informed legal decision-maker is concerned with both quantity and quality in the jurisprudential consequences of each alternative. Legal choice must be derived from the rules of law which are the constants that apply in a relative world. Both past, present and future are captured in the 'if...then' form of conditional generalization. However, the formulation of the rules, relative to each other, like the formulation of the laws of physics, relative to each other, is constrained by the relativity of the real world. The rules of legal choice must create a world in which people can make legal choices by reference to the various rules of legal choice, without their selections being in conflict. It is not feasible to formulate all possible alternative worlds in determing rules and their consistency. There are too many variables and the consequent combinatorial explosions are unmanageable. Choice and the restraints on choice are limited by the human capacity for co-ordination of human activities through common rules. A certain amount of freedom or indeterminancy is essential to the legal system because it cannot dictate the consequences of all alternative possible worlds. In the Theaetetus dialogues, the character of Socrates states the paradigm of relativity.

> I am about to speak of a high argument, in which all things are said to be relative; you cannot rightly call anything by any name, such as great or small, heavy or light, for the great will be small and the heavy light - there is no single thing or quality, but out of motion and change and admixture all things are becoming relatively to one another, which "becoming" is by us incorrectly called "being", but is really becoming, for nothing ever is, but all things are becoming. Summon all philosophers - Protagoras, Heracleitus, Empedocles, and the rest of them, one after another, and with the exception of Parmenides they will agree with you in this.(58)

The Paradigm of 72. Perfect Metaphysics

The dialogue in Cratylus examines the limitations of language to fully portray any entity or object. Through the character of Socrates, Plato establishes that

> ... images are very far from having qualities which are the exact counterpart of the realities which they represent.(59)

This view forms the basis of Plato's doctrine of ideal forms which poses a metaphysical reality comprised of perfect entities which human beings can only imitate imperfectly. The doctrine, which was developed in the Republic, introduced qualitative diversity and perfection to Pythagorean quantitative metaphysics. Language provided an imperfect representation of and access to the world of ideal forms. This is certainly the case when it is considered that knowledge necessarily distorts experience for the sake of greater certainty and efficiency. Plato's metaphysical domain brought a mystical element to Greek philosophy which was suited to the regrowth of religion. The notion of a perfect inaccessible God in a world of imperfection became the paradigm for Christian faith. Here was an explanation for human attrocities and an aspiration in death when the Pythagorean transmigration of souls could transport the deceased to the perfect world of heaven. The rules for transmigration to this destiny provided the only scope for imposing personal responsibility in social interaction. This was to be the context of law in the Christian era.

The paradigm of Platonic forms may be regarded as the precursor of the modern paradigm of a paradigm. The concept of 'paradigm' carries the notion of prototype or typical rather then perfect. It is part of a distortion process which converts experience to knowledge. However, perfection may be treated as a paradigm, or a paradigm may be treated as perfect. The co-ordination of human activities may be aided by paradigms such as the if(or where, whenever, or when)...then paradigm, and various choice paradigms, even if they imperfectly represent reality. The branching representation of alternatives and their consequences, may be a representation of many rules that are related in a 'tree'. This

illustrates an interlinking of different paradigms. The 'if(where etc.)...then' paradigm represents knowledge in such a way that a tree paradigm or flowchart paradigm may then be used to further simplify the knowledge representation. Choices can be understood more readily when presented as alternative branches of a tree rather than as a sequence of 'if...then' statements. This may be an indication of the ape-like nature of human intelligence. Prose, being a relatively recent human practice, is less familiar than a picture. If it is impossible to perfectly represent legal choice, nevertheless, effective social co-ordination might still be achieved through imperfectly represented legal choices. Perhaps the choice factors in social evolution occur through imperfect conscious selection.

The use of tree paradigms delineates variables and allows some geometry in metaphysics. Legal choice, like the law itself, exists in the metaphysical domains. Where past, present and future are synthesised in the constants of metaphysics, a metaphysical geometry must be used to organize the atemporal world. This is the geometry of metaphysical relativity. In the atemporal world, metaphysical contemporaneity requires description and dimensions. Metaphysical contemporaneity may be regarded as potential in a real situation. In the description of choice, there are potential worlds. At a given time a person may have various choices, that is, various potential courses of action. Paradigms of metaphysical geometry may be created by reference to the paradigms of relativity in the temporal world. The constant recurring paradigms of relativity might be more suitable to shape metaphysical geometry. For instance, the branching of a tree, which is a common constant in the real world, might be a useful paradigm to accommodate the potential sequences of a decision making process. The metaphysical geometry of choice includes the tree paradigm. In Chapter Seven, the tree paradigm is modified and expanded as the World of Venetian Rivers, to capture the choice structure of contract law.

Language has the potential to deal with combinatorial explosions and the metaphysical geometry which the control of these explosions requires. However, the memory and processing capacity of human individuals is limited to a narrower use of language.

Language is a community paradigm which accommodates all views of the members of the community. But there is no equivalent community processor, unless artificial intelligence can be developed as such. In Plato's philosophy, there is no recognition of the problem of combinatorial explosions in a perfect science. However, he recognises that language is at the source of the problem. In the Cratylus dialogues, Plato examines the use of words to discover where there may be imperfections in language. The character of Socrates explains some of the problems:

> Why clearly he who first gave names gave them according to his conception of the things which they signified.(60)
>
> ... if he did begin in error, he may have forced the remainder into agreement with the original error and with himself. ... And this is the reason why every man should expend his chief thought and attention on the consideration of his first principles:- are they or are they not rightly laid down? and when he has duly sifted them, all the rest will follow.(61)

The Paradigm of 73. Universals

When examining some subjects of knowledge in the Meno Dialogues, the character of Socrates looks at ways of defining ideas. In defining the term figure, he looks for the 'simile in multis'.

> ... what is that "simile in multis" which you call figure, and which includes not only round and straight figures, but all ?(62)

He then defines figure by reference to the end, termination limit or extremity of solids. To define colour he employs the passages paradigm of Empedocles: some effluences of existence fit into these passages, and some do not because they are too small or too large. Socrates defines colour as:

> ... an effluence of form, commensurate with sight, and palpable to sense.(63)

Added to the passages paradigm are the sense perceptions which apply to colour. Having laid down some methods of defining abstract and concrete concepts, Socrates then seeks a definition of virtue as a universal. Such a definition requires

consideration of whether or not there is universal agreement about its meaning. Plato recognises in the Phaedrus dialogues that there are two classes of concepts: those about which there is agreement as to meaning and those about which there is no such agreement. He does not consider that there can not be agreement about all possible worlds because individuals can not process this sort of information. The distinction in the two classes of concepts is recommended to rhetoricians for the purpose of ascertaining the class of concept which holds the greater potential for producing uncertainties. In seeking a definition of virtue in the Meno dialogues, Socrates does not permit treatment of this problem but directs the enquiry in accordance with his methodology of defining concepts.

> ... tell me what virtue is in the universal; and do not make a singular into a plural, as the facetious say of those who break a thing, but deliver virtue to me whole and sound, and not broken into a number of pieces: I have given you the pattern.(64)

In representing legal knowledge, there may be problems of interpretation which might be unravelled by reference to this analysis of different bases of meaning. In contemporary times, hermeneutics has become a specialized study. Of major importance is the work of American philosopher, Roy J. Howard; in his Three Faces of Hermeneutics, he has captured some of the implications for methodology of different approaches to determining meaning.(65)

The Paradigm of 74. Hierarchical Ideas

Plato might be seen to be searching for primitive or basic paradigms and complex or compound paradigms through the development of language, in the Cratylus dialogue. He makes the distinctions between primitive and derived nouns(66) and between primary and secondary nouns(67), indicating that some concepts are built on others. The character of Socrates puts forward the view that actions as well as things have names and people use names according to the agreement or convention about their meaning. However, there is not always unanimous agreement about the meaning of a particular word. Some words, like justice are subject to

variations. Socrates then attempts to found the proper meaning of certain words by examing their root origin for the basic paradigm they were intended to portray. For instance, he looks at the Greek word for thinking and discovers that it is derived from the Greek word for moving. This, he says:

> ... implies the movement of the soul to the essential nature of each thing.(68)

Reference is also made to the followers of Heraclitus whom, Socrates says, have adopted the 'pushing principle' as the essence of all things because of the similarity between the respective roots of 'essence' and 'pushing '. Push indicates a forceful motion. It is interesting to note that artificial intelligence theory uses a programming device called 'pushing' onto a stack. This is explained in Chapter Seven.(69) Plato lays down the basis for the development of formal logic from dialectic in the Cratylus dialogue, where the character of Socrates says:

> But if I can assign names as well as pictures to objects, the right assignment of them we may call truth, and the wrong assignment of them falsehood. Now if there be such a wrong assignment of names, there may also be a wrong or inappropriate assignment of verbs; and if of names and verbs then of the sentences, which are made up of them.(70)

Plato provides some directions as to how dialectic enquiry should proceed in the Philebus dialogues where the character of Socrates explains the distinction between means and ends, or generation and essence.

> ... there are two natures, one self-existent, and the other ever in want of something.
>
> ... some things are for the sake of something else (relatives), and ... other things are the ends to which the former class subserve (absolutes). ... One is the generation of all things, and the other is essence.(71)

A knowledge base in an expert system may be regarded as having two natures. In its static form it may be regarded as self-existent but when it is being processed it is ever wanting something until the process is complete. A legal knowledge base may also be ever in want of something insofar as it represents an incomplete system

of rules; it may not contain all of the rules of law, or, if it does contain all the rules of law, these rules may be regarded as incomplete, due to the inherent limitations of case-based development of rules. The rules of law may be extended by the logically necessary rules which they entail. Parliament could provide this sort of rational extension to minimize the injustice of retrospective judicial law, especially where a judge has indicated the rule by way of obiter dicta. This might require the co-operation of the legislature and the judiciary. Such co-operation would modify the Lockean doctrine of separation of powers: the separated powers would have to interact for a common purpose, which purpose might be a substitute for the checks and balances otherwise achieved by the separation of powers. Systematization with a common purpose might provide greater stability and conformity to a common coherent rationale, than is provided in a looser form of system.

However, it is not open to a legal knowledge engineer to extend the rules of law to deal with cases which are not covered by existing rules. Where the rules run out, there can only be opinions about what further rules might one day be law. Speculation must fill the gaps in law if necessary. A legal expert might venture an opinion about how gaps in the law should or would be filled, and such opinions might be included in the knowledge base as rules or otherwise, with appropriate cautions. A judicial opinion about gaps might also be used but a judicial opinion is not law if it is not the ratio of a case. Legislation could give judges extended law-making authority through a legal knowledge engineering power to construct legal expert systems of the court. In early times, English judges acted as legislators. The inherent incompleteness of the law is also due to the impossible task of dealing with all possible worlds. The law is a limited, ever-changing braid of paradigms. It is paradoxical to say that the knowledge base is both complete and incomplete. However, it is complete from some perspectives and incomplete from others. This 'paradoxical' view may be regarded either as a multi-perspective view or as relative thinking. Paradoxes may be an indication of a multi-perspective view which would capture the relativity of the object or matter under consideration.

The Paradigm of 75. Lateral Thinking

The relationship between language and knowledge is examined in the Cratylus dialogues. It is acknowledged that language assists in the learning process but, says the character of Socrates, things may be known without names; this way of knowing, he describes as follows:

> What other way can there be of knowing them except the true and natural way, through their affinities, when they are akin to each other, and through themselves? For that which is other and different from them must signify something other and different from them.(72)

When the character of Socrates is awaiting execution by poisoning in the Phaedo dialogues, he again describes this other way of knowing the essence or true nature of everything.

> And he attains to the purest knowledge of them who goes to each with the mind alone, not introducing or intruding in the act of thought sight or any other sense together with reason, but with the very light of the mind in her own clearness searches into the very truth of each.(73)

This philosophy is the basis of the notion of lateral thinking which was developed in relation to problem-solving by Edward de Bono in the twentieth century.(74) Lateral thinking frees the mind to consider alternative possible worlds, in the broadest sense, as the appropriate solution to a problem. The common law method contains both a language and a pure mind approach to cases. Ratios are expressed in language but are to be understood and applied in a 'pure mind' way. Computers can present the language representations necessary for a user to work in a pure mind way, but there is no way that a computer can emulate 'pure mind' except through highly refined language representations and programming which emulates learning.

The Paradigm of 76. Intuitive Knowledge

The method of rational contemplation in order to discover knowledge is an intuitive form of learning which may produce insights. However, intuition and insight might occur with little

rational contemplation. The knowledge of a legal expert usually includes this sort of learning so that a representation of intuitive learning and insight must be derived from the expert in the task of legal knowledge engineering. Intuitive learning is a method for lateral thinking, if the lateral premise has not already been associated with the problem. For Plato, this other way of knowing provides a method of ascertaining if first principles are correct. As such, he suggested, it might also be the path to discovering the perfect world. Plato's static world of perfection, or perfect paradigms, solves the problem of establishing knowledge in the framework of Heraclitian physics; for how can there be stable knowledge of things which are always changing. The Platonic solution to this problem is that another sort of reality exists which is the constant reality of knowledge, namely a metaphysical reality of ideal forms. However, if stability or change has a recognisable pattern so that there is a recognisable paradigm, then it may be the subject of ordinary knowledge. Rules of law accommodate varying fact situations either through ordinary knowledge or through insight.

The Paradigms of
77. Stable Social Ideals
78. Relativity in Rhetoric
79. Human Relativity

Plato's doctrine of ideal forms may have been an attempt to stabilize in philosophy the corruptions of rhetoric, and to provide ideals, according to the traditional goals of Greek culture, which would have an indisputable, necessary and authoritative existence. In the Phaedrus dialogues, Plato makes some observations about rhetoric, through the character of Socrates. These observations are worth noting, especially for two reasons. Firstly, they reflect the measure of skills in advocacy when counsel may have to persuade twelve jurypersons. Secondly, they reflect the measure of skills required for a judge to render a real resolution of conflict between litigants who may be all kinds of different people. Lord Denning was a judge who showed an excellent command of these skills of judicial rhetoric.

> Oratory is the art of enchanting the soul, and therefore he who would be an orator has to learn the differences of human souls - they are so many

> and of such a nature, and from them come the differences between man and man. Having proceeded thus far in his analysis, he will next divide speeches into their different classes:- "Such and such persons," he will say, "are affected by this or that kind of speech in this or that way," and he will tell you why.(75)
>
> Until a man knows the truth of the several particulars of which he is writing or speaking, and is able to define them as they are, and having defined them again to divide them until they can be no longer divided, and until in like manner he is able to discern the nature of the soul, and discover the different modes of discourse which are adapted to different natures, and to arrange and dispose them in such a way that the simple form of speech may be addressed to the simpler nature, and the complex and composite to the more complex nature - until he has accomplished all this, he will be unable to handle arguments according to rules of art, as far as their nature allows them to be subjected to art, either for the purpose of teaching or persuading.(76)

Human relativity may be a significant factor in designing the user interface of legal expert systems. A system might be designed to make an initial evaluation of the user, in order to proceed with an appropriate interface.

The Paradigm of 80. Relative Knowledge

Plato is sometimes concerned with knowledge as the structure which is common to all matters of knowledge, and sometimes he is concerned to point out the significance of the differences in subjects of knowledge. In legal knowledge engineering, the structure of the legal knowledge must be configured to the structures of artificial intelligence. In order to do this the structure which is common to both must be found and used as the transition medium. Design paradigms, such as a tree graphic, may serve this purpose. In the configuration, the transition medium must correctly portray the legal knowledge and there may be a need to develop the structures of artificial intelligence, or reach a compromise in each knowledge structure, to achieve this. The character of Socrates in the Ion dialogues says:

> ... when one art is of one kind of knowledge and another of another, they are different.(77)

Paradigms of knowledge are crucial in legal knowledge engineering to reconcile or develop the different modes of presenting a constant knowledge structure. Different arts, namely, computer science and law, must work together.

The Paradigm of 81. Knowledge-based Ethics

In the Charmides dialogues, Socrates poses the existence of a 'science of human advantage' which he further defines as the science of good and evil.(78) Charmides responds that wisdom would have this science under her control to benefit humanity. Plato's dialogues contain much discussion of the nature of virtue as he pursues Socrate's ethical philosophy. Knowledge and ethics are closely associated and also seen in relation to practical use. Good things, such as justice and knowledge are regarded as profitable when they are rightly used and unprofitable when they are not rightly used.

> If then virtue is a quality of the soul, and is admitted to be profitable, it must be wisdom or prudence, since none of the things of the soul are either profitable or hurtful in themselves, but they are all made profitable or hurtful by the addition of wisdom or of folly; and therefore if virtue is profitable, virtue must be a sort of wisdom or prudence.(79)

In the application of these sort of ideas to the field of computer jurisprudence, the concept of artificial soul may be treated as the domain in which artificial intelligence might operate. Programs may be evaluated in terms of their profitability or harm. The wisdom or folly of the program may be located in its design or content, as well as how it is used. However, computers themselves can not be regarded as intrinsically good or evil.

The Paradigms of 82. Control Models
83. Social Contract

Plato's doctrine of ideal forms provided a metaphysical domain suited to the legal modelling of both the social order or social organisation and, in the event of a breach or failure of this order or organisation, the modelling of law enforcement. Positive law provides these two models in contemporary times. The models are ideally framed and act as a control in the real world. Perfect conformity to law, and enforcement of all breaches does not occur in the real world. The models control divergence from the ideal and may indicate the degree of departure which is tolerable. When the models fail to work, they are usually adjusted to suit the changed reality.

In the Crito dialogues, Plato puts forward the idea of the social contract. It is this contract which prevents Socrates from escaping his execution. The character of Socrates says:

> Then the laws will say, "... we further proclaim to any Athenian by the liberty which we allow him, that if he does not like us when he has become of age and has seen the ways of the city, and made our acquaintance, he may go where he pleases and take his goods with him. ... But he who has experience of the manner in which we order justice and administer the state, and still remains, has entered into an implied contract that he will do as we command him.(80)

The Paradigm of 84. Justification

It was part of Greek legal science to discover the validity of law or the justification of law, as a reason to obey it. Superstition, belief, and herding, was not enough. There had to be something more rational and more intelligent. Efficient law is law which people will voluntarily obey; if there is sound reason to accept the law, there is reason to obey it. Social education may be a matter of either explaining the reason for law or conditioning blind obedience to a rule. Reasoning is more suited to an intelligent species and may be more efficient.

The concept of natural law and natural justice is not a suitable schema for democratic decision-making. They are inherently deterministic while democracy is inherently a process of human determination. While the Greek idea of natural law, with its

attendant natural justice, might provide a reason for people to obey the law, there was insufficient knowledge of natural law to reduce it to behavioural rules. In any case, human law is more concerned with the regulation of natural law as the fashion of human life. In modern times, a typical case of regulation is the requirement for traffic to proceed on the left hand side of the road. It could just as easily be the right hand side, as it is in some countries. However the regulation of a particular side reduces the number of collisions which might occur by natural events, and lends human efficiency to the natural environment. Marriage laws regulate the natural laws of human reproduction and human requirement for food and shelter. The social contract is a more realistic schema for determining democratic regulation. It carries with it the factor of human choice about laws, and the framework of quid pro quo for social co-operation and co-ordination. However, natural law, and any natural justice which will ultimately prevail, determine the scope for self-determination and quid pro quo through a social contract.

The Paradigms of
85. Reasonable Nature
86. Holistic Justification
87. Uniformity

The practice of rhetoric in the courts introduced an awareness of the great diversity of human predicaments which could bring new perspectives to the application of simple rules. Plato sets out in his Laws to examine the various aspects of law and to pose good law. In the republic which he posed as an ideal model, women were to be equal to men in the state; there was to be no family life and no private property; people would be so just and intelligent that they would obey the law willingly. He attempts to reconcile natural law and human made law by maintaining that if human law is made according to 'right reason' then it will also be natural law.(81) Consistently with this, justice is defined as what is best 'for the whole life of man'.(82) If law is good, this is a reason to obey it. However, this reason lends itself to the assumptions that there is a uniformity of good for all people, or that the law which is justifiable is limited to matters of uniform goodness; some other basis for order is needed to resolve areas of conflict involving a diversity of goodness. What then is right

reason and best for the whole life of people, or the lives of all people ? Perhaps the answer lies in adequate quid pro quo in the rules of law for people with different things to offer and different needs and wants. Justification, reason and benefit might be compounded in one system of exchange, effected by the rules of law. This is the proposal in Chapter Six in the development of SURMET as an information and decision-making system for the co-ordination of relative ethics.

The Paradigms of
88. Abstract Stability
89. Consequences of Principles
90. Application of Things to Ideas
91. Hierarchical Abstracts

In Greek philosophy, the mental representation and processing of the world of relativity, for purposes which included the law of the social contract, produced concepts which provided stability in thought. These concepts might be regarded as the constants of the real world. These constants do not necessarily have a real existence continuous through time, although they might have a continuous metaphysical existence as thoughts. They might be permanent existences such as the earth itself; or temporary recurring physical existences, such as rain; or abstract factors such as colour or justice. Like a discrete physical existence, abstracts might serve as a generalized goal in human behaviour. Abstracts can arise in two ways. Firstly, they may be macro generalizations of the real world, such as the abstract term, relativity, a sample of which can be identified in any section of the real world. Plato's categories of primary or primitive terms might be regarded as these sort of abstracts. Secondly, abstract factors may be founded on other abstracts; these are Plato's secondary or derived terms. Plato links the abstracts virtue and good as primary and secondary terms respectively. Mathematics contains both sorts of abstractions. So does law. Abstracts may have various relationships. For instance, a chain of secondary abstracts may link two primary abstracts. This distinction between primary and secondary abstracts is recognised by the character of Socrates in the Phaedo dialogues.

> Again, would you not be cautious of affirming that the addition of one to one, or the division of one, is the cause of two? And you would loudly asseverate that you know of no way in which anything comes into existence except by participation in its own proper essence, and consequently, as far as you know, the only cause of two is the participation in duality - that is the way to make two, and the participation in one is the way to make one.
>
> ... and when you are further required to give an explanation of this principle, you would go on to assume a higher principle, and a higher, until you found a resting-place in the best of the higher; but you would not confuse the principle and the consequences in your reasoning.(83)

This confines terms to a deductive schema. Presuppositions and inferences are determined to complete the chain of reasoning. Principles and rules of law are developed in this way. Facts in a case are used to develop and select rules and then the jurisprudential consequences of those rules are applied to determine the outcome of the case. The complex organisation of rules in this way carries some of the advantages of a closed system of reasoning. A rule can always be found or developed and other rules can be used as the justification for the development of a new rule or an old rule. A comprehensive coverage of the fact field makes the jurisprudential consequences in the rules seem correct. The consistent and hierarchical use of terms can prevent paradoxes at the cost of consistent, complex thought which might more accurately represent the relativity of the real world, truth in the real world, and a balanced social quid pro quo.

The Paradigms of
92. Discrete Non-paradoxical Abstracts
93. Qualitative Yardsticks

The world of abstracts is adopted by Socrates as proof that ideas exist in their own domain, and that other things participate in them and derive their names from them. Plato was concerned to establish the absolute of ideas as the true reality, even if this meant treating the real world as illusion. The space-time stability developed in language lead to language fixing reality or true ontology. In the Phaedo dialogues, Plato attempts to show that there are two categories of existence, the seen which is always changing and the unseen which is unchanging. The

distinction is drawn by the character of Socrates, who is awaiting execution, as the basis for proving that the soul survives the death of the body.(84) This view influences Plato's development of logic in the abstract world. In the relative world, the relationships, which justify something having one meaning, may change, so that another meaning is appropriate. For instance, something may be big in relation to one thing and small in relation to another. In this sense, an entity may be constant but contain opposite meanings. In the world of abstracts opposites are mutually exclusive. The character of Socrates puts it this way in the Phaedo Dialogues:

> ... there is a difference in the two cases. For then we were speaking of opposites in the concrete, and now of the essential opposite which, as is affirmed, neither in us nor in nature can ever be at variance with itself: then, my friend, we were speaking of things in which opposites are inherent and which are called after them, but now about the opposites which are inherent in them and which give their name to them; and these essential opposites will never, as we maintain, admit of generation into or out of one another.(85)

There is an attempt here to create a world of discrete absolute ideas in order to avoid paradox. Ideas used in this way limit communication and meaning but extend cognition and control in communication. For instance, colour is an abstract term, and everything, it might be said, has colour. It is abstracted as a common characteristic of everything. Diverse appearances are unified in the term colour. Fragmented appearances are drawn together in the space-time unity of abstract metaphysics. Abstracts do not have the same relativity as their fragmented components. Each instance of an abstract may not share the same relative state as a result of their common abstract content. Abstracts raise new problems of relativity.

The particularisation of colour is colours. There are many different colours, each being an abstract, such as pink or blue. Colour might be regarded as a primary abstract, so that pink and blue are secondary abstracts. Alternatively, pink and blue might be regarded as primary abstracts and colour as a secondary abstract. The categorisation depends on whether the abstract hierarchy is numbered top-down or bottom-up, and whether the

hierarchical structure is a pyramid or an inverted pyramid or something else. Discrete ideas such as large and small may be joined on the one yardstick or spectrum as a device by which to measure and describe things relatively. Hierarchies may be converted to yardsticks or spectrums to measure quality or quantity. So the spectrum of the abstract, colour, may be used to identify colour in real world instances. The yardstick or spectrum may be a paradigm that permits the use of abstracts in communication and cognition pertaining to the real world. One of the difficulties in applying law to a particular case lies in the use of various discrete abstracts on one or more yardsticks in regard to the minutiae of a concrete, relative world. It is sometimes difficult to see which abstracts apply from which yardsticks, in a given situation. Legal knowledge has two aspects. One set of facts may sustain various different causes of action.(86) It is not just a matter of structure but also a matter of application of the structure to real situations from time to time.

The Paradigms of
94. Infinite Abstracts
95. Finite Abstracts

Plato discusses the notion of a qualitative yardstick in the Philebus dialogues where the character of Socrates says:

> ... such an expression as "exceedingly," which you have just uttered, and also the term "gently," have the same significance as more or less; for whenever they occur they do not allow of the existence of quantity - they are always introducing degrees into actions, introducing a comparison of a more or less excessive or a more or less gentle, and at each creation of more or less, quantity disappears. For, as I was just now saying, if quantity and measure did not disappear, but were allowed to intrude in the sphere of more and less and the other comparatives, these last would be driven out of their own domain. When definite quantity is once admitted, there can be no longer a "hotter" or a "colder" (for these are always progressing, and are never in one stay); but definite quantity is at rest, and has ceased to progress. Which proves that comparatives, such as the hotter and the colder, are to be ranked in the class of the infinite.

> ... And all things which do not admit of more or less but admit their opposites, that is to say, first of all, equality, and the equal, or again, the double, or any other ratio of number and measure - all these may, I think, be rightly reckoned by us in the class of the limited or finite.(87)

Socrates then defines the class of the finite as:

> The class of the equal and the double, and any class which puts an end to difference and opposition, and by introducing number creates harmony and proportion among the different elements.(88)

In the enforcement of legal rights and duties, the courts may use, firstly, qualitative yardsticks, to preset the case for the application of the quantitative yardstick. In this way the infinite or potential diversity of situations is managed in relation to the precise order or harmony of finite numbers. A potentially infinite injustice is terminated by a quantitative award.

The Paradigms of
96. Compounds
97. Causation
98. Synthesis
99. Analysis

Through the Philebus dialogues, Plato divides all things into four classes: the infinite, the finite, a compound of the infinite and finite, and the cause of the compound. He also considers a fifth class, the cause of decomposition. This method of dialectic he describes as the process of division and enumeration. Plato is aware of the traditional doctrine in Greek philosophy which addresses causation. He states it in the Laws as:

> The wisest of all doctrines in the opinion of many. ... The doctrine that all things do become, have become, and will become, some by nature, some by art, and some by chance.(89)

The cause of compound may be regarded as the origin of synthetic thought; and the cause of decomposition, as the origin of analytic thought. An awareness of the distinction between similarity and

difference is a prerequisite to both synthesis and analysis. In legal knowledge engineering, analysis of unconsciously created syntheses in law, may be required for the design of legal expert systems. In the application of a synthesis of legal ideas, an analysis of the components and their relationships is required in order to determine whether or not there is a basis for analogy. A

major problem of analysing the synthesis occurs when the simple synthesis controls a complex of combinations of elements. The problem is to deal with the combinatorial explosion in configuring the legal knowledge structure to a processable structure which can emulate and apply the synthesis. Some complexes may contain knotted ideas which are also difficult to configure. Like Socrates, the modern computer requires some end to recursion if it is to produce a result. A program might provide a choice of points at which to terminate the recursion to allow a user to see in stages the whole reasoning complex. Legal data is itself finite in the sense that it is primary source law, the case reports and legislation. However, the meaning of that information may not be finite. The extent of the combinatorial explosion and meaning in law is the scope for choice in regard to the law. For this reason it must be accurately portrayed and accessible through a science of legal choice. Provisions for uncertainty would have to be made to deal with combinations of facts which are implicit in primary source legal data but have not been considered specifically.

The Paradigms of
100. Stable Reason
101. Irrational Change

In the Timaeus dialogues, Plato draws a distinction between reason which is constant and opinion which is relative. Matters of reason belong to the world of absolute abstracts. Matters of opinion introduce another aspect of conceptual relativity.

> What is that which always is and has no becoming; and what is that which is always becoming and never is? That which is apprehended by intelligence and reason is always in the same state; but that which is conceived by opinion with the help of sensation and without reason, is always in a process of becoming and perishing and never really is.(90)

The legal knowledge in legal expert systems is legal opinion. Nevertheless, legal opinion is apprehended by intelligence and reason, and is therefore a form of knowledge. However, the law is constantly changing and a legal expert system must be maintained accordingly.

The Paradigm of 102. Knowledge Macrostructure

Plato examines the potential of the method of dialectic to provide a complete understanding of the content of the cosmos. In the Philebus dialogues, the character of Socrates says:

> ... and the ancients who were our betters and nearer the gods than we are, handed down the tradition, that whatever things are said to be are composed of one and many, and have the finite and infinite implanted in them;
>
> ... the infinite must not be suffered to approach the many until the entire number of the species intermediate between unity and infinity has been discovered - then, and not till then, we may rest from division, and without further troubling ourselves about the endless individuals may allow them to drop into infinity.
>
> ... And this, I repeat, is what makes the difference between the mere art of disputation and true dialectic.
>
> ... the infinity of kinds and the infinity of individuals which there is in each of them, when not classified, creates in every one of us a state of infinite ignorance;(91)
>
> ... if we are not able to tell the kinds of everything that has unity, likeness, sameness, or their opposites, none of us will be of the smallest use in any enquiry.(92)

However, dialectic only applies in the world of constant ideas. In the Philebus dialogues, the character of Socrates defines dialectic as:

> Clearly the science which has to do with all that knowledge of which we are now speaking; for I am sure that all men who have a grain of intelligence will admit that the knowledge which has to do with being and reality, and sameness and unchangeableness, is by far the truest of all.(93)

Later Socrates clarifies the two classes of science:

> There was also supposed to be a difference in sciences; some of them regarding only the transient and perishing, and others the permanent and imperishable and everlasting and immutable; and when judged by the standard of truth, the latter as we thought, were truer than the former.(94)

R.A. Wilson, in his book, The Miraculous Birth of Language, reviews theories and evidence of the development of language, and acknowledges that Plato's theories and observations concerning the origin of language, are the 'first freely scientific and radical treatment of the question' which is, 'on the whole more fundamental and adequate than any modern treatment of the subject'.(95) However, Wilson takes an evolutionary view of the human mind. In the final Chapter of his book, he concludes:

> ... man gained for language that spaceless and timeless character which corresponds to the nature of free and conscious mind; motion and rest, change and permanency, fused in a single synthesis where each retains its own nature while freed from its own limits. The marriage of Heraclitus and Parmenides.(96)

This 'efficient instrument', as Wilson terms it, and its interface with other existences, still contains the dimensions or knots which would not be acceptable in a perfect Platonic world of ideas. These dimensions and knots make an understanding of Plato's perfect ideas inaccessible to people. Plato turned the peripheral paradoxes, which result from the artificial space-time dimensions of language, into a common cave where primitive thinkers are trapped in ignorance.

The world of ideal forms was scantily formulated by Plato. The little structure it is given is insufficient for it to be conceived as a reality in relation to human reality. If it is a valid entity, aspect or structure of or within human consciousness, then a more precise formulation of it might assist in the understanding, representation and processing of knowledge. Plato suggests the unuseable as the only valid useable. The Platonic world of ideal forms is the collective of ideas in an eternal state. They are constant; if they changed, they would

cease to transcend time. Ideas which indicate the nature of Platonic ideas may be those which represent the constant potential of the actual world or the timeless entities and processes of the real world. The idea of empty space might be like a Platonic idea but even space may be subject to changing shape. An unchanging reality is not subject to improvement or detriment. Charles Darwin's principles of evolution might also be considered as Platonic, since they are absolute and unchanging. The ideas of Plato may be the perfect tool but if they are not available, they must be treated as irrelevant in the human activites which strive to improve human reality.

In law, the view that ideas can have a valid existence without some correspondence in human reality, can be seen in the invention of abstract legal entities or legal fictions, which are difficult to vindicate in behavioural terms. For instance the concept of agreement as the basis of contract law, is tenuous. People may enter into contracts because they have no real choice; they do not feel in agreement but rather they feel legally bound. The court determines the existence of agreement by an 'objective test'; if the reasonable person would see there was agreement, then agreement is deemed to exist. In science, the existence of quanta is determined by the perfect metaphysics of mathematical calculation. Knowledge structures may certainly transcend and control ordinary human reality.

Plato's'perfect world of conceptual existence became the domain for fabricating the Christian heaven and the powers, purposes and lifestyle of God. In Europe, this pursuit of the human imagination, engaged the best rational thinkers during the prevalence of ruthless Roman and barbarian aggression, and throughout the dark ages; it diverted the development of science and law from secular domains back to the priests of a common religion.

The Paradigms of
103. Limited Purpose
104. Stable Eternity
105. Stable Metaphysics
106. Stable Truth

Aristotle, who was a pupil of Plato, developed his own school of thought. He qualified Plato's ideas by reference to finite boundaries and he saw paradoxes as an indication of boundaries. In the Metaphysics, this approach is stated clearly in the following extracts:

> ... the reasonable man, at least, always acts for a purpose, and this is a limit; for the end is a limit.
>
> ... nothing infinite can exist; and if it could, at least the notion of infinity is not infinite.(97)
>
> ... the principles of eternal things must be always most true (for they are not merely sometimes true, nor is there any cause of their being, but they themselves are the cause of the being of other things), so that as each thing is in respect of being, so it is in respect of truth.(98)

With this approach, Aristotle restored philosophy to the ordinary human reality. He saw human purpose as part of the framework of human reality. This framework is necessary for the development of a science of legal choice. Associated with the stabilizing factor of purpose is the stability of truth and eternity. These three points of reference provided the basis for Aristotelian metaphysics.

The Paradigm of
107. First Principles
108. Hierarchical Time

The basis of Aristotle's philosophy is a finite world with some eternal entities. In his definition of wisdom, as a science, Aristotle refers to his notion of the first principles of demonstration or being. These first principles would appear to be different aspects of a metaphysical structure which is not subject to its own rules and processes. These matters are set forth in the Metaphysics as follows:

> That Wisdom is a science of first principles is evident...; but one might ask the question whether Wisdom is to be conceived as one science or as several. If as one, it may be objected that one science always deals with contraries, but the first principles are not contrary.(99)

The English legal system has a set of first principles which establish its nature. Hierarchical time is reflected in the process of settling rules of law. Some rules are settled; the remainder are at various stages in the progression toward being settled. The more settled a rule, the harder it will be to overturn.

The Paradigms of
109. Induction
110. Habituation
111. Consistent Views

It might be that Aristotle ascribed one multi-perspective synthesis to all the aspects of human intelligence. In the Nicomachean Ethics, he portrays this picture as follows:

> Now of first principles we see some by induction, some by perception, some by a certain habituation, and others too in other ways. But each set of principles we must try to investigate in the natural way, and we must take pains to state them definitely, since they have a great influence on what follows.
>
> ... We must consider it, however, in the light not only of our conclusion and our premisses, but also of what is commonly said about it; for with a true view all the data harmonize, but with a false one the facts soon clash.(100)

The English legal system has aspired to this sort of coherence in its body of law. It draws on all reasoning processes as well as ordinary perceptions and common understanding. The case method of developing law assists in establishing this synthesis. However, with the advent of extensive legislative supplement to the common law, it is more difficult to maintain harmony, consistency or coherence in the data.

The Paradigms of
112. Hierarchical Principles
113. Theoretical Knowledge
114. Practical Knowledge

Wisdom, for Aristotle, is the study of the first principles which produce a knowledge of the truth consistent with common observations and understandings. These first principles are the

metaphysical principles upon which all other sciences build. The following extracts from the Metaphysics elaborate this view:

> It is right also that philosophy should be called knowledge of the truth. For the end of theoretical knowledge is the truth, while that of practical knowledge is action (for even if they consider how things are, practical men do not study the eternal, but what is relative and in the present.(101)

> ... But, taking the starting-points of demonstration as well as the causes, it is a disputable question whether they are the object of one science or of more (by the starting points of demonstration I mean the common beliefs, on which all men base their proofs); e.g. that everything must be either affirmed or denied, and that a thing cannot at the same time be and not be, and all other such premisses:- the question is whether the same science deals with them as with substance, or a different science.(102)

Matters of theoretical knowledge may be relevant considerations in informed decision-making. Theoretical law is certainly relevant to legal choice which founds action. If the metaphysical first principles deal with matters of the physical world, then it is necessary to define the relationship between the metaphysical and the physical domains. Aristotle examines the view of the Pythagoreans, namely, that the physical imitate the metaphysical numbers; he also considers the view of Plato that the physical participate in his metaphysical forms. Both of these approaches he finds too vague to be of assistance in the task of discovering the truth in the physical domain. He summarises the problems of each in the Metaphysics.

> Only the name 'participation' was new; for the Pythagoreans say that things exist by 'imitation' of numbers, and Plato says they exist by participation, changing the name. But what the participation or the imitation of the Forms could be they left an open question.(103)

The limitations of Plato's ideal forms are also discussed in the Metaphysics. The main criticism put forward by Aristotle is that, the ideal forms are so unclear in their structures that they are of little use in dealing with the sensible world.(104) It is very difficult to find in Aristotles works a clear indication of the relationship between the mental domain and the rest of existence,

save for his view that being and truth have a correspondence. Certainly, the mental domain represents and processes existences including its own existence. The existence of mind or consciousness is a constant, if not continuous, human factor. The content and processes of the mind are subject to variation from individual to individual and from time to time for any individual. Only in a notion of the collective conscious can these variations be stabilized.

Aristotle does not establish a clear location of his metaphysical concepts. He is concerned with the proof of the existence of god, an eternal conscious entity which exists on a higher level than any individual mind and which exercises power over individual minds. This idea of god could be a description of the collective conscious but there is nothing necessarily mystical in the idea of the collective conscious; it exists by reference to empirical matters which can be identified in the real world as a collective of surviving and contemporary thought, which is evolving. Law is part of this collective consciousness.

In the Metaphysics, Aristotle perceives the problem of the relationship between the mental and the physical world as paradoxical.

> ... the most paradoxical thing of all is the statement that there are certain things besides those in the material universe, and that these are the same as sensible things except that they are eternal while the latter are perishable.(105)

Aristotle recognises that there may be eternal sensible things.(106) An intermediate being between the concrete and the metaphysical is considered by Aristotle unfavourably.(107) His theory of truth depended on excluding middle categories. However, he deals with degrees of abstraction through the metaphysical processes which produce his static knowledge, namely generalization and categorization of constituent parts of things. Aristotle also recognises that the problem of the interface of metaphysical and physical beings is closely associated with the dimensions of potential and actual, and he asserts that it is not necessary for everything potential to be actual.(108) Through the development of law in cases, the English legal system has anchored

its theoretical matters in the facts of cases, the situation of the parties in the real world, as proven by evidence or admissions. Metaphysical law is developed from instances in the real world. There is a constant interaction between the real world of cases and the metaphysical statements of law. The orders handed down amount to a supervision of the real world by reference to the metaphysical domain of law. There is a practical as well as an ideal aspect of the legal system. The development of a science of legal choice might extend both the practical and ideal aspects of the legal system. Metaphysical information about legal choice could interact with actual legal choice.

The Paradigm of 115. Metaphysics

Aristotle poses a science of being qua being, his metaphysics, and discusses the different types of being in a relative world as it is subject to mental processing. Through his Metaphysics he sets up abstract forms as tools for discovering truths in the real world. They are not suitable tools for discovering their own truth because they are original creations and they exist by virtue of the fact that they have been invented or recognised as such. His methodology for discovering truth carried the status of ontology, an ontology of metaphysics. The legal system has been created according to this Aristotelian paradigm of metaphysics and is generally treated as an ontology rather than a methodology.

The Paradigm of 116. Irrational Need

Earlier philosophers were concerned with the nature of being in terms of ontologies. In the philosophies of Plato and Aristotle, there is an attempt to discover metaphysical reality and its structure. Both the reality and structure of the metaphysical domain had to be consistent with physical reality and how it was represented. In the Nichomachean Ethics, Aristotle recognises that there is an irrational sector of the human mind which may be beneficial.

> ... one element in the soul is irrational and one has a rational principle. Whether these are separated as the parts of the body or of anything divisible are, or are distinct by definition but by

> nature inseparable, like convex and concave in the circumference of a circle, does not affect the present question.
>
> Of the irrational element, one division seems to be widely distributed, and vegetative in its nature, I mean that which causes nutrition and growth ... this part or faculty seems to function most in sleep.
>
> ... the vegetative element in no way shares in a rational principle, but the appetitive and in general the desiring element in a sense shares in it, in so far as it listens to and obeys it.(109)

If this is so, then, to be effective, rational law must acommodate the appetitive and desiring element of mind.

The Paradigm of 117. Certainty ad hominem

Aristotle clearly indicates the relationship between human certainty and the laws of truth. This is stated in the Metaphysics as follows:

> There is a principle in things, about which we cannot be deceived, but must always, on the contrary recognise the truth, - viz. that the same thing cannot at one and the same time be and not be, or admit any other similar pair of opposites. About such matters there is no proof in the full sense, though there is proof ad hominem.(110)

There is no recognition of the idea of mental space in Aristotle's metaphysics, although time is seen as relevant. There is no discussion of the distinction between the time that a thought occurs and the representation of time in thought. These are both dimensions of human intelligence. A person may be able to recall opposite thoughts at one time. A person might both want and not want to do something, because of the contradictory aspects of that thing in its relative context. However, it might not be possible to both do and not do the thing. Therefore the thought which is the decision will be ineffectual if it is a direction to both do and not do the thing. It might be possible to do the thing in one context and not do the thing in another context. Space dimensions are necessary in thinking and different dimensions of time must be accommodated for each space dimension. The law has not fully exploited or mastered the subtleties of space-time thinking in the

resolution of human conflict. Studies of alternate dispute resolution sometimes incorporate advances in this regard. The rules of law should act as social traffic lights where appropriate if there is to be certainty ad hominem of reaching the destination which will satisfy needs and wants ad hominem.

The Paradigm of 118. Collective Truth

Aristotle also recognises the significance of the collective consciousness. Again in the Metaphysics, he states:

> The investigation of the truth is in one way hard, in another easy. An indication of this is found in the fact that no one is able to attain the truth adequately, while on the other hand, we do not collectively fail, but everyone says something true about the nature of things, and while individually we contribute little or nothing to the truth, by the union of all a considerable amount is amassed. Therefore, since the truth seems to be like the proverbial door, which no one can fail to hit, in this respect it must be easy, but the fact that we can have a whole truth and not the particular part we aim at shows the difficulty of it.(111)

Some people are in a position to see relative perspectives, some are not. The multi-perspective position is sometimes described as objectivity. From a multi-perspective position it may be possible to lay out the most efficient points for social traffic lights.

The Paradigm of 119. Metaphysical Knot

The concept of a knot in thought is also recognised by Aristotle in the Metaphysics.

> But the difficulty of our thinking points to a 'knot' in the object; for insofar as our thought is in difficulties, it is in like case with those who are bound; for in either case it is impossible to go forward.(112)

Knots may be represented in the social traffic light model as intersections that are difficult to work through as the lanes are not clearly marked. The knowledge needs to be unravelled to clearly present the choices. A common instance of a legal knowledge knot is where jurisprudential consequences of a

jurisprudential alternative are interwoven with evidentiary alternatives and consequences. For example, performance of a contract is knotted with discharge of a contract. It is not simply a matter of performance discharges a contract. Performance might be an action or omission. It might be required unilaterally or bilaterally. It may even be that a contract requires no performance. So the rule is: if performance is required and is completed, then the contract is discharged. Further, if performance is required and is not completed, there may be a discharge of the contract in other circumstances e.g. on the happening of a frustrating event. Other rules can be stated from the unravelling process. With a full statement of rules, the legal choices emerge.

The Paradigm of 120. Conceptual Systems

Aristotle has an understanding of conceptual systems. In reference to the works of earlier philosophers, he says, in the Metaphysics:

> After the systems we have named came the philosophy of Plato, which in most respects followed these thinkers, but had peculiarities which distinguished it from the philosophy of the Italians.(113)

The legal system is a conceptual system which, like philosophical systems, may be subject to systems analysis according to systems theory.

The Paradigm of 121. Formula

Aristotle's Metaphysics is largely concerned with categories, or the spectrums of knowledge, the dimensions of being or truth. Aristotle uses the division and enumeration method of dialectic to establish a theoretical hierarchy of metaphysical concepts. Vertical and horizontal spectrums are set up within the hierarchy. Reference is made to the physical world to verify the concepts used and their relationships. It is recognised that sensible objects exist and also conceptual abstracts. Being is equated with substance which is both the concrete thing which might have a temporary existence and the 'formula', consisting of words, which

is indestructible and unchangeable. Only formulae are capable of the scientific process of definition and of demonstration of necessary truths which is reliable.(114)

The English legal system has a clear interface with the concrete world, and also hierarchical metaphysics which structure the rules of law, and appellate jurisdiction. For instance in the law of trover, the true owner has the best title, then the owner of the real estate where the lost chattel is located who exercises control over the lost chattel, then the lessor of the real estate where the lost chattel is located where the lease agreement with the bona fide finder, or the employer of the bona fide finder, gives found chattels to the lessor, then the bona fide finder, then the bailee of a bona fide finder. This hierarchical entitlement indicates a range of legal choice and the priorities in legal choice.

The Paradigm of 122. Hierarchical Knowledge

Aristotle's metaphysical substance of being is given a structure initially through the categories of the essence, the universal, the genus and the substratum. The categories amount to different perspectives of being. Genus is divided into species. The units of being have constituent parts and attributes; they are also categorised, depending on the indivisibility of their movement or the indivisibility of their conceptual representation. Unity and plurality, identity, likeness, otherness and difference are established as a spectrum of being. Things have elements and there are three categories of elements: form, privation and matter. Different kinds of relationships are posed such as together in place, apart, between, and successive. Everything has a proximate and an ultimate moving cause. Further categorisation of causation is posed. The ultimate cause is termed the final cause, which is like a goal or an ideal; it fashions a teleological, and thus a rational, nature of being. Proximate causes might be effective or material causes; this involves both the effect of relationships of things and the inherent potential of things. The idea of potency in relation to possibility and actuality is discussed. Combinations and generation are examined. Various kinds of movement are considered; these might be compared

to the various kinds of human action posed in the Rhetoric. There may be principles of change where uniformity of change occurs. The agent of generation is posed as form embodied in another individual of the same species. Aristotle's metaphysics incorporates the dimensions of relativity in the real world. However, his metaphysical domain is static, like a tool which is available for use. It is a description of knowledge structures rather than thinking processes.

The law has not met the challenge of this Aristotelian paricularisation of metaphysics. In the construction of legal expert systems, Aristotelian categories might provide the regularity and control required for legal artificial intelligence.

The Paradigm of 123. Moral Choice

Aristotle is aware of the notion of choice in relation to action and morality. He considers this in the Nichomachean Ethics.

> The origin of action - its efficient, not its final cause - is choice, and that of choice is desire and reasoning with a view to an end. This is why choice cannot exist either without reason and intellect or without a moral state.(115)

This paradigm might be used as a framework for developing jurisprudential systems of choice.

The Paradigms of 124. Variability
125. Quanta

There may be matters of knowledge to be taken into account in the reasoning of decision-making but practical reasoning can also take account of likelihoods and matters less certain than constancy and truth. In the words of Aristotle:

> ... for that which can be scientifically known can be demonstrated, and art and practical wisdom deal with things that are variable.(116)

Variability is seen by Aristotle as the process by which things combine or separate. Aristotle's scheme of logic, controls the scope for variability in a time and space framework, through the

treatment of the concepts of accident and spontaneous generation and also through his rules of logical necessity.

In the Metaphysics, Aristotle defines the notion of quanta and it is in the sense that it is here defined that the term was adopted in modern physics. Part of his extensive definition is as follows:

> A quantum is a plurality if it is numerable, a magnitude if it is measurable. 'Plurality' means that which is divisible potentially into non-continuous parts, 'magnitude' that which is divisible into continuous parts;
>
> ... Again, some things are called quanta in virtue of their own nature, others incidentally; e.g. the line is a quantum by its own nature, the musical is one incidentally.(117)

The term quantum is used, in law, to mean the measure of damages. In modern physics, quanta are components of the atom. They are regarded as paradoxical because, depending upon how they are measured they are seen either as a plurality (particles) or as a magnitude (a wave). It is possible to identify in the law what might be termed legal quanta, that is, legal concepts which are treated as continuous entities but which may also be treated as discrete entities. For instance, the concept of duress covers a range of different forms of violence, all of which carry the same consequence in contract law; it is a continuous concept. However, in criminal law, each instance of duress, depending upon the sort of crime that it is, might carry different consequences; duress is a plurality because it is broken down into a number of alternatives, each carrying different consequences. For some purposes, duress is a continuum; for other purposes, it is quanta. It may be difficult to determine the application of a legal quantum where it is located on a continuous yardstick, such as the duress-non duress yardstick of human behaviour. Within the duress part of the yardstick, there is a spectrum of crimes. In a sense, each crime also has its own yardstick, the non-crime area of which may be a non-duress area or a duress area. Thus, a collection of metaphysical yardsticks, legal fiddlesticks, which are more extensive than the nature of any particular real situation, is required, as a jurisprudential system by which to manage duress

and crime, as coherent law. In developing this sort of jurisprudential system, the structures of the various Aristotelian categories and the processes for reaching and dealing with these categories, may be of assistance.

The Paradigm of 126. Completeness

The concepts of 'whole' and 'one' are specifically defined by Aristotle in the Metaphysics.

> While in a sense we call anything one if it is a quantity and continuous, in a sense we do not unless it is a whole, i.e. unless it has unity of form. ... This is why the circle is of all lines most truly one, because it is whole and complete.(118)

The nature of the universe as a whole is fundamental to Aristotle's metaphysics. He desribes this in the Metaphysics.

> For if the universe is of the nature of a whole, substance is its first part; and if it coheres merely by virtue of serial succession, on this view also substance is first, and is succeeded by quality, and then by quantity. At the same time these latter are not even being in the full sense, but are qualities and movements of it.(119)

The legal system is whole but it is not complete. It evolves through time, discarding some parts of itself and developing new parts. Within it there is some circularity. Overall, it is expanding, and this makes change of the most settled parts more difficult. This could produce stability, or the most settled parts might begin to dacay, causing the whole structure to collapse into itself. It is therefore useful to study the life span of a legal system, to see if and how this collapse might occur and might be prevented. There are signs of collapse in the contemporary English legal system, because it has grown beyond the means, and off course of the needs, of most people.

The Paradigms of 127. Contradiction
128. Contrariety

Aristotle deals with the rules for arrangement of specific entities. He locates things in the space and time frame of his metaphysics, by reference to the metaphysical law of contradiction. The law of contradiction determines what may coexist consistently in a common time frame; it is the rule which determines the domains of truth and falsity in terms of what is and what is not. Two contradictory propositions can not both be true and can not both be false. One must be true and the other must be false. There is no middle category between true and false, although there may be things which are excluded from both the domain of truth and the domain of falsity because of their nature. This arises largely in the meaning of language where a statement is not concerned to assert the being or non-being of something in a time frame. The nature of contrariety and opposition further refine the spectrums within each of the two domains of truth and falsity. The spectrum of contrariety is explained in this way in the Metaphysics:

> For all things are either contraries or composed of contraries, and unity and plurality are the starting points of all contraries.
>
> ... it is impossible that contrary attributes should belong at the same time to the same subject.(120)

A thing may have a single contrary; other things may have more than one contrary and might be placed in an escalating order as the number of contraries increases. The more contraries which something contains, the more will be the things which it excludes. Contraries may be opposites, such as 'good' and 'bad' or merely different, such as 'red' and 'yellow'. Aristotle also developed classes of contraries and opposites. In the relative world, contradictories, contraries and opposites may be subject to the uncertainties of change which are explained by Aristotle as follows:

> ... while there is some justification for their thinking that the changing, when it is changing, does not exist, yet it is after all disputable; for that which is losing a quality has something of that which is being lost, and of that which is coming to be, something must already be. And in general if a thing is perishing, there will be present something that exists; and if a thing is

> coming to be, there must be something from which it comes to be and something by which it is generated, and this process cannot go on ad infinitum. - But, leaving these arguments, let us insist on this, that it is not the same thing to change in quantity and in quality.(121)

In contemporary legal theory, Aristotelian logic is employe to ensure that the rules of law are consistent. This consistency is necessary; otherwise, in the compliance model of law, a person may be required to do and not do the one thing, or to do two different things whereby the one offsets the other. Contradictions in the law may make the law ineffectual, either because the behaviour which it requires is physically impossible or because possible behaviour which it requires is indeterminable: the result may be an absurd order or the conflict may be aggravated rather than resolved. For instance, contradictory law such as the definition of marriage as a union for life, coupled with divorce law, when relied on behaviourally, entails a point or period of conflict; matrimonial law predetermines and provides for conflict in its unreasonableness and irrationalities. It is concerned with solutions to customary conflict, instead of setting up alternative customs as reasonable paths which might prevent conflict. Spouses are locked into potential conflict; for many women, their marriage is the major framework of their lives, so that their whole lives are locked into potential conflict. The rationality of law is limited by its preservation of values which carry long term conflicts.

The Paradigms of
129. Logical Being
130. Inductive Generalization

In his Logic (Organon), Aristotle further developed his science of being. He introduced a schema for dealing with language so that truth and falsity may be discovered in propositions. His Categories, Prior Analytics, and Posterior Analytics, provide systemic structures for the arrangement and processing of thought. These structures can create as well as unravel the knots of reasoning which are inherent in intuitive understanding and decision-making. The Logic and the Metaphysics are built on the framework of dialectic but they proceed from the concept of being through the use of deduction to a theoretical hierarchy. The

categories of language presuppose a hierarchy of generalization which stratifies particularization. Deduction presupposes induction, and, together, these forms of reasoning provide directions of flow through the hierarchy. The laws of contradiction, contraries and opposites, which apply to specific situations, also rest on the experience of the senses as well as inductive generalization. So Aristotle's metaphysical system must be open to experience or incorporate experience (Aristotle's notion of common beliefs), or both. It might be thought that by presupposing the process of induction, there is a necessary relationship between the physical world and Aristotle's metaphysical system, whereby, the metaphysical arises from and depends upon the physical. Further, Aristotle's metaphysical ontology and methodology is applied to the physical world through an interface of analogy. It might be thought that the metaphysical, with its space-time amalgam, is created by analogy to the physical world, and that the metaphysical is applied to the physical world by the reverse analogy. It is clear in the following extract from the Metaphysics that Aristotle is aware of the significance of induction in relation to his spectrums of existence:

> Since things which differ may differ from one another more or less, there is also a greatest difference, and this I call contrariety. That contrariety is the greatest difference is made clear by induction. For things which differ in genus have no way to one another, but are too far distant and are not comparable; and for things that differ in species the extremes from which generation takes place are the contraries, and the distance between extremes - and therefore that between the contraries - is the greatest.(122)

English law has been developed with this type of Aristotelian spectrum. Each field of law, such as crime, tort, contract, and property, is treated as a genus, within which, contraries are set up as causes of action, to spawn new rules of law. Where there is an overlap, as for instance where a case might be framed in tort or contract, the claimant may have to elect to rely on one only. This structure has hindered coherent systemic views of the law.

Aristotle's search for truth dispaced the complex patterns which occur each day, as the members of different species of things behave naturally. The creation or re-creation of a natural event might be a goal of human behaviour. Causation might have to be set off by reference to the logical reasoning of induction and deduction. At the outset of the Metaphysics, Aristotle sets out the progression of human learning which leads to a theoretical understanding of why things are or happen. Through his metaphysics of truth, this understanding might be enhanced; truths about causation might constitute an understanding of why and how things are or happen.

> ... from sensation memory is produced ... from memory experience is produced ... science and art come to men through experience...
>
> we do not regard any of the senses as Wisdom; yet surely these give the most authoritative knowledge of particulars. But they do not tell us the why of anything.(123)

Aristotle recognises that experience is necessary if the benefits of theory are to be obtained.

> If, then, a man has the theory without the experience, and recognizes the universal but does not know the individual included in this, he will often fail to cure; for it is the individual that is to be cured.
>
> ... For men of experience know that the thing is so, but do not know why, while the others know the 'why' and the cause.(124)

For a person to work out how to achieve ends in daily life, in accordance with law, those ends must be identified in the body of law. Then the means of attainment of those ends need to be identified in the body of law. Having ascertained the legal framework for daily life, the person then must specify, by analogy, the particular course of conduct to adopt, and behave accordingly. For instance, each day, a person will require food. Food is a form of property. If the person has no food, then it is possible to obtain food in accordance with law by entering into a

contract to buy food from someone who wishes to sell it. The daily habits of buying food are so common that the customs can be followed without a knowledge of the law. However, a person with a knowledge of contract law knows the legal reinforcements in the customary practice, and how to manage the situation if something goes wrong. Methodology goes beyond custom.

The Paradigm of
132. Relative Abstracts
133. Relative Generalizations

In the Categories, Aristotle might be seen to be setting up various perspectives of the relative world in order to examine if the rules of truth apply differently in each. These categories or perspectives, at the macro level are: substance, quantity, quality, relation, place, time, position, state, action and affection. The Prior Analytics is largely concerned with the various forms of syllogisms which amount to further rules for determining truth or locating the position of particulars in relation to generalizations.

The full scope of Aristotle's works contains a wealth of structures which might be systematically developed as knowledge engineering tools. Only some of these resources are considered in this thesis. However, the brief outline of Aristotelian structures treated here indicate that, if legal knowledge engineering is to be a science, it requires these resources. Contemporary legal theory is not suited to the reasoning of formal logic alone; it is concerned with consistency, behavioural possibility, and practical reasoning, as well as with truth. However, the chaining paradigm in formal logic may be useful in the development of a science of legal choice, where there is an assertion of the existence of each factor in the chain as a fact of a case, and the end result is a legal consequence rather than a finding of truth. A hierarchical structure may provide the guide for determining the sequence of links in the chain; but the chain through the metaphysical domain must also be suited to the relativity of real world situations and deal with user's who present real world impossibilities.

The law is concerned not just with truth and falsity but also with what people ought to do. It requires consistent pictures of the

past, present and future in both their static and sequential cross-sections. In modelling what a user ought to do, a legal expert system might take the user on dialectic pathways of questions and answers which establishes the model for the particular situation of the user; or a legal expert system might take the user on information network pathways which establishes the choice of compliance models and enforcement models. There should be no need for the user to work out questions but a legal expert system might enable a user to select a question. Each model contains its own set of abstractions, generalizations, and categories of things in relationship to each other. Explanations of the model may accommodate the perspectives of litigants whose conflict it seeks to resolve. Between the legal system and the user, the interface logic must deal with both conceptual and physical relativity.

The Aristotelian hierarchical theory paradigm, might be used to develop tree paradigms which will be useful in legal knowledge engineering. Tree paradigms are design aids in creating a computer program which will behave like a human expert. The hierarchy paradigm has been used to develop contemporary legal theory but not always as a tree structure. However, because judicial law is only developed as cases arise, theory, and perhaps also trees, often appear fragmented and incompletely formulated. Logical processing can only be created if the categories are complete. It is possible to make logical categories complete even if the jurisprudential consequence for each category is uncertain due to a gap in the law. The Aristotelian tools of argument developed in the Topics, On Sophistical Refutations and the Rhetoric, and in the extensive study of meaning in On Interpretation, may be of assistance in ensuring the correctness of advice provided by legal expert systems. From these studies, further design aids might be framed for the field of legal knowledge engineering.

Through his Metaphysics and his Logic, Aristotle mapped out the realms of formal reasoning and systemic paradigms. In the Metaphysics, he envisaged the fields of science across his spectrum of constant classes.

> Now for each one class of things, as there is one perception, so there is one science, as for instance grammar, being one science, investigates all articulate sounds. Hence to investigate all the species of being qua being is the work of a science which is generically one, and to investigate the several species is the work of the specific parts of the science.(125)

This basis for scientific studies opened the way for specialisation in the sciences. Aristotelian metaphysics not only provided a framework for truth or knowledge, it also permitted the abstraction of fields of study. Accordingly, law constituted a field of science.

The Paradigms of
134. Distributive Law
135. Rectificatory Law
136. The Mean

The Nicomachean Ethics contains a study of justice. Aristotle recognises the two models in law which he classifies as the distributive and the rectificatory. The former he sees as subject to geometrical proportion and the latter to arithmetical progression. These two classes of law might be understood as the behavioural model for conformity to the law and the behavioral model for enforcement where there has been a failure to adhere to the conformity model. The former models human life in the physical world; the latter provides compensation usually in monetary terms. Aristotle also recognises the distinction between natural and legal justice and degrees of wrongdoing. Justice is regarded as a manifestation of inner structures and processes. The just is fair and equal. The moral standard developed in the Nicomachean Ethics is that of the mean. There is a sense of balance in this concept.

The Paradigm of 137. Fairness

The measures of justice are put forward by Aristotle as the quid pro quo of the social contract. This applies in both the distributive and the rectificatory models of law. In the Nicomachean Ethics, Aristotle considers what is a fair exchange.

> But in associations for exchange this sort of justice does hold men together - reciprocity in

accordance with a proportion and not on the basis of precisely equal return.(126)

The Paradigm of 138. Equity

In the Nicomachean Ethics, Aristotle deals specifically with the requirement of equity in particular cases to correct the law. An adjustment is required in exceptional cases because in the formulation of principle, the generality makes the law unsuitable in some cases.

> What creates the problem is that the equitable is just, but not the legally just but a correction of legal justice. The reason is that all law is universal but about some things it is not possible to make a universal statement which shall be correct. In those cases, then, in which it is necessary to speak universally, but not possible to do so correctly, the law takes the usual case, though it is not ignorant of the possibility of error. And it is none the less correct; for the error is not in the law nor in the legislator but in the nature of the thing, since the matter of practical affairs is of this kind from the start. When the law speaks universally, then, and a case arises on it which is not covered by the universal statement, then it is right, where the legislator fails us and has erred by over-simplicity, to correct the omission - to say what the legislator himself would have said had he been present, and would have put into his law if he had known.
>
> ... In fact this is the reason why all things are not determined by law, that about some things it is impossible to lay down a law, so that a decree is needed. For when the thing is indefinite the rule also is indefinite ... the decree is adapted to the facts.(127)

This view of equity gives it the same sort of adjusting characteristic that is required by the element of randomness in the physical world. This randomness can produce evolutionary change and might be viewed as a creative or free force. The notion of equity is sometimes closely associated with the Hellenistic values of individualism and freedom; it is also sometimes seen as an equalizing, adjusting force of law. If Aristotle's view of equity is correct, then there might be a requirement of provision for equity in the design of a legal expert system.

The Paradigm of 139. Relative Goodness

In the Nichomachean Ethics, Aristotle makes it clear that the term 'good' is a consideration in all the aspects of the relative world. Anything might be a matter of ethics.

> ...'good' has as many senses as 'being' (for it is predicated both in the category of substance, as of God and of reason, and in quality, i.e. of the virtues, and in quantity, i.e. of that which is moderate, and in relation, i.e. of the useful, and in time, i.e. of the right opportunity, and in place, i.e. of the right locality and the like) ...(128)

The English system of law is certainly pervasive. Everything is classified either as a class of property or as a person. The activities of the natural environment may be force majeur or a frustrating event. The activities of people may fall within the categories of crime, tort, contract, contract or trust. In this way, anyone and anything might be involved in legality or illegality.

A comparative study of the constitutions of the Greek States was made by Aristotle and his pupil, Theophrastus. Comparative law studies found an inter-state and international view of relative law. For Australia, this raises new problems. If the common law is developed consistently with legislation, and legislation varies from state to state, then potentially the High Court of Australia will administer and develop six different common laws and an additional two for the Northern Territory and The Australian Capital Territory. Thus, insofar as there are systems of choice with ethical implications, in law, there can not be a common Australian freedom or morality.

The Paradigm of 140. Empirical Investigation
141. Natural Teleology

Aristotle carried out extensive empirical investigations which extended and complemented his formal structures of metaphysics, in particular his formal logic. This work is contained in his treatises on animals and his physical treatises. He also explored the realms of psychology in On the Soul and the treatises which

are known as Parva Naturalia, Short Physical Treatises where he examines, inter alia, memory, sleep and dreams. In the works of Aristotle, there is an attempt to reconcile the teleology of nature and the realms of human teleology. Human beings could make their own laws for their own purposes but those purposes are largely determined by the natural requirements for human survival, the nature of human reason and society, and the natural limitations of human understanding and control.

The spectrum paradigm which Aristotle employed in his biological treatises, was a paradigm used in English analytical legal science of the nineteenth century. The law still is studied by genus and species categories, with little opportunity to examine the species across genera, or to examine the law holistically, so as to gain a systemic picture of the social organisation and legal choice which it fashions. This is not to say that the spectrum paradigm was taken from Aristotle. From the time of the earliest codes of law, the rules were set out in the spectrum mode, viz. the Hammurabi Code was laid out in fields of law such as property, matrimonial, and labour law. This facilitated the location of a rule. In the nineteenth century, the spectrum had become a methodological paradigm which was popular in biology and botany, perhaps because it was used in this way by Aristotle.

In his Nichomachean Ethics, Aristotle sets out the domains of the human intellect. He sees science as a matter of demonstrative knowledge, art as a knowledge of how to make things, and intuitive reason as knowledge of the principles from which science proceeds. Then there are two forms of wisdom: practical wisdom which is a knowledge of how to secure the ends of human life and philosophic wisdom which is the combination of intuitive reason and science.

Plato and Aristotle were concerned with major developments of human intelligence which promoted the cognitive development of the collective consciousness. Alexander the Great (355-323 B.C.) of Macedonia, was a pupil of Aristotle. He took a Greek army across Asia, conquering the east through to India. This introduced Greek learning into the east. He established the city of Alexandria in Egypt in 332 B.C. which was left to the rule of one of his generals, Ptolemy. This city became a major seat of western

learning from the second century B.C. for about eight centuries. However, most of that learning was destroyed by a conquering military force. Aristotle was driven out of Athens in 323 BC, the same year that Alexander the Great died. He was condemned but escaped execution by fleeing north to Chalcis; he died the following year. Demetrius of Phalerum who became archon of Athens in 317 BC was a pupil of Theophrastus. During his period of office, he attempted to continue the development of the Athenian code by a synthesis of practical and theoretical traditions.

The Paradigms of 142. Utilitarian Equality
143. Soul Atoms

Epicurean philosophy was less concerned with the problems of knowledge posed by Socrates and more concerned with developing human life in the best way. Epicurus was influenced by a disciple of Socrates, Aristippus of Cyrene who developed a hedonistic philosophy. If the philosophy of Socrates was extended by the Epicureans, then it was extended in the realms of Socrates' moral view that, despite the cognitive limitations of human beings, they should deploy whatever resources they have to doing good works and leading a worthy life. The sentiments of a utilitarian equality, an equality in happiness, enriched by the pleasures of the human intellect are to be found in this philosophy. Epicurus applied the atomic doctrine of Democritus to the human soul and posed soul-atoms as material particles comparable to breath or heat and spread throughout the body. However, in his philosophy, which was atheistic, there was no life after death; life ended with the cessation of sensation. The paradigm of soul atoms is a basis for conceptual relativity, which in turn is a basis for jurisprudential relativity, which is as immortal as the evolving collective consciousness.

The Paradigms of 144. Common Sense
145. The System of Nature

Stoic philosophy shaped an ethical lifestyle largely modelled on the character of Socrates, who was indifferent to physical comforts, righteous in his trial, and calm in the face of death. They were not so concerned to attain the remarkable intellect, the

levels of concentrated thought and the vibrant humanity of Socrates; these traits were captured by the Epicureans. The emphasis in Stoic philosophy was on virtue and common sense. Zeno maintained that the cosmos is rigidly determined by natural law which proceeds in a cyclic pattern. He was a materialist who thought that even the soul was a solid, and a holist who believed that all things are a part of a single system called Nature. Virtue was to be achieved by conformity to the harmony of Nature. This could be attained by adopting the same ends as Nature and obeying natural laws. Human freedom is the freedom to choose this lifestyle rather than seeking other ends. There was also an element of masochism and martyrdom in Stoic aspirations: it was considered that cruelty and injustice provided the best opportunities for the exercise of virtue. This led to a certain selfishness as pointed out by Bertrand Russell in his History of Western Philosophy, for in adversity the Stoic will not be driven by a passion to rectify the situation but rather his concern will be to maintain his own virtue.

> As for public life, it may be your duty to engage in it, since it gives opportunities for justice, fortitude and so on; but you must not be actuated by a desire to benefit mankind, since the benefits you can confer - such as peace, or a more adequate supply of food - are no true benefits, and, in any case, nothing matters to you except your own virtue.(129)

The English legal system is not ostensibly Stoic and judicial dicta often asserts that the rules of law are for human benefit. However, litigants are sometimes required to be stoical in their determination in order to endure the rigours of legal process. Lindy Chamberlain is a prime example which demonstrates this aspect of the legal system.

The Paradigms of
146. Objective Morality
147. Determinism
148. Powerlessness
149. Right Reason

To the Stoics, who believed in the principle of 'love thy neighbour', love was an objective matter. This view was adopted in the law of negligence and is prevalent in many of the aspects

of the common law legal system. The objective morality of the Stoics was personal rather than integrated into a human-made social system such as the social contract. All the ingredients of Nature had a purpose that pertained to humans, so that nature was deterministic and systemic; but God, Right Reason, was the force in it all and people would be powerless to change anything even if they knew about it. The legal system requires its subjects to be stoical, in that its subjects must regard the legal system as Right Reason, which will deterministically set the course of their lives, and that, otherwise, they are powerless. This inherent nature of the legal system has inhibited the development of a science of legal choice.

The Paradigms of
150. Consensual Knowledge
151. Natural Rights
152. The Balance of Probabilities

Some of the Stoics did develop a theory of knowledge which was largely empirical with some ideas and principles based upon 'consensus gentium', the agreement of humankind. This principle underlies the role of the jury in the English legal system. Stoic philosophy marks the transition from Greek dominance in western civilization to Roman dominance. Stoicism was widely adopted by the Romans and became a major influence in the Roman legal system. The idea of natural rights which provided a basis for human rights has its origin in Stoicism. So too does the civil burden of proof, on the balance of probabilities. Russell describes the Stoic reasoning which underlies this test.

> ... the deceptiveness of the senses, they held, was really false judgment, and could be avoided by a little care. A Stoic philosopher, Sphaerus, an immediate disciple of Zeno, was once invited to dinner by King Ptolemy, who, having heard this doctrine, offered him a pomegranate made of wax. The philosopher proceeded to try to eat it, whereupon the king laughed at him. He replied that he had felt no certainty of its being a real pomegranate, but had thought it unlikely that anything inedible would be supplied at the royal table.(130)

The Paradigm of 153. Innate Ideas

For the Stoics, certainty was innate, and they developed a notion of innate ideas and principles as the first principles of knowledge. This philosophy is vindicated by the notion of imprinting.(131) In a sense, the ability of the human mind to work with paradigms, reflects a human susceptibility to imprinting of forms or structures which might then be used flexibly in a variety of situations similar or dissimilar to the situation in which the paradigm was first perceived, albeit unconsciously. These imprinted paradigms could be regarded as innate and in this sense a matter of innate certainty. Such predisposition is like preconceived ideas; it is the source of intelligence but might also be the straight-jacket of intelligence. It is difficult to know what innate tendencies have produced the legal system, but

the lack of a science of legal choice indicates that, although human beings have a natural curiosity, they have not yet sought to be ruled by a metaphysics of choice.

The Paradigms of 154. Cynicism
155. Non-materialism
156. Social Entropy

Antisthenes (455-360), who had a school of rhetoric in Athens, became a disciple of Socrates, and founded a sect of Cynicism around 396 B.C., shortly after the death of Socrates. The term cynic, meaning canine, was applied to these philosophers because, in their poverty, they lived like dogs. Antisthenes rejected the lifestyle of Athens, closed his school, and took to poverty and public preaching of a philosophy of 'return to nature'. The cynics considered that only by living outside of society could the laws of nature be discovered and followed. One of the pupils of Antisthenes, Diogenes (420-324 B.C.), took this philosophy to extremes and popularised the cult of cynicism. His philosophy was one of a virtuous lifestyle because he was free of the corruptive influence of material values. He was greatly admired by Alexander the Great. By the third century B.C., the popularity of cynicism had reached Alexandria, in Egypt, which was then a leading city of learning. In modern times, cynicism has come to mean contemptuous criticism which undermines ex facie efficacy. If it is levelled

at a court, it is an offence. However, it may be levelled at the law as a form of critical thinking.

The Paradigms of
157. Scepticism
158. Systematized Doubt
159. Relative Doubt

Pyrrho, who was in Alexander's army, retired to his home town of Elis and, in about 304 B.C., founded the philosophy of scepticism, which amounted to the systematization and formalization of doubts. He was of the view that there could never be a rational ground for preferring one thing to another. Consequently he was indifferent to everything, including his own survival. Scepticism explored doubts about sense perception, logic and morality and recognised the scope for uncertainties in the mental domain. The subjectivity of doubt was given the status of the first premise in cognition and placed people in a world of illusions and appearances. Doubt is accommodated in the English legal system in the prosecution's burden of proof in criminal proceedings, namely proof of the offence beyond a reasonable doubt.

The Paradigms of
160. Self-referencing
161. Subjectivity
162. Balanced Objectivity
163. Degrees of Probability

A disciple of Pyrrho, Timon, pointed out that if no objective principle could be asserted, then all logical arguments were circular or self-referencing, which is a form of subjectivity. Timon spent his later life in Athens. His teaching was taken up by the Academy as a perspective from which both sides of an argument might be examined objectively. Subsequently, two successive heads of the Academy, Carneades and Hasdrubal developed a doctrine of degrees of probability. They maintained that it was reasonable to act on the most probable of possible hypotheses. In the second half of the first century B.C., the Academy fell under the influence of Stoicism. In the legal system, there are some dangers in equating the most probable with truth. If it is not in fact the case that the most probable is the truth, and it is relied on as the truth, great injustice may result. It is a

difficult task for counsel to establish the truth counter to the most probable evidence. A compromise of probability imposes a further metaphysical dimension on conceptual and physical relativity.

The Paradigm of 164. Recursive Paradoxes

In Greek philosophy, all the major influences of human learning were established. The Ionian philosophers explored the ontologies of nature and produced the pictures which we now understand as quantum theory, relativity and systems. Within this Ionian view of the world, Plato distinguished the realms and potential of the world of human concepts. Aristotle provided the empirical approach as a complement to structured conceptual tools of metaphysics, in particular, the tool of formal logic. Epicurus had posed the goal of conceptual balance for the benefit of human life and the cynics, skeptics and stoics mapped out the limitations and endurance of the world of human concepts.

It might be born in mind at this point that, in the East, the meditation known to Pythagoras was adopted as a practice of the sages and as a methodology for discovering and developing a lifestyle akin to Epicurean and Platonic beliefs. The philosophy of Lao Tzu in China in the sixth century B.C., which founded Taoism, contains an important element which was not ostensible in the Greek learning: this was a circular or holistic view of paradoxes. The Greek philosopher, Zeno of Elea and the rhetoricians had raised the problem of paradoxes within a framework of logic. In the East, there was a mystical view of paradoxes which assisted the search for an enlightened personality and lifestyle. A major thrust of the Eastern view was that it introduced a large measure of tolerance of the diversity and adversity in human life. The Greek view of paradoxes led to the particularisation of logic and systemic ontologies, as well as theories of ideal personalities and societies.

Conclusion

In the 5th century BC, the Ionian school of thought reached its heights with the formulation of the atomic theory by Leucippus and

Democritus. However, at the same time, the seeds were sown in the philosophy of Parmenides, for the metaphysical pre-occupation which characterised philosophy for the next two thousand years. It may be that the schools of rhetoric with their paradoxes, probability arguments and illusive persuasion contributed to the new direction which learning was to take, away from the course of physical science. In the 4th century BC, philosophical enquiry became concerned with the nature of the human intellect. It is therefore not surprising that there then emerged, juristic enquiry into the nature of human law, which was concerned to reconcile the phenomenon of human law and the mechanistic and teleological theories of the cosmos and the natural world. Natural law was regarded as the determinant of natural phenomena. An ancient notion of justice was incorporated in some of the scientific theory of the Ionians: natural law achieved natural justice. The problem then became for human law to achieve human justice. As speculation in Greek philosophy was exhausted, specialised investigation was taken up both in the matters of science and the details of law. This introduced a direction of learning which would eventually blossom into modern scientific methodology. Choice in the law may now be made more certain by the use of these modern methods.

The development of law and science through the philosophies and technological practices of early times, reflects the development of human intelligence. When the minutiae of these developments in intelligence are studied, the systemic fragments of intelligence may be seen struggling to emerge. With the potential for artificial intelligence in modern computer technology, there is now a requirement to systematize these fragments of human intelligence for the purposes of specific program tasks. Artificial intelligence has promoted a new development of human intelligence: human intelligence must now develop a paradigm of itself, which it can control and use to fashion aids for itself. In Chapter Six, an initial systematization of the resources of human intelligence is posed as the information or thinking system, SURMET. This system may be further particularized by an extended rationalisation of the paradigms and perspectives covered in this Chapter. The paradigms of intelligence are decision-making

paradigms as well as knowledge or understanding paradigms. They may be used to decide what is knowledge and what to do.

The thesis does not attempt a comprehensive rationalisation of the fragments of intelligence. It is concerned to establish that human intelligence could be a system and the nature of the elements of that system, for the purposes of re-orienting the legal system to the full potential of human intelligence. The task of further rationalisation of the system of human intelligence might proceed with the development of specific intelligent programs, just as legal theory is developed to accommodate new cases. Jurisprudential systems science and the science of legal choice are major frameworks for this further rationalisation of intelligence. Development of the system of human intelligence must be limited to a manageable complexity. Intelligence, like any system with a great number of elements, contains the potential for combinatorial implosion that might produce a density of information which could make it the black hole of human culture: unworkable.

Footnotes

(1) The University of Chicago Press, U.S.A., first published in 1962 and revised in 1970

(2) Ibid. page 46.

(3) Vol.3 No.1 Legal Studies March 1983, page 1ff.

(4) For a summary of imprinting theory in the context of a natural history of human knowledge, see K. Lorenz, Behind the Mirror, first published in 1973 as Die Ruckseite des Spiegels, English translation by Ronald Taylor, Methuen and Co Ltd., London, England, 1977, page 78ff. See also Jurij Moskvitin, Essay on the Origin of Thought, Ohio University Press, U.S.A., 1974, Chapter 11, entitled, The Roots of the Anthroposphere, for a discussion of the role of imitation in invention by human beings to achieve goals.

(5) Guild Books, London, England, 1937, page 183.

(6) Ibid. page 184.

(7) Watts & Co., London, England, 1921, page 46ff.

(8) The World's Earliest Laws, Watts & Co., London, England, 1934, page 44.

(9) Op. cit. page 69.

(10) Ibid. page 70.

(11) Ibid. page 96.

(12) Ibid.

(13) Penguin, Harmondswôrth, England, 1946, Revised Edition, Page 48.

(14) Ibid. page 50.

(15) Ibid. page 52.

(16) Ibid. page 61.

(17) Macmillan, London, England.

(18) Ibid. page 460.

(19) Edited by Felix Guirand, Translated by Richard Aldington and Delano Ames, Batchworth Press Ltd, London, England, 1959.

(20) Lancer Books Inc., New York, U.S.A., 1953, first published 1952.

(21) A pond at the site of the Golden Bough.

(22) Op. cit. page 132.

(23) Translated by James Strachey, Routledge and Kegan Paul, London, England, 1950, page 159; originally published as essays in Volume 1 (1912) and Volume 11 (1913) of the Viennese pariodical, Imago.

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(28) Op. cit. page 24.

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(31) N.G.L. Hammond, The History of Greece, Clarendon Press, Oxford, England, second edition, 1967, pages 24-91.

(32) See William Dwight Whitney, Oriental and Linguistic Studies, Scribner, Armstrong and Co, New York, U.S.A., 1873.

(33) Fontana Paperbacks, London, England, revised edition, 1983. This book considers a range of geometric paradigms which could be useful in legal knowledge engineering.

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(54) Ibid. page 810.

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(56) Ibid. page 53.

(57) Ibid. page 61.

(58) Ibid. page 517.

(59) Ibid. page 109.

(60) Ibid. page 111.

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(62) Ibid. page 176.

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(65) University of California Press, Berkeley, U.S.A., 1982.

(66) Op. cit. page 110.

(67) Ibid. page 104.

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(69) For an explanation of push-down stacks see Harold S. Stone and Daniel P. Siewiorek, Introduction to Computer Organization and Data Structures: PDP-11 Edition, McGraw-Hill Book Company, New York, U.S.A., 1975, page 162.

(70) Op. cit. page 109.

(71) Ibid. page 632.

(72) Ibid. page 112.

(73) Ibid. page 224.

(74) See Lateral Thinking: a Textbook of Creativity, Ward Lock Educational, London, England, 1970, and The Use of Lateral Thinking, Penguin Books, London, 1967. In these books, lateral thinking is contrasted with vertical thinking which has a limited scope like a fixed hierarchy from which deductions can be made.

(75) Op. cit. page 137.

(76) Ibid. page 140.

(77) Ibid. page 146.

(78) Ibid. page 12.

(79) Ibid. page 184.

(80) Ibid. page 217.

(81) Ibid. pages 760-761.

(82) Ibid. page 748.

(83) Ibid. page 243.

(84) Ibid. page 231.

(85) Ibid. page 244.

(86) See also the discussion of yardsticks at page 135.

(87) Op. cit. page 616.

(88) Ibid.

(89) Ibid. page 760.

(90) Ibid. page 447.

(91) Ibid. page 612.

(92) Ibid. page 613.

(93) Ibid. page 634.

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(95) The British Publishers Guild, London, 1941, first published in 1937, page 40.

(96) Ibid. page 184.

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(98) Ibid. page 512.

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(100) R.M. Hutchins (ed.), The Works of Aristotle, in Great Books of the Western World, Volume 9, translated under the editorship of W.D. Ross, Encyclopaedia Britannica, Chicago, U.S.A., 1952, pages 343-4.

(101) Op. cit. page 512.

(102) Ibid. page 515.

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(105) Ibid. page 516.

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(107) Ibid. page 516.

(108) Ibid. page 521.

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(111) Ibid. page 511.

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(113) Ibid. page 505.

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(119) Ibid. page 598.

(120) Ibid. page 524.

(121) Ibid. page 529.

(122) Ibid. page 581-2.

(123) Ibid. page 499-500.

(124) Ibid. page 499.

(125) Ibid. page 522.

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(128) Ibid. page 341.

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CHAPTER THREE

THE LIFE OF A LEGAL SYSTEM - ROMAN LEGAL SCIENCE

Introduction

The Ritualistic Period

The Common Law Period

The Theoretical Period

The Casuistry Period

The Codification Period

Conclusion

Introduction

The development of Roman law proceeded from religious origins in the eighth century B.C., through a number of scientific influences for about fifteen hundred years. In the last one hundred years of this period, when the Roman Empire had split into two, the Eastern Empire which had fashioned the final advances in the legal system, ceased to be Roman, and the Western Empire, which had ceased to be secular, resumed a religious nature. The influence of the Roman law can still be seen in the law of many countries, including the English law. The changes which may be observed in the Roman legal system are indicative of the pattern of change which might be expected of any legal system which spans fifteen hundred years. The English legal system, which arose from the chaos of the eighth century A.D., has so far spanned nearly twelve hundred years. It is not difficult to see analogies between the pattern of development in each of the two systems. If the analogies are correct, then the English system is about to enter the stage which is equivalent to the final stage in the Roman legal system, the codification stage. It is interesting to note that, at this present time, the heart of the English Empire, Britain, is about to become European, and, in the East, in Australia and New Zealand, the English settlements are looking to an Eastern identity.

The stages in the development of Roman law have been classified by two scholars, Charles S. Lobingier (1) and Fritz Schulz (2), in different ways, but there appears to be a common tendency to find eras of development marked by political changes which have carried with them a particular scientific emphasis. Lobingier took an evolutionary perspective and found five stages each marked by the emergence of a new form of law. He covers the full span of fifteen hundred years. His periods are marked by the Ius Quiritium, the Jus Civile, the Ius Gentium, the Ius Naturale, and the Age of Codification. Schulz adopted a perspective which gave emphasis to changes in methodology. He identifies four periods which commence in the fifth century B.C., namely, the Archaic Period, the Hellenistic Period, the Classical Period and the Bureaucratic Period. The two forms of classification can be reconciled within the stages identified in this Chapter, to

produce a more complex picture of the development of the Roman legal system. There are five stages suggested in this Chapter, each flourishing for about three hundred years. The stages identify the form of the law which is largely due to the dominant paradigm of jurisprudential systematization. The stages are described as [1] the ritualistic period, [2] the common law period, [3] the theoretical period, [4] the casuistry period, and finally, [5] the codification period. There is some overlapping of these periods. The paradigm of each period may be seen as a theme throughout the full span of fifteen hundred years. However, each theme has a dominant era.

The Ritualistic Period - 8th Century B.C. to 6th Century B.C.

The evolution described by Lobingier begins with the period of the Leges Regiae (laws of the kings) when there was a limited class of patricians, the quirites (spearmen), who were governed through the religious temples, by the ius quiritium, the law of the spearmen. This period dates from the foundation of the city of Rome in about 753 B.C. until the establishment of the Republic in 509 B.C. Schulz does not deal with this period.

Lobingier observes that these early laws are characterized by actional formalism, a primitive metaphysics of formulae and ritual. To obtain legal rights, a patrician was required to perform a religious chant. The priests of the Temple taught the wording and cadence of the chant which had to be repeated perfectly at a legal ceremony. An error of form made a legal transaction invalid. If the form was correct, it could not be invalidated even if there was fraud or duress. The oral and ritual events of law were the valid matters of law, not any written record of them. Oral solemnization and the presence of the parties were thought to prevent misunderstandings; no doubt there was an element of social coercion also at work in the legal ceremonies, so that obedience to the rule of law was more effectively instilled. A wager or sacramentum, in the form of a gift to the temple, was required as a sort of court fee. If a suit was lost, the gift was meant to atone for the sins of the loser and appease the deity of the temple. The severest form of

atonement was the sacrifice of the wrongdoer on the altar of the deity.

There were three sources of Roman law: fas, which was the will of the gods; mos or custom; and jus, the common law which developed from custom. The ius quiritium was a form of common law, or positive law. However, these rules were not refined through judicial decisions. The rituals and formulae were fixed. The basis of judicial decisions was auctoritas (authority) and no reasons were given. Mos maiorum, the way of the ancients, was the source of morals, justice and regulation. It was a branch of the early Roman religion, established by the founding clans of Rome and perpetuated by them through the patrician priests.

The Senate was established by the first king, Romulus, as a body of patricians selected by the monarch as advisers. The Senate guided the king according to law. During this early period, the comitia curiata, a patrician assembly, was introduced and given a legislative function. It enabled the patrician priests to make regulations. The priests declared what was right and wrong, fas and nefas, and made regulations. They were both legal advisers and judges. Through a mixture of tribal customs, royal edicts and priestly commands, they defined the relationship between people and between people and their gods. The social contract was produced through a religious bond which was contractual in nature. The Romans believed that if they did not worship the gods, they would suffer ill fortune; but if they did pray and give sacrifices, they would receive favours and benefits. The problem was to have the right communication with the right god in the given circumstances. Crime was a disturbance of the pax deorum, the peace of the gods. The rules were designed to restore the peace and maintain the contractual relationships required by the religion. The complexity of the law produced a complex religion. The contractual element was a paradigm from which Roman jurisprudential exploration and invention proceeded in the domain of religion.

The ancient Roman religion contained a wealth of spiritual and emotional diversity through its vast number of deities, formulae, charms, incantations, portents and magic cures. In the first

century B.C., Roman scholars recorded some of this detail. Marcus Terentius Varro reckoned the number of divinities at thirty thousand and Pliny the Elder recorded volumes of portents and magic cures. There was a different divinity for almost every aspect of Roman life.

The social system supported by the religious law was a patriarchal clan system, not unlike that of the mafia as it is portrayed in contemporary times. It was an authoritarian, rigid, and disciplined lifestyle, not likely to produce lateral thinking, rational questioning, and free thought in its members. It fixed the boundaries within which science and legal science might develop. Will Durant describes the lifestyle as follows:

> Birth itself was an adventure in Rome. If the child was deformed or female, the father was permitted by custom to expose it to death. The child found itself absorbed into the most basic and characteristic of Roman institutions - the patriarchal family. The power of the father was nearly absolute, as if the family had been organized as a unit of an army always at war. He alone of the family had any rights before the law in the early republic; he alone could buy, hold, or sell property, or make contracts; even his wife's dowry, in this period, belonged to him. If his wife was accused of a crime she was committed to him for judgment and punishment; he could condemn her to death for infidelity or for stealing the keys to his wine. Over his children he had the power of life, death, and sale into slavery. All that the son acquired became legally his father's property; nor could he marry without his father's consent. A married daughter remained under her father's power, unless he allowed her to marry cum manu - gave her into the hand or power of her husband. Over his slaves he had unlimited authority....
>
> These rights of the paterfamilias were checked to some degree by custom, public opinion, the clan council, and praetorian law; otherwise they lasted to his death, and could not be ended by his insanity or even by his own choice.(3)

The patriarchal social system was suited to an environment which was dominated by male aggression. The inhabitants of Rome, during this period, lived under constant threat of physical attack by the neighbouring peoples, and the wandering bands who pirated on the seas and pillaged across Europe. It was partly in response to

these threats that the Romans eventually went out and conquered and controlled the lands which became the Roman Empire. They were attacked by Celts, Teutons, Gauls, Goths, Huns, Carthaginians, Greeks, and closer neighbours.

Up to the end of the third century B.C., Roman law was characterized by the paradigm of actional formalism, but this ceased to be the prevailing paradigm with the establishment of the ius civile. During the ritualistic period, legal choice was reflected in the alternative deities and the alternative rites associated with each. Religion and law amounted to a holistic jurisprudential system which was maintained by the authoritarian application of the rules by the priests. However, political and intellectual changes in the sixth century B.C. established a basis for a new paradigm.

The Common Law Period - 5th Century B.C. to 3rd Century B.C.

Lobingier's second period in the evolution of Roman law, overlaps his first period and is marked by the development of the jus civile or civil law. This period originates in the reforms introduced during the reign of Servius Tulius (578-534 B.C.), the sixth king of Rome who was born a slave. These reforms extended the benefits of the legal system to all classes of citizens. The jus civile was developed by Roman jurists throughout the periods of the Roman Republic and the Roman Empire. However, the common law paradigm dominated the period from the fifth to the third Centuries B.C. Initially, there was an expansion from one system of rules, the ius quiritium, to two systems of ius quiritium for a privileged class and ius civile for all citizens. On the formation of the republic in 509 B.C., one system was settled for all citizens, namely, the ius civile.

The laws of the early republic treated the poor harshly. A creditor was permitted to arrest and detain in a private dungeon, sell into slavery, or kill, a debtor who was frequently in default. Joint creditors were entitled to a share of the debtors corpse. As the number of slaves grew from Roman military campaigns, the number of poor freemen or plebs increased. Class struggles occurred throughout the history of the Roman

civilization. Members of the ruling classes were discouraged from any sympathy toward the poor. Any attempt to provide benefits to the poorer classes was usually seen as an attempt to enlist the political support of the masses. Durant records instances of how these matters were dealt with by the patricians.

> In 486 the consul Spurius Cassius proposed an allotment of captured lands among the poor; the patricians accused him of currying popular favour with a view to making himself king, and had him killed; this was probably not the first in a long line of agrarian proposals and Senatorial assassinations, culminating in the Gracchi and Caesar. In 439 Spurius Maelius, who during a famine had distributed wheat to the poor at a low price or free, was slain in his home by an emissary of the Senate, again on the charge of plotting to be king. In 384 Marcus Manlius, who had heroically defended Rome against the Gauls, was put to death on the same charge after he had spent his fortune relieving insolvent debtors.(4)

Greek colonies had been established south of Latium along the west coast of Italy from the eighth century B.C. The Pythagoren cult was highly influential in Italy in the sixth century B.C. and, by the fifth century B.C., the Eleatic School was practising dialectic. The Latin alphabet was taken from the Greek language. Latin as a language was not as flexible and not so suited to the generation of compounds and images as the Greek language. However, Latin was a highly ordered and practical language which suggested some of the order and spectrum of Pythagorian ontology and dialectic methodology. Following the invention of writing, it became a practice for the Romans to record legal acts in writing; this practice arose in the sixth century B.C. and no doubt provided the basis for the practice of recording law and legal decisions in writing. Writing and reading became an established practice in Rome by the fifth century B.C.

Patrician priests had charge of the records and interpretation of the law. They practiced secrecy, not so much to ensure payment for legal services as they were not remunerated, but to preserve the power of a monopoly against social change. The strict rituals and superstitious associations which they fostered, assisted in the preservation of their power and social position. The poorer classes demanded that the laws be reduced to writing and

published. The disadvantaged saw a scientific method to improve their lot. Thus political interests became and continue to be inextricably bound up with the development of legal science.

The stages perceived by Schulz begin during the Republic, with the publication of the Twelve Tables in 451 B.C. This could be regarded as the first instance of codification of Roman law. The Twelve Tables were set out in the Forum in a similar fashion to the Code of Hammurabi. They were destroyed in 390 B.C. during the Gallic sack of Rome. Schulz calls this early period the archaic stage. It lasted to the end of the 3rd century B.C. when the Romans established military supremacy in the mediterranean at the conclusion of the second Punic War with Carthage (the site of which is now in Tunisia in North Africa) in 202 B.C.

The publication of the Twelve Tables which Schulz sees as the beginning of Roman legal science, is certainly a landmark in Roman law. There is some indication that the the Greek codes of Dracon and Solon were influential models in the formulation of the Roman code. The Twelve Tables were not a complete codification of the Roman law. However, they did contain in a scheme of twelve subject divisions, a range of the most contentious rules of law. These headings were:

Appearance
Procedure
Debts and Debtors
Patria Potestas
Succession and tutelage
Ownership and Possession
Lands and Buildings
Crimes
Public Law
Sacred Law
Intermarriage
Procedure: Legislation

The effect of the publication of the Twelve Tables in the Forum was that they were accessible to all people. Schoolboys were taught their content and the nature of the language used in the

Tables facilitated rote learning. The publication of law in written form is of major significance in the development of legal science because it introduces the constraints of impartiality and provides accessibility to the laws as a subject of study. When laws are published in a systemic form, the study of law is facilitated. It is a scientific methodology to determine clearly the subject of study and to arrange the subject for this purpose. This methodology is common to legal scientists who wish to examine the law for any purpose and to legal administrators who wish to employ methods of scientific administration. The fixed form of the law is studied from various perspectives, so that the the form of action which can resolve many different conflicts, can be seen. These are the forms of action common to many different situations and common to all people. From existing fixed forms, new forms can then be developed. Forms of action were superimposed on formal ritual. Legal fictions were used to promote this development. Lobingier discusses the legal fictions which were used to expand the ius civile.(5) In the development of fictions, principles of law were fashioned. Legal choice greatly increased through fictions, with the development and systematization of forms of legal action. Actional formalism ceased to be rigid but provided a stable basis from which to fashion a more complex and secular social contract.

The Twelve Tables were based on the mos maiorum and framed by the decimvirs under the presidency of Appius Claudius. They were adopted by the comitia centuriata as leges. In doing this, mos or customary law became lex or state law. After the publication of the Twelve Tables, juristic opinions on the interpretation of the Tables were recorded as the responsa prudentium. These studies extended the scope of legal science to the realms of analysis and speculation about the nature of the rules of law. After the destruction of the Twelve Tables in 309 B.C. the juristic writings were treated as the source of authority on their contents. There was no further attempt to make the laws public and judicial decision-making remained authoritarian.

From the time of the Twelve Tables, the law became increasingly secular. Since early times, there was a commercial class of Roman citizens called the equites. The temples were used as banks for

safe deposit. Moneylending was well established by the time of the Twelve Tables which provided for the contrrol of interest rates. A street near the forum became the centre for moneylenders (argentarii) and money-changers (trapezitae). Money was loaned for the acquisition of property and to finance ventures. Lenders might join together to finance major schemes; this provided a form of insurance. Joint stock companies existed and raised their capital by selling partes or particulae as stocks or bonds.

In the third century B.C., the Romans established military supremacy in the Mediterranean by defeating the forces which opposed them. From this time, Roman bankers proliferated and prospered. They paid interest on deposits, cashed cheques (praescriptiones), paid bills for their clients, and managed investments. Where the Romans conquered, they usually plundered and brought back to Rome the resources of foreign lands, including precious metals and slave labour.

In the Roman religion, it was thought that the dead would be made benign by human blood. For this reason, it was usual to kill slaves at a funeral. As Roman morality modified, it was thought preferable to obtain the requisite blood from a combat between condemned persons. Accordingly, in 488 B.C., on the death of their father, the Bruti introduced an ancient Etruscan practice of having a combat between prisoners at a warrior's grave. This was the origins of the gladiatorial contests.

During the fourth century B.C. the major schools of philosophy were established in Athens: the four major schools were Plato's Academy, Aristotle's Lyceum, Epicurus' Garden and Zeno's Porch. The cultural influences of Greek philosophy expanded. Greek teachers established themselves in Rome in the third century B.C. The Greek warrior, Alexander the Great (355-323 B.C.), established a Macedonian Empire comprising lands in Greece, Asia Minor, Persia, Syria, Egypt and Pakistan. In 332 B.C. he founded the city of Alexandria as the capital of his Egyptian lands. After Alexander's death, his empire was divided among his generals. Ptolemaeus (332-284 B.C.) became governor of the Egyptian lands. As the Macedonian Empire broke down, Ptolemaeus or Ptolemy extended his domains and became an independent monarch. Ptolemy

established in Alexandria a library and a society called the Museum, the members of which were employed at public expense to carry out philosophical studies and scientific research. His successors were called Ptolemies, the last of whom, Ptolemy Caesar, the son of Cleopatra and Julius Caesar, was killed on the order of Octavian in 31 B.C. Alexandria was then ruled by administrators appointed by Rome. In this establishment of Greek philosophy lay the scientific influences which would produce the next stage in the development of the Roman legal system.

Following the establishment of the Museum at Alexandria, there was a tendency, in Greek science, to specialization in mathematics and esoteric inventions. Aristotle had founded specialized study in Athens. The Museum followed the research practices of Aristotle's Lyceum. Researchers at the Lyceum collected information about anything which could be observed and systematized, such as animals, plants, stones and state constitutions. Strato (fl. 270 B.C.), who was head of the Lyceum, taught at Alexandria. Archimedes (287-212 B.C.), a scientist of Syracuse in Sicily, the founder of statics and hydrostatics, studied at Alexandria. Other Alexandrian scholars were Euclid (fl. 300 B.C.), the great mathematician, Ctesibius (fl. 135 B.C.), the inventor of the pump and other hydraulic instruments, and Hero (fl. 100 A.D.) who constructed a rudimentary steam engine which employed a jet reaction principle. During the Alexandrian period, catoptrics, the study of reflections in mirrors, was developed to the extent of arranging illusions and burning mirrors. Mathematics was developed along Platonic lines, as a way of discovering ideal forms; it was also used to provide more exact descriptions for astronomy, mechanics, pneumatics and hydrostatics. Aristotelian teleology, the doctrine of natural places and final causes, was abandoned. Algebra was invented by the Alexandrian Greek, Diophantus (fl. 250 A.D.), who worked in equations and is known as the father of Algebra.

The movements of cynicism and skepticism discredited the more general pursuit of wisdom. Knowledge was sought in confined and defensible ways. Cynicism became popular in Alexandria in the third century B.C. Cynicism opened the way for skepticism which compounded the conceptual relativity which was developed in

rhetoric. This prevailing view of human reason was applied to the physical world in Alexandrian science. Among the philosophers who worked at Alexandria was Apollonius of Perga (fl. 240-220 B.C.), a mathematician who demonstrated the mathematical equivalence of two different physical systems; his studies of the conic sections, the elipse, the parabola and hyperbola were used by Kepler and Newton nearly two thousand years later to find planetary orbits. It is a tenet of modern relativity theory that any description of physics depends upon the language or system of mathematics used to divide and relate entities. This aspect of relativity was recognised by Apollonius who demonstrated that the application of alternate mathematical principles to the one entity, produced alternate perspectives of the entity. This could be regarded as the origins of Einstein's special theory of relativity. In the twentieth century, Einstein dealt with the problem of settling a constant perspective in a relative world by posing the speed of light as the uniform constant of the physical world.(6)

During the period of Roman domination in the Mediterranean, when specialisation in the sciences was practised at the Museum in Alexandria, Roman science was more practical. It tended to serve materialistic purposes of building roads, sewers, baths and other public works. The specialization in Greek science, established fields of science independent of the ethical pursuits of philosophy. The fragmentation of ethics in Greek philosophy and the increasing understanding of the relativity of the world, predisposed the Mediterranean to a new legal science the development of which was undertaken by the Romans.

Throughout the period of the Republic, the plebs continued to extend their control over the substantive rules of law through democratic vote and judicial and administrative appointments. Democracy, with all its interplay of factions as a form of survival of the fittest, emerged in Rome as it had in Greece as a development in legal science. Both politics and science became factional.

In the archaic period, jurists were not paid; they were aristocrats. By the third century B.C., there was an administration of law which divided the administrative and

judicial tasks between six classes of honores : the Questorship which carried judicial and later financial responsibilities; the Consulate which carried magisterial duties; the Censorship, responsible for the census, the nomination of Senators, the custody of public property and money and the supervision of public morals; the Praetorship which was an offshoot of the consulate exercising judicial authority; the Aedileship, which which was responsible for building inspection; and the Pontifical College who were guardians of the fas, the ius and the national religion. A class of lawyers, the juris prudentes or juris consulti, emerged from about 250 B.C. and they provided advisory and judicial services.

The Theoretical Period - 2nd Century B.C. to 1st Century A.D.

The second stage, identified by Schulz, is fixed between 202 B.C. and the end of the Roman Republic in 29 B.C. when Octavianus, nephew of Julius Caesar, became the first Emperor and established the principate of the Roman Empire; he was given the title Augustus, meaning the Majestic or Revered. Schulz calls this the Hellenistic period because it is characterized by the application of the Greek dialectic method to Roman law by Roman jurists.

In the second century B.C., as foreign forces continued to threaten Rome, the Romans imposed their imperial rule in foreign lands as a means of controlling the foreign military threat. In conquering so far and wide in so many battles, the Romans turned from a patriarchal sternness to cruelty and brutality. Their religion was weakened through the influence of Greek philosophy and the arts. Roman ethics were undermined by the critical philosophies of the cynics and the skeptics. This removed the moral constraints which had qualified the Roman sternness. The patrician families and political factions displayed ruthlessness toward each other and toward their slaves. This produced a situation for which Christianity offered a solution.

The violence of the conquering forces of Rome was expressed at home through the gladiatorial contests. Tappan describes the rise of the gladiatorial games.

> The Romans had always been stern, and now they had become cruel and often brutal. In the athletic contests they were no longer satisfied with racing and wrestling; they demanded real fights and the spilling of real blood. At first they were entertained by watching battles between wild beasts, lions, leopards, panthers, and elephants, sometimes hundreds of them fighting together in the same arena; but this soon ceased to be interesting. Those who are cruel to animals always become cruel to human beings; and the Romans soon wanted the excitement of seeing men fight and die. It was an old custom among the Etruscans to have combats between prisoners at the grave of a warrior. This was introduced into Rome, and the Romans found it so entertaining that they soon ceased to limit it to funerals or to single pairs of combatants. These fighters were called gladiators, from gladius, the Latin word for sword.
>
> At first the gladiators were all slaves and criminals. Sometimes they were promised freedom if they fought for a certain number of years and were not slain. These men fought savagely, but not always skilfully, and the Romans were soon a little bored by seeing fighting done in a clumsy fashion. Schools were established where gladiators were trained to fight, and from which they could be obtained at any moment. Not only slaves, but some of the wild reckless men of Rome went to these schools.(7)

Sulla (162-78 B.C.), who conquered extensive parts of Greece, took Athens and brought back to Rome many of the works of Aristotle and Theophrastus. As well as being a warrior, he was a patron of the arts. When he returned to Rome, he slaughtered thousands of his political opponents. Against the background of gladiatorial amusement, the atrocities of Sulla in slaying thousands of his political opponents probably did not so greatly disturb the Romans as they might otherwise have done. Sulla assumed a brief ditatorship and provided a precedent for the establishment of the title of imperator or emperor. His brutality was also seen to be compatible with a patronage of the arts, just as the art of the warrior was a major feature of the gladiatorial contests. The same background of brutality no doubt provided a tolerance for the atrocities of the emperors who followed Octavian.

During the course of settling their military dominance, the Romans sometimes made allies peacefully. Greek colonies in Spain and western Italy, as well as many of the Greek states, were brought into the Roman Empire by peaceful alliance. This alliance

produced cultural interactions between Greek philosophy and Roman religion. Greek dialectic, rhetoric, and the formal logic of Aristotle provided methodology and cognitive tools which the Romans used to explore the many aspects of rules of law.

In the second century B.C., a circle of learned Romans was formed. It was known as the Scipionic circle after the younger Scipio (185-128 B.C.), the leading personality of the group. Although the Scipio family was a branch of one of the founding clans of Rome, the Cornelii, the younger Scipio did not accumulate great material wealth. The Scipionic circle adopted a morality which blended stoicism and epicurism. This became the essence of Roman humanitas and displaced the traditional Roman religion. Greek treasures and books were brought to Rome by the Scipios.

Panaetius, a Stoic from Rhodes, who had studied in Athens, taught in Rome. Scipio the younger became his pupil and, subsequently, Panaetius accompanied him on his expeditions. Following the death of Scipio, in 129 B.C., Panaetius became head of the Stoa in Athens and, under his influence, the perfectionism of the Stoic philosophy was modified so that it came closer to the asceticism of the Cynics. He also developed a form of pantheism in which he defined god as pneuma which appeared in human beings as reason or logos. It would become increasingly difficult to find much of this pneuma in people in the next few centuries.

With the patronage of the Scipio family, literature and drama were established in Rome and with it, the critical influence on the public. This had an effect of freeing the public from singular political and religious values but also produced a social discordance and incoherence; it was similar to the corrupting influence of Greek rhetoric. At the same time, the diverse influences from an expanding empire and the need for new methods of government produced a crisis in the political structure of the Republic.

In 155 B.C. three leading philosophers were sent from Athens as ambassadors to Rome. They were: Carneades from the Platonic Academy, Critolaus from the Aristotelian Lyceum, and Diogenes, the Stoic of Seleucia. They made a great impression on the Romans

with their skills of questioning or hypothesizing their way through the rhetorical spectrum of dialectical reasoning. This added the feast of philosophical perspectives to the material wealth which was enjoyed by Rome. Greek ideas and ways replaced the mos maiorum. The paradigm of a vast system of gods could be given a new content: law to serve material prosperity.

By 150 B.C., the patricians and equites of Rome had passed from stoic simplicity to reckless indulgence and opulence. The morals and values of humanitas, upheld by the ruling classes, succumbed to these new influences. Corruption in the legal system, government and administration, became rife. The study of Greek reasoning, on the one hand, corrupted government, and on the other hand served to fashion a vast and orderly body of legal information. Roman legal science developed, as a compromise between Greek reasoning and practical social administration.

During the Hellenistic period, legal records were kept in public archives by the scribae. There were also some private collections kept by members of the legal profession and politicians. No official or private collection was published and no reliable text of the law was made accessible to the public. Durant describes the early form of legal practice, the responsa prudentium, as follows:

> It must have been a pleasant sight when learned jurists sat in chairs in the open Forum (or, in later decades, in their homes), and gave legal opinions to all who asked, taking their chances on some indirect remuneration. Often their advice was solicited by lawyers or municipal judges. Like the great rabbis of the Jews they reconciled contradictions, drew subtle distinctions, interpreted and adjusted the ancient law to the needs of life or the exigencies of politics. Their written replies, by un-written custom, had an authority only less than the laws.(8)

In the second century B.C., Roman lawyers adopted the methodology of dialectic and Aristotelian logic, which was at this time practised extensively in the Aristotelian and Stoic schools of Greece. Rome had formed a friendly alliance with several of the Greek states and initially provided them with protection. The Romans greatly admired the Greek culture. Amongst the Roman

jurists who adopted the Greek methodology were M'. Manilius, Q. Mucius Scaevola who instructed Cicero in civil law, P. Rutilius Rufus, Q. Aelius Tubero, the younger Scipio and Panaetius.

Schulz describes what dialectic meant to Plato.

> To Plato, this method meant, in a word, the study of kinds (genera and species). Kinds were to be known by distinction (differentia...) on the one hand and synthesis .... on the other ... This discernment of kinds was to lead on to the discovery of principles governing the kinds and explaining individual cases.(9)

Using this methodology, Q. Mucius wrote the first lawbook containing a systematic arrangement of the civil law. The distinctions which he drew, were debated and modified by later jurists. The principles which governed the genera and species of legal theory were called in Greek, opoi, and in Latin, definitiones or regulae. The regulae iuris were devised in this way as the short statements of law. In comparison with the statement of the facts of a particular case, these principles of law were 'brevis', short and succinct. As the law expanded, principles which were theoretically connected to each other, aided the memorizing task. The Roman style of juristic expression was Stoic. It is described by Schulz as follows:

> It is elegant, idiomatic Latin, weighty, unadorned, correct and terse. Contentiousness and rhetoric are avoided; the sentences are short, the terminology is fixed, things are called by their plain and proper names, clarity and objectivity are the chief aims.(10)

Dialectic was a Hellenistic theory of language. Stoic doctrine maintained that words possess a natural meaning given by etymology; from the history of the derivation of the term, its meaning could be discovered. The Latin language was framed in spectrums of meaning through its declensions and tenses. The Roman jurists were therefore inclined to theoretical spectrum and applied etymological analysis to legal terms to discover their meaning.

Application of the Greek methodology to Roman law, gave it the character of Greek science: it required systematic research and organised knowledge. Aristotelian or hierarchical dialectic subsumes individual phenomena as genera. It also suggests categories to complete the logical field, and thus problems which have not yet occurred: it is an instrument for discovering and designing jurisprudential systems. Through the Greek tools of reasoning, Roman law became logical, unified, and comprehensible.

In the application of Greek methodology, the Romans developed exceptions and modifications to rules to achieve equitable results; but they did not take up the theoretical cohesion of Aristotelian equity which would have required consideration of macroforms of the notion of justice. The exceptions and modifications were made in the interpretation and application of a rule. The effect of this was that formalism in interpretation began to be relaxed. Actiones in factum, or actions on the case, were allowed to overcome the problem of odd causes which did not fit the existing rules. In all this, the sacral law fell into decline and the law became increasingly secular and detailed to meet practical problems. Oral formalities were still preferred to written documentation which was treated as evidentiary only. In the climate of Hellenism, this allowed the development of a secular legal metaphysics, which was social in nature. Unwritten contracts, founded on a notion of consensus, were recognised.

During the Hellenistic period, the Greek concern for justice was not of major interest to the Romans; they were more concerned with practical matters. With the Roman juristic preoccupation for developing law theoretically, there was not a great deal of legislation introduced. Orators, who were not always acquainted with the law, sometimes relied upon Greek notions of justice. The Roman orators developed the skills of exploiting relativity and paradoxes, which were studied in Greek rhetoric. Schulz describes an example of this:

> Thus in the Auct. ad Herennium we find edifying advice on how to inculpate an accused from his previous life and how to exploit his behaviour since the commission of the crime. If, on first being charged with it, he shows perturbation, the prosecution will claim this as a sign of guilt,

> while the defence will explain it as due to the greatness of the peril. If he remains calm and collected, the prosecution cries out on such brazen impudence, while the defence is eloquent on the peace of a good conscience.(11)

Rhetoric corrupted notions of justice, so that, to the Romans, it probably seemed more reliable to examine concrete problems as the basis of law. Hellenism contained elements of individualism and liberalism which did have some influence on Roman jurists. The Romans were not greatly concerned with the Greek notions of natural law and equity. As Schulz observes:

> About Natural Law, with which generations of Greek thinkers had occupied themselves, the republican jurists have not a word to say. They certainly drew on Natural Law, but, in Aristotle's terminology, this was relative Natural Law ..., not absolute ..., and they did this unconsciously, or at least without reflection, and certainly without saying or writing a word on the subject.(12)

However, Cicero, the great Roman orator, wrote of law in relation to nature. The mixture of brutality and refinement which characterised the Roman culture is evident in the life of Cicero (106-43 B.C.), who was plagued by bitter faction fighting and lived most of his life in fear of assassination. Even after he was decapitated by his enemies his head was mutilated by a woman. His famous definition of natural law might be viewed as his response to the insecurities of his life.

> True law is right reason in agreement with nature, world-wide in scope, unchanging, everlasting ... We may not oppose or alter that law, we cannot abolish it, we cannot be freed from its obligations by any legislature, and we need not look outside ourselves for an expounder of it. This law does not differ for Rome and for Athens, for the present and for the future; ... it is and will be valid for all nations and all times. ... He who disobeys it denies himself and his own nature.(13)

Codification of the law was posed by Cicero as an ideal. His contemporary, Julius Caesar (100-44 B.C.) planned to implement codification.

In the theoretical period, the ius gentium, which is comparable to private international law, was developed in response to the growth

of international trade from the second century B.C. The next stage of legal evolution identified by Lobingier occurs with the emergence of the ius gentium. The origins of the ius gentium appear to lie in the ius honorarium which contained a standard of conduct toward foreigners that was expected in the early Roman legal system. The ius gentium may also have been developed by reference to the Aristotelian distinction between laws peculiar to the state and laws recognised by all people.(14) However, Aristotle's distinction was intended to identify the scope for natural law within and beyond the state system. The ius gentium applied to transactions with foreigners and was developed as a separate system of rules. As Lobingier says:

> Apparently not all even of the Roman juridical writers fully understood it.(15)

During the Hellenistic period a legal rule could be proved either from custom or from statute. Customary law carried the auctoritas of mores maiorum. Ius, covered both leges and mores. The Romans applied the dialectic method to the forms which already existed in their law; they did not alter the content and results of their rules of law. From the old forms, they fashioned a new theoretical form as a mould for their legal metaphysics. In this remodelling process, they could be seen to be relying on notions in Greek atomic theory, to measure the extent of change in their rules. The changes produced through the modification of a cause of action were compared to the example of Theseus' ship which is regularly repaired with new planks; by virtue of the reductio absurdum argument, it could be shown that the ship has gradually become a whole new ship. This form of development or change reflected the potential of the dialectic method to produce a metamorphosis or evolution of the substantial law. This paradigm of metamorphosis can be seen in the work of modern legal knowledge engineers, such as L. Thorne McCarty, who have modeled the transformation of a prototype precedent case to a new case which should be bound by the precedent. This work is discussed in Chapter Seven. The Romans created incremental change through the process of dialectic; where the change produced a situation contrary to the original subject matter, then the dialectic method had obviously come full circle in a paradoxical continuum. Where

the original position is abandoned and the concluding contrary position becomes the position from which to proceed further, then the nature of the circle is that of a spiral. From this new position, the dialectic method may then proceed through another paradoxical continuum, as a further spiral effect. Each new paradoxical continuum may be discovered by commencing the cycle from a slightly different perspective. Thus, the new planks had created a second ship in the same form, and further replacement of these planks will not restore the first ship. The form may be retained but the substance will be ever changing.

With the secularisation of the Roman law during the Republic, abstract legal concepts were adopted as the legal metaphysics of the civil law. Examples of this were stipulatio, an obligation and mancipatio, a conveyance. Abstract concepts have played a major role in science, especially in the development of theory as a description and explanation of the physical world which permits accurate prediction. In the same way, legal metaphysics has permitted effective legal administration.

The actional formalism of the early priestly law, came under the influence of Hellenism from the second century B.C. and fell into disuse. In about 150 B.C. the lex Aebutia introduced a more informal legal process which could be used in the place of the ritual of the legis actio. Instead of conforming to specific acts and words, the parties met with a magistrate, the praetor, and agreed upon the nature of the case to be stated to a judge. The praetor then prepared the 'formula' or instructions on the issues of fact and law for the judge. This was the origins of praetorian law. The procedure per formulam was more suited to law which was developing as theory.

Plato's theory of forms provided a conceptual world suited to the development of legal metaphysics. The Greek dialectic method and Aristotelian logic provided structures by which these developments in Roman law could occur and Stoic and Epicurean philosophy provided a range of moral views by which to model the structure. The skills of rhetoric further provided a methodology by which any view might be found. The Roman jurists abandoned their early servitude to the letter of the law, procedure and ritual.

As in the Greek system, there was some opportunity for democratic debate in litigation but there were no reasons given for a decision. Legal theory was developed in the juristic writings and legal argument. Some flexibility and publication was introduced with the annual Edict. This was a form of temporary legislation which the praetors declared as the law which they intended to follow during their year of office. It operated for one year only and then it could be revised or reaffirmed. With this flexibility, there was also uncertainty.

Carus T. Lucretius (98-55 B.C.) who was educated in Athens and learned a range of Greek philosophy including the tenets of Epicurus, Empedocles, Anaximander, and Democritus, brought together in philosophical poetry the full force of Greek learning for the benefit of Roman civilization. He understood the broad Greek scientific ontology, from the notion of the Infinite of Anaximander, the atoms of Democritus, the evolutionary prionciples of Empedocles to the balanced morality of Epicurus. He consolidated these ideas in a poetic picture of nature, called De Rerum Natura, a highly esteemed work. His work reflects an awareness of the evolutionary process of natural selection and he sees the solution to mental insecurities in an understanding of nature and its laws. Durant extracts from his extensive works two quotations which are evidence of this.

> ... for those to which nature gave no (protective) qualities lay at the mercy of others, and were soon destroyed.
>
> ... This terror and gloom of the mind must be dispelled not by the sun's rays ... but by the aspect and law of nature.(16)

A large Jewish population grew in the city of Alexandia. They had an active intellectual culture and contributed to the philosophy and science of the learned circles. One of these Jewish scholars was Philo (c. 20 B.C.- 54 A.D.) He attempted to reconcile Jewish scriptures and Greek philosophy; in the course of doing so, he provided much of the basis for Christian theology. He took the concept of the Logos, developed by Heraclitus, Plato and the Stoics and imbued the forces of nature with the personality of the Jewish god. He treated the events, people and doctrines of the

Old Testament as allegories which symbolized certain truths. Angels he equated with Plato's Ideas, existing only in the Divine Mind as thoughts and powers. The collective of these powers he equated with the Logos, the Divine Reason which created and guided the world. Through the Logos, god reveals himself to people. The Logos is an expression of god. Through the reason of the human soul, people can become acquainted with the Logos and thus with god. His poetic metaphors which described the Logos, in his De confusione linguarum, as the 'first-begotten of God', provided the religious paradigm by which Jesus could be conceived as the son of god in medieval Christian theology.

To some extent, in Alexandria, philosophy parted from science. The Alexandrian scientists pursued specialized studies, while in Greece and Rome philosophy became concerned with lifestyles. Bernal describes this period as follows:

> Philosophy was now concerned with reconciling politically impotent man to the uncertainties of life in an economically insecure and war-ridden world. The Cynics and Sceptics shrugged their shoulders. The Stoics put up a fine show of superior indifference based on the belief in the intrinsic value of virtue, and in a world ruled by unalterable fate which the stars determined. The Epicureans urged men to make the best of it, to practice virtue as the surest way to pleasure, and not to worry about the gods who lived far above this world of whirring atoms. The philosophy of the ancient world was to peter out in the mysticisms of the Gnostics and the Neoplatonists, and the last echo of its old voice was to be the Consolation of Boethius.(17)

Boethius (480-524 A.D.) wrote a treatise, De consolatione philosophiae in five books while in prison during the reign in Italy of Theodoric, king of the Ostrogoths. He is regarded as the last of the Romans and the first of the Scholastics.

During the Republic, the Senate had assumed increasing authority in the legal system. The senatusconsulta which were initially recommendations to the magistrates, became directives and then imperatives. Toward the close of the Republic and throughout the empire, the senatusconsulta had the force of law. The first of the emperors, Octavian who was known as Augustus, gave special

authority to some of the reputable jurists who handed down responsa prudentium in the Forum, so that their opinions had the force of law. These opinions had to be lodged with the judge who was to hear the case. These responsa accumulated as a large part of the literature of Roman law and provided the opportunity for the development of casuistic methodology. The division of power in the legal system became increasingly complex.

In the first century B.C., skeptic philosophy and Roman aggression gave way to a science of human power. The Roman Empire provided a form of social organisation where extremes of power could be explored. Emperors became gods. After the death of Octavianus in 14 A.D. there were periods of bizarre tyranny by rulers of the Empire such as Caligula (37-41 A.D.) and Nero (54-68 A.D.). These extremes of power lasted until the assassination of Domitian in 96 A.D.

The thoroughness of Roman exploration of the power of violence is reflected in Durant's description of the execution of criminals in the amphitheatre.

> The condemned man was sometimes required to play in no make-believe way some famous tragic role: he might represent Medea's rival, and be garbed in a handsome robe that would suddenly burst into flame and consume him; he might be burned to death on a pyre as Heracles; he might (if we may believe Tertullian) be publicly castrated as Atys; he might play Mucius Scaevola and hold his hand over burning coals until it was shriveled up; he might be Icarus and fall from the sky into no merciful ocean but a crowd of wild beasts; he might be Pasiphae, and bear the embraces of a bull. One victim was dressed as Orpheus; he was sent with his lyre into an arena set as a pleasant grove of trees and brooks; suddenly hungry animals emerged from recesses and tore him to pieces.
>
> Laureolus, a robber, was crucified in the arena for the amusement of the populace; but as he took too long in dying, a bear was brought in and was persuaded to eat him, piece by piece, as he hung upon the cross. Martial describes the spectacle with fascination and approval.(18)

There were gruesome attrocities to people and beasts in the gladiatorial games. Nero used the games as a means of disposing of Christians after the fire of Rome in 64 A.D. Blood sports and

the persecution of Christians were a popular preoccupation of the Romans during this period. It is not likely that a sense of natural law would have prevailed in such times. According to Lempriere's Classical Dictionary, the priests held glatiatorial games and, under the emperors, senators, royalty and women participated in the combats.(19) No doubt the pastime of gladiatorial entertainment involved a human obsession with certain skills and tactics, which produced at the same time, an expansion of consciousness through emotional energy. In modern terms, the gladiatorial brutality acted as a drug which induced a heightened awareness at great human cost; at the same time the situation was the context for development of human skills. This reflects a pattern of human excitement which occurs in human discovery and performance of skills.

Durant explains the attitudes of the Romans to these attrocities.

> Most Romans defended the gladiatorial games on the ground that the victims had been condemned to death for serious crimes, that the sufferings they endured acted as a deterrent to others, that the courage with which the doomed men were trained to face wounds and death inspired the people to Spartan virtues, and that the frequent sight of blood and battle accustomed Romans to the demands and sacrifices of war.(20)

Not all the Roman amusements were violent. Sometimes animals would be paraded as in a circus to show the great variety of different and powerful beasts. Caius Plinius Secundus (23-79 A.D.) made an extensive study of nature, so much so that he died while tarrying too long to observe an eruption of Mount Vesuvius. His Historia Naturalis in 37 volumes deals with 20,000 topics. He regarded Nature as the sole god and, in his encyclopaedia, he set about to describe everything known to exist.

Some changes made during this period were intended to improve the system of justice. The Emperor Claudius (41-54 A.D.), who brought Britain into the Empire, created the emperor's private court of justice. The emperor handed down decreta which had the force of law and might write letters of direction or advice in response to petitions or enquiries, the imperial rescripta. In addition to the emperor's legislative power through the imperial edicts, the

emperor now assumed judicial power. The legal profession had found ways of receiving payment for their services, contrary to custom. Claudius legalized fees up to 10,000 sesterces per case. The Roman civil service was also begun under Claudius. Directives of the emperor to officials, the mandata, formed the basis of Roman administrative law. All sources of law which emanated from the princes were known as the constitutiones principum.

The potential for intellectual degeneration was present in the flexibility of Greek philosophy. In Greek culture, the pursuit of science and justice through philosophy, prevented this degeneration. The Greeks had explored the potential of human mental faculties to the ultimates of the subjectivity maintained by skepticism, and the qualities of god in people as posed by the stoics. Greek philosophy unsettled the Roman culture for about five centuries until a fusion was reached in the catholic religion. The catalyst of this fusion of Greek philosophy and religion was the new religion of the east, Christianity. Before this fusion was reached, the power of subjectivity and the power of human gods were pursued by the Romans in practice. The military and material might of the Romans predisposed them to this exploration of power. In the first century A.D., philosophy succumbed to the science of power and the resources of Roman civilization were deployed to the cultural experiment.

The power of Christian faith was a response to Roman aggression and materialism; it too was an extreme measure which displaced skepticism and revived a concern for morality. In the first century A.D., Christian martyrdom began to counteract the brutal excitement of the Romans. In the exploration of power, the limits of human tolerance and stoic endurance were also tested. The tools of philosophy were then diverted into the catholic religion after which the search for science and justice degenerated for a thousand years.

The weakness of philosophy and its course toward religion is evident in the ideas of Epictetus (50-120 A.D.), a Stoic philosopher who was born a slave in Asia Minor and subsequently became famous throughout the Empire. He maintained that the studies of natural science were useless and that people should

conduct themselves in such a way that their happiness would not depend upon external things. He advocated the acceptance and endurance of misfortune as part of the secret wisdom of Nature. It was this human reason which was a part of World Reason and the key to tranquillity. The human body was to be regarded as unpleasant and foul.

Those Romans who continued to adhere to some form of virtuous morality during this period, were usually influenced by Stoicism which preserved a sense of personal power in three ways. Firstly, it advocated self-control. Secondly, it acknowledged that individuals had a choice to preserve their virtue regardless of their circumstances. Thirdly, it maintained that individual conscience was higher than any law. Obedience to the law was a matter of yielding to the secret wisdom of Nature.

In the first century in Alexandria, skeptic philosophy was propounded in detail by Aenesidemus of Cnossus. He set out the 'Ten Modes' (Tropoi), the reasons why knowledge was unreliable: he pointed out that the human senses varied and gave only limited access to the subjects perceived, that everything is relative and that people are biased according to their experiences in life.

There were many philosophers during this period whose practices indicate that philosophy had entered the realms closest to insanity. Cynic poverty and self-denial was extended to self-torture, self-mutilation and self-denial which sometimes ended in death. Some formed religious sects such as the Therapeutae, healers of the soul, who lived in solitary cells in the Egyptian desert. By 89 A.D., the philosophers of Rome were seen to be supporting the growing rebellion against the despotic extremes of Domitian. As a result. he expelled them from Rome and subsequently in 95 A.D. he banished them from Italy.

The Casuistry Period - 2nd Century A.D. to 4th Century A.D.

The third period identified by Schulz commences with the Principate and ceases when Diocletian takes the throne in 284 A.D. Schulz calls this the classical period. Lobingier sees the emergence of the ius naturale in the second century A.D. during

the classical period of Schulz as a significant evolutionary factor in the development of Roman law..

After the death of Domitian, who had banished the philosophers from Rome, until 180 A.D., Rome enjoyed a period of rule by a succession of Emperors who were known as the philosopher kings. Under their rule, humane reforms were introduced and juristic studies were fostered. The second of the philosopher kings, Trajan (98-117 A.D.), posed the principle that it is better for the guilty to be left unpunished than that the innocent should be condemned.

With the establishment of the Empire, an extensive bureaucratization of law and public administration began. The tendency of the bureaucracy was to seek a detailed control of the application and execution of law. Codification facilitated the monopolization by the bureaucracy of the development of the law. The Emperor Hadrian (117-138) commissioned Julianus to collate the Edicts as lex perpetuum. The edict ceased to be lex annua. This had a stabilizing and stereotyping effect. He also built the Atheneum in Rome to house the state-paid professors as a university and introduced legal training for officials. Early in the second century, jurisconsulti set up schools in Rome where they gave instruction to law students and advice to clients. In the second half of the second century A.D., the Romans developed administrative law. This began with a collection of annotated constitutions and the attempt to reconcile their differences so that regulations would be common to all the provinces. Magistrates who had prepared formulae for a judge were permitted to hear the case themselves in accordance with a new procedure, the cognitio extraordinaria. This new procedure gradually replaced the formulary procedure.

Stoicism was favoured by the philosopher kings and their administrative assistants; it gained semi-official status and developed ideas which addressed the legal system. Law, the Stoics now claimed, should be consistent with morality. Guilt should be determined by reference to the intention of the wrongdoer, rather than the deeds. The Stoic Emperor Antoninus (138-161) decreed that an accused should be regarded as innocent until proven guilty

and in doubtful cases, the accused should be found innocent. In Roman law, witnesses could be called to prove a case.

Toward the close of the second century, after a plague had swept through the Empire, the Greek philosopher, Sextus Empiricus brought skepticism to a further level of analysis. He asserted that we cannot know that we cannot know, and that for every argument there is an equal opposing argument. Further, all knowledge is relative. Even if absolutes could be posed for the processes of deduction, the conclusions are limited by the validity of the inductive premises. Induction is always incomplete because a negative instance might arise. Cause is merely a regular antecedent. However, for practical purposes, even though nothing is certain, people can operate on the basis of probabilities and accept the conventions and beliefs of their society. At about this time, Lucian, a Syrian philosopher who settled in Athens, defined philosophy in skeptic terms which can be reconciled with all the great philosophies of ancient Greece: he saw it as the pursuit of an elevation from which to see in every direction. In this definition, philosophy itself is the stable constant of the human intellect. Philosophy came to be regarded not as a search for knowledge and understanding but as a virtuous way of life. Stoicism provided the prevailing view of virtuous conventions and beliefs. However, some philosophers continued to practice the extremes of cynicism. In 165, at Olympia, Peregrinus built, lit and jumped into his own funeral pyre. Nevertheless, skepticism, stoicism and cynicism were slowly converging in a positive form that could counteract the exhausted stages of the Roman obsession with power.

The methodology of the jurists, from the commencement of the Empire is described by Schulz as a matter of speculative detail. The legal imagination, like the imaginative cruelty of the period, ran wild with detail. During this period there was an extensive exploration into the possible circumstances in which a rule might apply and how in such circumstances the rule would apply. This exploration may have produced a dual pattern of natural law matters and state law matters, but it is more likely that the concept of natural law emerged with the Christian influence and

the need for a more temperate and stable rule, after the first century A.D.

In this period of the principate, jurists developed and elaborated in detail, the body of distinctions and principles founded in the Hellenistic period. They extended the model and pattern of Roman law in this way. A wealth of ideas and problems were posed by the Roman jurists. Amongst these works were the Institutes of Gaius, the Digesta and Responsa of Cervidius Scaevola, Ulpian's Libra ad Edictum, Julian's Digesta and the one hundred and fifty books of Commentaries on the Edicts by Pomponius. Other authors were Trajan, Papinian, Paulus, Labeo, Sabinus and Iavolenus. The Republican formulary procedure passed away and there was no attempt to formulate further abstract principles from cases. By the end of the third century, magistrates gave summary judgements and were responsible only to the emperor. Juristic emphasis was on detail and casuistry. The potential spectrum of rhetoric was examined through hypothetical cases.

The existing framework of the Roman law was maintained; there were few innovations in the systematization of the law. Only detail was added. Schulz describes the work of the jurists during this period as follows:

> With untiring patience and unvarying acumen the classical writers subject the institutions of the law ever and again to a searching casuistic examination which, by applying it in concrete cases, real or imaginery, pursues each principle to its most remote and minute consequences. No problem of private law, however petty or singular, but was welcomed and probed. One is astonished at the number of insignificant and practically unimportant questions that are discussed. The sections on the law of succession in Scaevola's Digesta and Responsa and in Papinian's Responsa and Questiones contain endless acute observations on eccentric testamentary clauses or on misbegotten institutions such as the quarta Falcidia, pupillary substitution, or fideicommissium universitatis. One wonders whether it was really justifiable to spend so much time and labour on these difficult, tortuous questions, the practical importance of which was so small. The classical jurists either did not ask the question or answered it by a silent affirmative. Their professional relish for the tiniest details reveals them as belated, but true followers of Aristotle. There is no doctrine in

> private law that they have not in some way advanced and enriched.(21)

The jurists of the classical period continued to use the dialectical method, drawing distinctions, formulating principles and definitions, but the trend was to deal in concrete cases rather than abstractions. It would seem that abstractions were treated with the same reserve as Greek rhetoric; they were seen as corruptible. In the words of Iavolenus:

> Omnis definitio in iure civili periculosa est: rarum est enim ut non subverti posset. (All principles in the civil law are full of danger; for it is rare that they are not able to be subverted.)(22)

With the decline of formalism in the classical period, interpretation problems were treated more flexibly. However, customary law was no longer admitted to prove a rule. Instead, the jurists came to rely on a concept of natural law. Schulz describes this Roman version of natural law.

> 'Natural law' does, however, play a considerable part in classical jurisprudence, but in the sense of Roman natural law, in other words, the law resulting from the nature of things within the framework of the Roman legal system, for example from the nature of ownership, contract and so on.(23)

The ius naturale also provided an opportunity for jurists to found a common human morality which would be suitable for the integration of the various peoples of the empire under one system of law. A single system facilitated the administration of the empire and fostered its unity. In Roman law, the ius gentium applied to foreigners. The application of this law depended upon the distinction between subject and foreigner. The ius gentium was developed upon the basis of Aristotle's notion of law common to humanity. During the classical period, the ius civile was extended to all people in the empire and, within the ius civile, the concept of natural law was used to develop a consistent and justifiable system of rules common to a diversity of peoples in the empire. The development of ius gentium and ius naturale overlap each other and the ongoing development of the jus civile. The ius gentium applied to all peoples of the empire in their

relationship with foreigners. The ius gentium and the ius civile now had a common basis in the ius naturale.

In examining the evolution of the Roman law, Lobingier is concerned with an application factor in the rules of law. He shows how this changes, expands and condenses. The ius quiritium applied to patricians, the ius civile applied to citizens, and the ius gentium applied to foreigners. The ius quiritium was abolished with the Republic. The ius naturale brought systemic cohesion during the Empire. The Roman science of power was transferred from physical atrocities to law and administration, then back to religion, albeit a different form of religion to that of the archaic period. The introduction of new areas of law by the Romans was a response to the requirement for law to meet new aspects of social growth in the jurisdictional domain.

The form of social organisation created in law during the empire provided a framework for the development of the feudal system. Gaius divided all law into three categories: persons, property and procedure. There were various classes of persons. Each class had different political, commercial and marital rights. Slaves were regarded as property rather than persons. A slave was known in law as an 'impersonal man', impersona as distinct from persona, and had no legal rights until Claudius gave them some protections. Thereafter, a series of reforms gradually improved their position. By the third century, Ulpian, who was involved in a persecution of the Christians, stated the principle that, by the law of nature, all men are equal. The law also provided for regulation of the family. The exclusive patriarchal rights which applied under the clan system were modified during the period of the empire such that the state could intervene in family affairs to protect women and children from men in the family group. Durant describes this change as follows:

> Rule through family and clan diminished as population became more abundant and diverse, and life more mobile, commercial and complex; kinship, status, and custom were replaced by contract and law. Children won greater freedom from their parents, wives from their husbands, individuals from their groups. Trajan compelled a father to emancipate a son whom he had maltreated; Hadrian took from the father the right of life and death

> over his household and transfereed it to the courts; Antoninus forbade a father to sell his children into slavery. Custom had long since reduced the use of these old powers to rare occurrences. Law tends to lag behind moral development, not because law cannot learn, but because experience has shown the wisdom of testing new ways in practice before congealing them into law.(24)

Roman law also contained much of the framework which is still recognisable in English law: enforceable obligations might arise by contract or by delict (tort). Debt arose by loan, mortgage, deposit or trust. Trials might be conducted with or without a jury which varied in number but was often as many as seventy-five persons. The decemviri, or Ten Men, was maintained as a special court to hear civil matters; likewise the centumviri, or Hundred Men, heard disputes concerning property and bequests.

In the second and third centuries A.D., Neoplatonism was developed at Alexandria by Ammonius Saccas and his disciples, Plotinus and Origen. Ammonius Saccas was born a Christian and founded the first school of Neoplatonism in Alexandria in 232 A.D. Plotinus moved to Rome where he taught the ideas of Neoplatonism and impressed many influential men. In order to reconcile Greek philosophy and Christianity, Neoplatonism developed the mystic side of Platonism and produced propositions which lead to much theological debate and bitter conflict. Neoplatonism might be regarded as a further development of the work of Philo who was a contemporary of Christ and was not seeking to develop Christian theology but rather, Jewish theology.

Various Christian sects appeared at this time. The Gnostics who were concerned with the distinction between the human and divine persons of Jesus, and the Manichaeans who identified matter with evil and spirit with good, so as to reconcile Christianity and Zaroastrianism. The attempts at synthesis and rational argument in theology may be regarded as a scientific theology. It could be said that scientific thinking moved into theology and, throughout the middle ages, there was an attempt to develop the Christian religion as a coherent and complex system of religious thought. Thus mystical metaphysics became the subject of science.

The metaphysics of Plotinus attempted to differentiate various aspects of the divine entity. He used the concept of the Holy Trinity to examine the different notions of One, nous and Logos, so as to produce a coherent understanding of what the divine entity is and does. This could be viewed as a systems ontology in theology and a primitive precursor of systems ontologies of the collective conscious. Russell explains the trend to theology among the intellectuals of the time of Plotinus (204-270 A.D.):

> ...the army had become conscious of its power, and had adopted the practice of choosing emperors in return for monetary reward, and assassinating them afterwards to give occasion for a renewed sale of the empire. These preoccupations unfitted the soldiers for the defence of the frontier, and permitted vigorous incursions of Germans from the north and Persians from the east. War and pestilence diminished the population of the empire by about a third, while increased taxation and diminished resources caused financial ruin even in those provinces to which no hostile forces penetrated. The cities, which had been the bearers of culture, were especially hard hit; substantial citizens, in large numbers, fled to escape the tax collector. ... Of all this there is no mention in the works of Plotinus. He turned aside from the spectacle of ruin and misery in the actual world, to contemplate an eternal world of goodness and beauty. In this he was in harmony with all the most serious men of his age. To all of them, Christians and pagans alike, the world of practical affairs seemed to offer no hope, and only the Other World seemed worthy of allegiance. To the Christian, the Other World was the Kingdom of Heaven, to be enjoyed after death; to the Platonist, it was the eternal world of ideas, the real world as opposed to the illusory world of appearance.(25)

In the fourth period identified by Schulz, from 284 A.D. to the completion of the Justinian codification in 534 A.D., natural law had a prevailing influence. The traditional Roman sense of humanitas was reconciled with Christian morality, and the Greek notion of natural law assisted the process. Schulz calls this the bureaucratic period and sees the classicizing methodology of the jurists as a matter of administrative expediency.

The bureaucratic period begins with the reign of Diocletian in 284 A.D. Major changes were introduced by Diocletian in an attempt to solve some of the problems of ruling the empire. To control the

power of the armed forces, Diocletian, who was himself a general, appointed three other generals to aid in government. The senior of these was given the title, Augustus, and was to be the successor of Diocletian. The other two were given the title, Caesar. The Caesars were to be the heirs of the Augusti. Diocletian then divided the empire into four parts, each to be ruled by an Augustus or a Caesar. This permitted better administration and protection from the barbarians who were pressing upon the boundaries of the empire. The assassination of rulers had been a common occurrence in Roman history. With four emperors in different parts of the empire, this practice could be curtailed. Diocletian chose to rule the eastern sector of the empire and set up his capital in Nicomedia, near the Bosphorus. Persecution of the Christians continued under the rule of Diocletian and his immediate successors.

Like Hadrian, Diocletian encouraged the study of law. He provided state funding for law schools and it is likely that the famous law school of Berytus (now Beirut) became well established during his rule. The codification of imperial constitutions began with the the Codex Gregorianus c.291 A.D. which was commissioned by Diocletian. It is thought that this code was compiled by Gregorius, a professor at the Beirut law school. The codification sought to order the law as a digest of books and titles so that it would be more accessible and comprehensible. The work was supplemented by a further collection, the Codex Hermogenianus, which was prepared unofficially, probably by another Berytean scholar, Hermogenianus.

Freedom of religion was decreed by the first Christian emperor, Constantine, who, after many battles against his rivals, was installed by the army in 323 A.D. as sole emperor. Constantine adopted the Christian faith before he became emperor. After he came to power, he halted the persecution of the Christians and established their political supremacy throughout the Roman Empire. Constantine moved to Nicomedia and in 330 A.D., established his capital at Byzantium which was renamed Constantinople. This moved the centre of political power to the east and enabled him to rule without the interference of the influential nobles of Rome. Because Constantine had adopted Christianity, he was in a position

to lead both the secular administration and the Church. He appointed Church leaders to administrative and judicial positions. It is with this development that Christian values became integrated with Roman law. Constantine further divided the administrative responsibilities of the empire by partitioning the provinces into small districts. The cost of the administration increased as it was divided from the time of Diocletian. Heavy taxes were imposed to meet this cost.

Constantine was at first tolerant of other religions but, with the influence of his mother who was also Christian, he came to favour a common or catholic religion strongly supportive of the empire. To settle disputes within the Church, he summoned the first ecumenical or universal council and, after some debate, resolved the catholic doctrine. The council met in 325 A.D. and the event is sometimes regarded as the beginning of the middle ages. Thereafter, the council determined common doctrine and settled the metaphysical disputes about the nature of the divine entity; it acted as a form of central government for the whole Church.

Constantine also abolished the gladiatorial games, about six hundred years after they had begun. After his death, they were revived and were finally abolished by Honorius (384-423 A.D.) Even though Constantine was born an ex-nuptial child and received only a meagre education, he reintroduced a hellenizing influence, both in the structure and values of the law. The hellenistic values were modified by the Christian influence and the Roman notion of humanitas. Rigor juris was systematically attacked by reference to the popular concepts of benignitas, pietas, caritas and clementia. Schulz describes the Roman humanitas which influenced the law during this period:

> Humanity is an idea of Greek origin, which, however, received a special Roman stamp in the circle of the younger Scipio and Panaetius: both the term and the concept humanitas are original Roman creations. It was meant to express the sense of the value of human personality, placing man above all other creatures on earth. The unique value of his personality imposes on a man the duty both of cultivating his own personality and of respecting and developing that of other men. Thus humanitas embraces not only social and intellectual culture but also graciousness, kindly action,

> regard for and fellowship with others, and abstention from an immoderate and ruthless assertion of one's own rights.(26)

In 337 A.D., Constantine died. Thereafter, the Empire was ruled in the east from Constantinople and in the west from Rome. Flavius Theodosius (335-395) provided a strong rule through military victories against the Goths on the borders of the Empire; he was a zealous Christian and ruled as sole emperor. By the end of his reign, there was sufficient peace to allow the development of a new period of Roman legal science.

The Codification Period - 5th Century A.D. to 7th Century A.D.

The grandson of Flavius Theodosius, Theodosius 11 (401-450), ruled as emperor in the west from the age of eight. After he attained his majority, he provided strong military leadership against the Persians and kept the Vandals and Huns out of the Empire with bribes and promises. Jurists in Constantinople, during his rule, selected laws and regulations from the earlier juristic works and formulated a comprehensive body of law which came to be known as the Theodosian Code or the Codex Theodosianus. It was approved by the Roman Senate and promulgated in 438 A.D. under Theodosius 11, but it is not likely that he played an active role in instigating it or in the determination of any policy in its formulation. He was known to perform his administrative duties with little concern for their content.

Following Constantine, major theological development in the Catholic religion, was undertaken by four men who are known as the Doctors of the Western Church: St. Ambrose, St. Jerome, St. Augustine, and Pope Gregory the Great. St. Ambrose provided the ecclesiastical view of the relation between Church and state. He was bishop of Milan, which, by the end of the fourth century was the capital of the Western Empire; St. Jerome, who was born in the north of Italy, but based himself in Bethlehem, produced the Latin Bible and instigated monasticism; St. Augustine fixed a theology of the Church which was to endure until the Reformation when it was re-examined up by the Protestants.

St. Augustine was born in Numidia in North Africa. His mother was Christian but his father was not. He became a Manichaean and then a Catholic. He studied under the Neoplatonists of Milan and was appointed bishop of Hippo in North Africa in 396. He modified the Manichaean belief that evil is a kind of substance by a tenet that evil comes from a peverseness of will. This provided a basis for the development of the criminal law through the punishment of mens rea. St. Augustine also took up the problem of time in theology, both as a matter of the divine entity and as this relates to ordinary human understanding. It is Russell's view that, on this subject, St Augustine made advances on the earlier Greek works and pre-empted Descartes' cogito and Kant's subjective theory of time. Since time theory is an integral part of modern physics, and an important consideration in the development of legal expert systems, it is worth noting Russell's description of St Augustine's views.

> God is eternal, in the sense of being timeless; in God there is no before and after, but only an eternal present. God's eternity is exempt from the relation of time; all time is present to Him at once. He did not precede His own creation of time, for that would imply that He was in time, whereas He stands eternally outside the stream of time. This leads St. Augustine to a very admirable relativistic theory of time. ...
>
> Nevertheless there really is time past and future. We seem to be lead into contradictions. The only way Augustine can find to avoid these contradictions is to say that past and future can only be thought of as present: 'past' must be identified with memory, and 'future' with expectation, memory and expectation being both present facts. There are he says three times: 'a present of things past, a present of things present, and a present of things future'.(27)

In his Soliloquia, St Augustine poses a number of questions and their answers in order to establish some a priori propositions about mental certainty, as a basis for knowing. The precursor of Descartes' cogito is contained in his question and answer, 'Do you know that you think ? I do.' Much of St. Augustine's philosophy is concerned to establish the universal guilt of human beings inherited from the original sin of Adam and Eve, and the fact of predestination, a sort of theological mechanism, whereby the elect are saved and others are damned, irrespective of their conduct on

earth. These matters are established by St. Augustine on the authority of, or an interpretation of the scriptures of St. Paul. At the time there was a controversy in the Church about the notion of free will in theology. A Welsh ecclesiastic, Pelagius, lead a faction which maintained the theological contract of the Roman religion on the basis of free will. Intentional good deeds showed moral effort which would be rewarded in heaven. The other side of the Roman culture which had more recently come to dominate, the duplicity and cruelty in social relations, the power games, could continue without moral constraint on the view posed by St. Augustine. The views of Pelagius were treated as heretical. The theology of St. Augustine introduced a new era: baptism was a prerequisite for being one of the elect. Anybody could enjoy the divine entity by associating with it while alive. Those who did whatever they liked otherwise might still be saved if they happened to be one of the elect. This was a religion which imposed no moral constraint through fear but at the same time imposed great fear of death and an opportunity to enjoy a spiritual life which would appease the fear of death. It introduced a fear and a sanction of immorality which was not present in Stoicism. The Roman Catholic religion imposed a new contractual paradigm, the sanction of immorality at the price of fear. This contract then created a demand for religious illusions which would encourage moral standards without any other reward. The complexity of the social psychology in this theological science locked up intellectual activity for a thousand years. The contractual paradigm contained paradoxes of personal freedom in the context of social co-operation: the beliefs of society imposed fear and offered a solution which was social co-operation at the price of a restriction on personal freedom which might not be necessary.

As Christianity became more dogmatic, Alexandria produced theologians as well as mathematicians. The Church opposed the work of the Alexandrian philosophers and succeeded by violent measures in curtailing their activities. The turning point might be marked by the barbarous butchery of the erudite mathematician, Hypatia, in 425 A.D. by Christian fanatics, at the instigation of St. Cyril. The Athenian schools of philosophy were also closed.

Justinian closed the last of the Athenian schools of philosophy, including Plato's Academy in 529 A.D., for religious reasons. Schulz discusses the juristic characteristics of the bureaucratic period. When the bureaucracy reached its zenith, it dominated the administration of law with bureaucratic methods of government. The republican forms passed away. Through official and semi-official codifications, rescripts and imperial statutes, the law became settled. Jurisprudence survived only as a scholastic interpretation of the settled law. Schulz describes the work of the bureaucratic jurists as follows:

> The innate tendency of every bureaucracy to convert the development of the law into the monopoly of a central office, to codify the law and to assure and supervise its strict application and enforcement, undoubtedly produced a complete change in the structure of Roman legal science.(28)

In order to settle the body of law, the jurists carried out a process of simplification which Schulz calls 'classicizing'. From the work of the earlier jurists, especially the five who were regarded as the evangelists, namely, Papinian, Paul, Ulpian, Modestinus and Gaius, a culmination of standards was formulated as canons or norms. The models of the classical period were adapted to the bureaucratic requirements of the empire. The earlier works were abridged and condensed through paraphrases, epitomes and anthologies. In order to make these works more accessible and intelligible, introductions, insertions and justifications were added. This juristic work made codification possible and the culmination of the bureaucratic period was the Justinian codification which incorporated all law into one corpus sanctioned as imperial command.

By creating sharply defined and unambiguous legal situations, the classical jurists had provided a basis for simplification. In the course of bureaucratic classicization, the law was simplified. Fine distinctions were removed. The provisions of actio and exceptio were abolished. The process of simplification may have been a reaction to the petty detailing of the classical period. The volume of detail may have made the law difficult to access and administer. The classicizing process sifted out unnecessary detail and trivia. It also reconciled the different influences on

law throughout the empire and produced a stable body of law common to all people in the jurisdiction.

In about 407 A.D., the Romans withdrew from Britain. The Germanic tribes, the Goths and the Franks had infiltrated the Roman Empire over several centuries. By 451 A.D., sufficient integration had been achieved for the Romans to unite with the Germans to resist an invasion by an eastern tribe, the Huns, who were lead by Attila. The Huns were defeated in France but they swept through Italy and exacted a huge ransom from Rome before they departed. The last Roman Emperor in the west was a boy, Romulus Augustus. He was deposed in 476 by the Goths whose leader, Odoacer, assumed the title of King of Italy. This event is regarded as the fall of the Western Empire but Odoacer claimed to rule as the deputy of the Emperor of the east. As there was no emperor in Rome, the power of the bishop of Rome increased greatly.

The work carried out by the jurists from the time of Diocletian, in abbreviating and condensing the earlier juristic works prepared the way for the Justinian codification which concludes the bureaucratic period. Although codification has early origins, the period of the Justinian codification marked out a separate stage of Roman law whereby the rules of law were brought together as an entity with a precise delineation applicable to all people in the empire. The evolutionary picture of expansion and condensation of the Roman law to meet the problems of legal administration indicates a methodology of legal administration. The sort of methodology which Schulz is concerned with, may be understood as scientific methodology, and he treats the changes of Roman methodology as the major characterizing influence which produced changes in the nature of Roman law.

Justinianus (483-565 A.D.), who was Illyrian by birth, became emperor in the east in 527. The following year he appointed a commission of jurists to codify the Roman law. Bureaucratic rule required uniform, officially sanctioned regulations which could be applied strictly and supervised by a central bureaucracy. The commission was lead by Tribonian. The directions given by Justinian, permitted not just a simplification process but also an opportunity to correct inconsistencies and inequities. Obsolete

matters could be deleted or replaced to complete the adaptation. Anything outside the codification was to be devoid of authority and banned. The compilers of the code selected the most useful and salutary juristic works of the classical period as the basis of the code, among them, Gaius' Institutes, Paul's Sentences and Ulpian's Epitomes. Earlier codifications were also available; the codification of the Edict by Hadrian who was Emperor from 117 to 138 A.D., the Codices of Gregorianus c.291 A.D and Hermogenianus c.295 A.D. and the Codex Theodosianus of 438 A.D. The Justinian codification increased the certainty of law by a common system, clearly identified in scope and imperially ratified; the effect of this was to condense the law. Some obsolete law was retained in the Justinian codification, especially in the Digest, as a matter of historical interest. Justinian forbad future recourse to the original texts and confined students to the historical excerpts in the codification.

The Justinian codification replaced juristic doctrine. Controversies and uncertainties were thereby removed and the law became a stable and identifiable body of rules. It was during the bureaucratic period that the certainty in the law, ius certum, became the ideal. Codification was initially declaratory rather than reformatory from the codification of the Edicts by Hadrian. However, in reconciling rules and in the process of adaptation of the rules to contemporary times, some reform was introduced.

The Berytean professors assisted in the process of stabilization of the law in the Justinian codification. Tribonian and the compilers of the code favoured simplification of the law. The professors had a modifying effect on this tendency. They sought to preserve some of the subtleties of the dialectic jurisprudence, subtilitas, and some of the problemata of the classical jurists. The Justinian compilers also favoured brevity as well as simplification. The dubiousness of rhetoric had ceased to be of importance. There was a return to abstract formulations as a method of removing case detail. This in turn introduced a different approach to interpretation problems. The maxim, semper vestigia voluntatis sequimur, was coined: in the application of law to any situation, regard was had to the intention of the law and not just the literal meaning of words used.

Justinian's code was promulgated in 534 A.D. It consisted of four parts: The Institutes, the Digest, the Codex, and the Novels. The Institutes were largely the work of Theophilus, a professor of the law school at Constantinople, and Dorotheus, a professor of the law school at Berytus; the work was intended as an elementary textbook for the law schools and treated the whole field of law in four sections, namely, persons, property, obligations and actions. Earlier juristic works formed the basis of the text.

The Digest is regarded as the soul of the Corpus. It defines jurisprudence, wisdom in the law, as the science of the just and the unjust, and the art of the good and the equitable. Modelled on the Twelve Tables and the Edictum Perpetuum, it was prepared as a handbook for practitioners. The Digest consisted of fifty books and comprised about nine thousand extracts from the works of thirty-nine authors; about one third of the works are taken from Ulpian's juristic writings. It covered the ius civile, the ius gentium and any miscellaneous area of law which did not fit into these categories. The Codex contained in twelve books imperial legislation found in the Orationes which were proposals put to the Senate, the Edicta, the Mandata or instructions to officials, the Decreta or decisions on legal points, the Rescripta or answers to queries from citizens and officials, and the Epistolae or letters. The system of arrangement was compatible with the Edict arrangement of the Digest. Finally, the Novels were the separate publication of new enactments.

The conversion of Roman law to imperial command in the Justinian codification, provided a model for the laws of the future states of Europe. Control of the administration of law by a Christian bureaucracy, maintained a Christian influence in the application of the rules which were settled in the Corpus Juris Civilis. At the time of the publication of Justinian codification, the west was still under the rule of the Goths. Justinian's military forces drove the Goths out of Italy and briefly established the Justinian Corpus Juris Civilis as the code of law common to the reunited Roman Empire. However, the Theodosian Code was reestablished in Italy after the death of Justinian.

Following the death of Justinian, a tradition of papal power developed, usually with its centre in Rome. Through the catholic church, the notion of a Roman Empire continued. During the period of the Dark Ages, from about 600-1000, the barbarians continued their conquering migrations. From the time of the Hegira, Mohammed's flight from Mecca to Medina, in 622, Islam spread for a hundred years. The educational resources of the many schools established in Alexandria which had been a centre of Greek learning for nearly a thousand years were destroyed by the Saracens lead by the caliph Omar in A.D. 642. It is said that the books from its library fuelled four thousand baths in the city for six months. The Arabs took Syria and Persia and invaded India in 664. They attempted to take Constantinople in 669 and 716-7 but were defeated by the forces of the Eastern Empire which had virtually ceased to be Roman but remained Christian. Westward they took Egypt, Carthage and invaded Spain in 711. The Popes came to depend upon the Frankish kings for military support. In 732 the Islamic Saracens pushed north into France where they were defeated by Charles Martel, leader of the Franks.

Subsequently, Charles the Great or Charlemagne, at the request of the Pope, drove the invading Lombards of the north out of northern Italy. In 800 the Pope crowned Charlemagne Holy Roman Emperor but the secular entity of the Roman Empire was never restored. The custom of crowning the Frankish monarch emperor continued but the empire gradually broke up as the Roman domains developed into different European nations.

In the Islamic Empire, the learning of the Alexandrian Greeks was intermingled with the new religion, just as in the west, Christianity was reconciled with Greek philosophy. Islam was also more influenced by the learning of the civilizations of India and China than was the west. In his book, Islamic Science, Dr. Seyyed Hossein Nasr describes the contribution of Islam to the maintenance and development of scientific thought and its integration with religious studies. He outlines the classifications of the sciences by Shams al-Din al-Amuli in the most extensive of the Islamic encyclopaedias written before the sixteenth century, the Nafais al-funun, Precious Elements of the

Sciences. In one classification, the 'sciences of law', shar iyyat, is listed as part of the late sciences.(29)

It is likely that eastern and Islamic learning had some influence on the development of western thought but this is more likely to have occurred during the middle ages, when the social order had settled with the cohesion of a common religion and the barbarian disruptions were replaced by a stable rural economy. The Roman Empire, when its military might failed, met its invaders with a new religion. In this way, its domains were extended further and there was a return to a religion-based stable society. The Church carried on successfully its conversion of the various peoples who settled in the lands of the old Roman Empire. Constantinople became a centre for scientific study until it was captured by the Turks in 1453. Fugitive professors took refuge in Italy where they received patronage from the Church and princes. Their learning contributed to the advances of the renaissance.

Conclusion

In the pursuit of power, the Romans developed extensive rules of law with a scientific structure, and fashioned scientific administration and social regulation. The scientific influences of philosophy which fashioned the Roman legal system, were then applied to the development of the Roman Catholic religion rather than the development of social science. In the evolution of the Roman legal system, the list of ancient deities and rites which attended to the various needs of the people in early Roman society was replaced by a list of rules which addressed the satisfaction of human needs and wants through social order and priorities. These rules were consistent and coherent, thereby reflecting a more complex intellect than the imaginative religion of the archaic period. However, there is no evidence that the evolution increasingly satisfied human needs and wants. Perhaps this is why there was a reversion to religion. People could see their legal choices in the list of rituals and rites; they did not lose sight of these choices in the forms of common law actions. The rituals and rites may have been ill-founded, and the forms of action may have been too limited and insufficiently rationalised with the needs and wants of people. In the theoretical period, the forms

of action were developed logically to account for more and more of the requirements of people. However, the theory did not readjust the basis of law to address its social purpose. It was not refounded on a science of social administration. People lost sight of their legal choices in the complex system of rules, the casuistic detail, and the abstract representation of all this in the codification. The Roman legal system became a rarefied, specialized science, entrenched in the realms of metaphysics.

The Romans were a practical people but they never developed a science of legal choice to optimize the conditions of human life, given available resources. Nor did they develop a practical scientific methodology to explore and control the material or physical world. They did not seek understanding; rather, they sought power and novelty. It was not until the development of modern scientific methodology from the fifteenth century, that the study of human sciences could extend scientific social administration, and the study of the physical world could produce advanced technologies that served human survival. The contemporary challenge for the legal system is to produce a jurisprudential system which can integrate these two arms of science. Such a system must incorporate a scientific system of legal choice.

If it is the case that the English legal system is on the verge of codification, then the form of this codification might depend upon contemporary philosophy and science. It could be that the computerization of legal services which has recently begun, is the English form of codification. However, the form of codification will not ensure an effective content or compliance. The common references, both physical and mental, which the law can provide, are essential for human agreement and for the co-ordination of coadaptation within the species. The English have confined the development of their legal system in much the same way as did the Romans, to a rarefied legal science. In order to integrate the social and physical sciences for the benefit of human survival, computerized codification of legal services must address the survival requirements and choices of lay users and lay beneficiaries of the services. It is the tasks of human survival which are governed by law, that must be codified. Otherwise, the

English codification will not have progressed according to the scientific standards of its culture.

Footnotes

(1) The Evolution of the Roman Law, 2nd ed. 1923. (published by the author)

(2) Op. cit.

(3) The Story of Civilization, Caesar and Christ, Volume 111, Simon and Schuster, New York, 1944, p. 56.

(4) Ibid. p. 23

(5) Op. cit. pages 94ff.

(6) Relativity: The Special and General Theory, Translated by R.W. Lawson, Methuen and Co. Ltd., Londomn, 1920; and The Meaning of Relativity, translated by E.P. Adams, Methuen and Co. Ltd., 1922.

(7) The Story of the Roman People, George G. Harrap & Co. Ltd., London, revised edition, 1929, page 111.

(8) Op. cit. page 394.

(9) Op. cit. page 62.

(10) Ibid. page 98.

(11) Ibid. page 82.

(12) Ibid. page 70.

(13) Quoted by Durant, op. cit. page 405.

(14) Gaius takes this view in his Institutes, as pointed out by Lobingier, op. cit. page 110.

(15) Op. cit. page 110.

(16) Op. cit. page 150.

(17) Op. cit. page 211.

(18) Op. cit. page 385.

(19) First published in 1788; revised and rewritten by F.A. Wright, Routledge & Kegan Paul Ltd., London, 1949, page 253.

(20) Op, cit. page 387.

(21) Op. cit. page 126.

(22) The Latin quoted by Schulz, ibid. page 131.

(23) Ibid. page 137.

(24) Op. cit. page 395.

(25) Op. cit. page 289.

(26) Op. cit. page 297.

(27) Op. cit. page 352.

(28) Op. cit. page 263.

(29) World of Islam Festival Publishing Company Ltd., 1976, pages 15-16. Place of publication not stated; printed by Westerham Press Ltd., Kent, England.

CHAPTER FOUR

SCIENCE OF THE COMMON LAW

Introduction

The Ritualistic Period

The Common Law Period

Conclusion

Introduction

The English legal system, in its development from the time when the Romans abandoned Britain, has stages similar to those which have been identified in the Roman legal system. Ritualistic influences are present in the earliest period, with some written codification which, like the twelve tables, is limited. As with the Roman system, a common law period follows, when forms of action, replace actional formalism. The common law period in each system is followed by a theoretical period, and then a period of casuistry. The English theoretical and casuistry periods are covered in Chapter Five. The final period in the Roman system is one of comprehensive codification. If the analogy is valid, then the English system is on the verge of a codification stage. It has reached this stage at a time when computer technology has become available to assist in the codification task. Chapters Six and Seven are concerned with developing a form of English codification, namely, computerized legal services, which are lay user friendly and suit the requirements of human society.

The English periods are set out in two chapters to mark two scientific features of the English legal system: common law and precedent. This Chapter is concerned with the development of common law. The paradigm of common law entails an application of law to all people equally. This paradigm is recognisable in the laws of modern science, which apply uniformly throughout the universe. The English legal system and British empiricism share a similar control metaphysics or intelligence. In the early history, the development of English legal science and British empiricism can be seen emerging side by side. Some interaction seems implicit in this. The social and environmental context of their development is also significant. In the Roman history, the social and environmental context of the development of law and science, indicate an alienation of learning from the social and environmental realities. In the English legal system, this alienation is lessened by the methodological links that are maintained between the learning of science and law and the social and environmental realities. Throughout the history, there is a waxing and waning of these links, and with each waxing, the methodology is developed to provide new and stronger links. There

is an opportunity in contemporary times for the forging of a new link through the methodologies of artificial intelligence.

The computerization of law offers a solution to the problems of managing the vast and complex body of law in contemporary times. Through the aids of artificial intelligence which might extend the human capacity for memory and processing of information, there is an opportunity to give the character of technological or cybernetic codification to the Justinian era of the English system. Computerization requires precision in rules and permits a communication system which will determine the application of these rules in any particular case. Thus, a computer might advise a user of the choices of behaviour that are recognised in the rules of law so that the user may consider and evaluate alternatives and make informed selections. Codification of legal services in this way increases the opportunities for informed decision-making and intelligent social co-ordination. A user may ascertain how to act within the law so as to maximise the satisfaction of personal needs and wants. The systemic structures which have been fashioned in the English legal system will provide the context or content for this sort of computer codification. However, these systemic structures must be thoroughly examined and understood in order to design effective artificial legal intelligence. This Chapter carries out some of the initial examination required.

Chapter Five is concerned with the scientific feature of the law which developed as the doctrine of precedent. This paradigm of precedent provided a basis for the scientific paradigm of prediction, which is a major feature of modern science. These scientific features increase the certainty which the law provides for its people. This Chapter reviews the early development of the English legal system under the general feature of common law, in order to identify the first two stages comparable to the Roman system and in order to identify some of the systemic structures as they have evolved in these stages. Ritual was common procedure on which common law could be mounted. Prevailing sub-paradigms in the history are identified throughout each period. The systemic structures may be particularly relevant in the design and evaluation of a comprehensive automation of law.

The Ritualistic Period - 9th Century to 11th Century

The Paradigm of 1. Co-existing Sets of Rules

After the Romans abandoned Britain in 407 A.D., the country was subject to Teutonic invasions by Angles, Saxons and then Danes. With the final breakdown of the Roman Empire in the west, after the death of Justinian, the Dark Ages descended in Europe. In the east, the Byzantium Empire flourished until the fifteenth century when Constantinople fell to the Moslem forces of the south. The chaos of the Dark Ages in Europe reached its zenith in the eighth century A.D. From the ninth century A.D., the various invading hordes of Britain established their respective domains and maintained their various customary laws in different parts of the land.

The ancient Celtic population, which had been subject to Roman rule in pre-Justinian times, retained some strongholds and preserved to some extent, their legal system which was administered by the priestly judges, the Druids. J.H. Baker observes that the Druids developed a mnemonic rather than a written system of law, which enabled them to rule.(1) This mnemonic tradition, which was described by Caesar, is comparable to the extensive poetic works of the ancient Aryan races of the Mediterranean and northern India. The Teutonic or Germanic invaders of Britain, like the Romans, recognised the right of conquered peoples to retain their own system of law. Law was, in a sense, personal property derived from one's cultural membership. Consequently, the law of Britain became a collection of co-existing sets of rules. Any remaining influence of Roman law appeared as instances of Roman-like customals retained by some boroughs and cities. These Roman rules are described in Potter's Historical Introduction to English Law as 'the legacy of a bygone age rather than as a scientific set of principles'.(2)

The Paradigm of 2. The Judgement of Rules - Written Dooms

The earliest written English laws, customals known as dooms, meaning judgments, appeared, before the Danish invasions of the ninth century, in about the year 600 when St. Augustine converted

King Aethelbirht of Kent to Christianity. This code of dooms was an attempt to record some existing custom and some additional reforms, according to the Roman model. The reforms were in the nature of statutes issuing from the monarch and are sometimes described as capitularies. Subsequently, other codifications were attempted by King Alfred of Wessex (871-899), the Danish King Cnut (1016-1035) and King Edward the Confessor (1042-1066). These records were largely written in Anglo-Saxon. Even after England became loosely united under Christian King Cnut, the different customs were not reconciled; the lex Anglorum and the Danelaga remained distinct in the body of English law until the Norman Conquest of 1066.

The Paradigm of 3. Ubiquitous Influence of Religion

In these early times, the Church and the state were not clearly separated and both were in primitive stages of development. The influence of the Church on law is described in Potter's Historical Introduction to English Law - in this way:

> No proper estimate has been made of the effect of Christianity on English law, but there is no shadow of doubt that it was far-reaching. On the other hand, the philosophical conceptions and manner of thought associated with Christianity have undergone great changes themselves, and modern notions of Christianity must not be interpolated into the Anglo-Saxon era.(3)

The Paradigm of 4. A Price for Peace : Measuring Justice

The substance of the early laws is also described briefly in Potter's Historical Introduction to English Law:

> The object of the earlier customs seems to have been the prevention of bloodshed by the recognition of certain elementary rights of property and personal freedom, and the substitution of measured compensation for the prosecution of the indiscriminate blood feud as revenge for injury.(4)

The dooms were fragmentary and unsystematic. There was no strong system of rights and duties to control the unruly practices of self-help and brute force. The law required a person to seek

redress in the courts before personally enforcing the law. Although there were Anglo-Saxon courts, namely the Shire and the Hundred communal courts, executive power to compel attendance and enforce judements, was relatively weak. Twelve thegns were required to report offences to the court and instigate criminal prosecutions. Litigants were required to seek relief in these courts before proceeding in the royal court. The monarch was the ultimate source of justice. If justice was refused in the communal courts, then effectively an appeal might be made to the monarch.(5) As the courts had little means of enforcing their judgements, other than outlawry of the disobedient party, a successful litigant had to find the means to take an entitlement if the losing party did not cooperate. The blood feud was an entitlement to exact a specified violent retribution on a defendant. Legal rights were a right to blood. An outlaw forfeited his property and might be killed lawfully by anyone. In the case of serious social offences such as treason, cowardice in battle or sins against the Church, an offender might forfeit property, be executed or maimed. Property as well as physical force was used to effect social control and order.

The Paradigms of 5. Resolution of Conflict
6. Balance by Measurement

Law was used to control private feuds. The rules that would operate to settle priorities automatically in a conflict, had to be clear and simple since conflicts usually gave rise to violence rather than reason. The main concern of the early English codes was not to incorporate all existing customs, but rather to fix the amounts payable in lieu of a blood feud. The Church was opposed to violence and suggested a system of compensation rather than vengeance. The scales of payments in law were similar to the penitentials developed by the church whereby a sinner could purchase or earn forgiveness and prevent a feud with god. Injurious acts were dealt with in the simple terms of wer, the value of a person's life, wite, the penalty or fine, and bot, the compensation to the victim. Measurement was the essence of justice in the rectification of a wrong. The concept of 'own' arose from the notion of owe. The sophistication of Roman commerce no longer existed and economic organisation pertained to

land and labour rather than abstract notions of investment and the power of title. Possession rather than ownership, presence rather than power, characterised Anglo-saxon law. The most effective rules were those which attached notional rights and duties, to persons and their tangible property. However, although this integration of the concepts of law with physical identities reduced violent reactions to wrongs, it also served to restrict the flexibility and freedoms permitted by the law.

The Paradigm of
7. Proof of Justice
8. Dominance by Oath and Ordeal

The forms of trial in Anglo-saxon law were oath and ordeal. Oath was a mode of proof of the justice of a claim or defence rather than a means of establishing facts. A litigant might be required to take a word-perfect oath without hesitation, verifying her or his case. Like the earliest Roman procedure, there was a formula for each claim and if any error was made in reciting it, the claimant's action would fail. A certain number of persons, known as oath-helpers or compurgators (usually twelve), were required to swear in support of a party's case. The number varied according to the nature of the case and the rank of the party. It would seem that a belief in a party's case, rather than a knowledge of the facts upon which it relied, was the standard of proof. Baker describes this method of trial.

> The procedure followed at such (moot) meetings was calculated to avoid decision-making. If the parties could not be persuaded to make a "loveday", to settle amicably, then the dispute had to be put to a supernatural test. The most widespread test was the oath. The community would adjudge that one of the parties should "do his law". He then took an oath in support of his assertions, and would usually be required to bring a certain number of neighbours with him to swear that they believed his oath to be good. The theory, no doubt, was that God would not suffer perjury. In practice, the friends or "oath-helpers" may have served the function of character-witnesses: if a sufficient number of lawful men believed the party, then he could make or "wage" his law, and receive judgement. There was no question of deciding whether the oath, if made in due manner, was true; that responsibility was undertaken by the oath-helpers. It is therefore commonly said that judgment preceded

> proof, because once the "judges" decided which of the parties should wage his law they had no further decision to make.(6)

The court decided which party must prove her or his case and the method of trial. They made an award of proof. Where proof was by oath and easy to make, this judgement effectively determined the succesful party and implicitly established what the law was as well as how it would be applied. No doubt, conflicts which came before the moot sometimes raised matters which had not been previously settled in law. The requirement of oath-helpers might have been a procedure for sampling the strength of support for a new rule and the support for settling the dispute in a certain way. In a sense, the procedure entailed both some element of democracy and some element of dominance by the stronger forces. Permission from the moot to enforce a solution to the conflict indicated to the losing party that there would be no community support for the defence, and enforcement of the judgement would be condoned. If the oath requirements were not fulfilled, the trial proceeded to an ordeal. Then, the court invoked the supernatural resolution of doubt, rather than the human belief of the oath procedure. However, even the ordeals were a test of physical dominance and the litigant who established this quality was supported by the community.

C.G. Weeramantry describes the savagery and superstition in the ancient customs of ordeal.

> Trial by ordeal could take the form of resort to fire, water or drowning. Ordeal by fire required the accused person to carry with his bare hands a red hot iron a distance of seven or eight feet. His hands were then bandaged and sealed. Three days later, on opening the bandages, if the hand was clean the accused was innocent, or if the hand was infected, he was pronounced guilty. Ordeal by water required the accused to plunge his hand into a cauldron of boiling water and pick up an object from the bottom of the cauldron. A similar procedure followed. So also with drowning. The accused was trussed up in a prescribed fashion and dropped in a stream and his guilt or innocence depended on the manner in which he sank or floated to the surface.(7)

The Paradigm of 9. The Feudal Contract

In Europe, the legal science of the Dark Ages was concerned with the conversion of the Roman slave and money economy to a holistic social system, the feudal order, whereby the division of labour was rigidly bound up with alliances and with protected land tenure. Roman laws became vulgarized under the dominance of the barbarians. From this vulgar classical law and the barbarian folk-laws, classical feudalism was forged. The Catholic religion which was an integral part of the Roman empire, headed by the emperor, survived in the west by disassociating itself from secular leadership. It might be thought that Roman statesmanship reverted to the domain of religion where it established a social control similar to that employed by the priestly classes of the ritualistic period of Roman legal history. Roman techniques of power had come full circle but with an eddying effect. Not just Latium, but the whole of Europe was to be the new starting jurisdiction for religious law. During the Dark Ages, the Roman catholic religion assisted in forging the stability of a European feudal system in the face of ongoing migration, invasions and violence. The truce of God set limits to the anarchical right of private war; it placed certain persons, lands and times under religious protection and out of bounds for the war. By the year 1000, the feudal order, a complex social contract, was well entrenched and economically productive.

The Paradigm of 10. Creativity

In the Dark Ages, unorthodox scholars of the west fled to the remote edges of the Empire and to the east. In Ireland, John the Scot or Johannes Scotus Erigena (800-877), an accomplished Greek scholar, maintained the preference for reason over faith and revelation. In his magnus opus, On the Division of Nature, he developed an elaborate Neoplatonic philosophy which distinguished between creating and being created; he included in his concept of nature not only what is but also what is not. He did not spend all of his life in Ireland but moved to France where much of his life was passed under the patronage of King Charles the Bald. His magnus opus was condemned by the Church in 855 and 859 but he was

protected from punishment by the king. It was not until 1225 that the Pope ordered the burning of all copies of the work.

In the tenth century, there are signs of a new learning in the Church which might be regarded as the end of the Dark Ages and the beginning of medieval scholasticism. Gerbert (c.930-1003), a mathematician, whom Bernal regards as the first of the western scientists, became Pope.(8)

The Paradigm of 11. Civil Science

Throughout the Dark Ages, the scholia of the Basilica in Byzantium continued their juristic studies of the Justinian Codification. In the first half of the eleventh century, at Pavia in Italy, a law school was established and, at this school, studies were undertaken to systematize by gloss and comment, the ancient Germanic law of the Lombards; this body of law was similar to the early English dooms. Through the study of law a lay science, which F. Pollock and F.W. Maitland describe as a science of civil life,(9) became available as an intellectual pursuit. The scholars of Pavia began to examine the Justinian Institutes In order to develop a legal methodology. In 1038, the Emperor Conrad 11 ordained that Roman law should once more be the law of the city of Rome. The law school of Bologna was founded in the second half of the eleventh century.

By 1100, Guarnerius, also known as Irnerius (1055-1130), a professor at the Bologna law school, had revived the study of Roman law including the Justinian Digesta. Thereafter the glosses of Bologna contributed to the study of the Justinian codification. The Crusades of 1097, 1147, and 1189 probably promoted contact with eastern learning, including the learning of the Roman law preserved in the eastern empire. The crusaders not only brought information back to Europe but they also opened up for Christian merchants opportunities for trading, and an ongoing cultural exchange.

According to Schulz, the scholia and the glosses were mainly concerned to resolve the remaining inconsistencies in the Corpus Civilis, and in order to do this they used every artifice without regard for the historical meanings of the texts or the circumstances in which decisions had been reached. Schulz describes their work as follows:

> Above all, the science was obscured by an ever-spreading forest of finespun distinctiones and solutiones contrariorum which, for the most part, lack any juristic value, since they are not the products of juristic reflection on juristic problems, but of sham and empty cleverness and pseudo-philology. In consequence, jurisprudence took on an unrealistic, unpractical, and frivolous character which had been entirely alien to pre-Justinian and especially classical jurisprudence.(10)

However, a more recent study by Harold J. Berman explains the work of the scholastic jurists in its braoder context. The Bologna Law School was established as an international school of law, largely controlled by its fee-paying students. It was soon dominated by the Church. By the eleventh century, the systematic and holistic theology of the Catholic religion had been worked out. The Church then turned its attention to law. In 1075, Pope Gregory VII declared papal supremacy over the entire Western Church and secular affairs. This is known as the Papal Revolution. A struggle for supremacy between the papal and imperial forces ensued until the secular forces succeeded on the death of Archbishop Thomas Becket in 1170. Berman suggests that the Church was intent on bringing the customary laws of its various peoples into line with the settled theology. The Roman law was regarded as a source of true laws, suitable for incorporation into the social management system of the theology. There may also have been an interest in exploring Roman law for some further support for the tenets of the theology.

In the course of developing the theology, the scholastics had developed the Greek dialectic methodology. Along with Roman law, the works of Aristotle were rediscovered. The scholastics inherited the Roman development of Greek dialectic, in the Roman

law, and forged it with their own theological methods and with Aristorelian logic. This produced a complex system of legal reasoning which is used by contemporary jurists of the English system of law, and which confounds the design of artifical legal intelligence. It is an obtuse description of legal choices. Scholastic holism was deterministic and concerned with prescribing a single path to heaven: a Christian lifestyle was given one mould, one selection. There was no recognition of the need for co-ordination of human choices to produce a Christian mould for all human life.

Berman makes the following observations about the scholastic jurists:

> The scholastic method has remained the predominant mode of legal thought throughout the West to this day. ...(11)
>
> The method is called "dialectical" in the sense that it seeks the reconciliation of opposites. ...(12)
>
> And in seeking justifications and synthesis, he (the scholastic) often sacrificed the narrower kind of consistency which the Romans prized. ...(13)

In contrasting Roman legal science and the legal science of the scholastics, Berman highlights the legacy of the scholastics.

> The Romans converted the Greek dialectic from an art of discovery (ars inveniendi) to an art of judging (ars iudicandi). ...(14)
>
> They (the Roman jurists) had no reason to try to transform the Roman genius for consistent adjudication into a philosophical system. They had every reason to be suspicious of the applicability of the higher ranges of Greek philosophy to the practical needs of adjudication. ...(15)

The Romans condensed their law to maxims which acted as principles in a range of laws which were categorized in terms of different aspects of human life. The maxims provided reasons for a decision and created an appearance of consistency and impartiality in decision-making. The Romans did attempt to maintain a consistency

in their maxims but not a systematization. The maxims were resources for decision-making.

The scholastic jurists set out to systematize the principles of law while still retaining a categorization of law according to different aspects of human life. To do this, they used all the Greek reasoning skills in any way which would produce the required result. These reasoning techniques are explained succinctly by Berman:

> They turned Aristotle on his head by conflating dialectical and apodictic reasoning and applying both to the analysis and synthesis of legal norms. In contrast to the earlier Roman jurists and the earlier Greek philosophers, they supposed that they could prove by reason the universal truth and universal justice of authoritative legal texts. For them, the edicts and responsa of Roman law, taken both individually and as a whole, constituted what they certainly had not constituted in the minds of the Roman lawyers themselves - a written natural law, a ratio scripta, to be taken, together with the Bible, the patristic writings, and the canons of the Church, as sacred. Since they were true and just, they could be reasoned from, apodictically, to discover new truth and justice. But since they contained gaps, ambiguities and contradictions, they had to be reasoned from dialectically as well; that is, problems had to be put (quaestiones) had to be put, classifications and definitions made, opposing opinions stated, conflicts synthesized. The scholastics added another methodological "topic": where possible, legal maxims, the brocardica, were to be formulated as autonomous universal principles. Thus Aristotle's contradiction between dialectical reasoning and apodictic reasoning was itself resolved. The dialectical method became the scientific method in law - as it eventually became the scientific method in other branches of learning as well, including the natural sciences.(16)

Aristotle formalized apodictic reasoning as a formal or monotonic logic which was a framework for deductive and inductive reasoning on the basis of true premises. Apodictic reasoning could produce certain conclusions. However, Aristotle recognised, in his Topics, that dialectical reasoning which was not apodictic, could be used as a framework for deductive and inductive reasoning, on the basis of uncertain premises, in order to reach probable conclusions. The scholastics mixed and matched the two forms of reasoning, interspersing the certainty of formal logic and the

uncertainty of non-monotonic reasoning in a single system. Wherever needed, the autonomous maxims could be used to complete the rationalization. The principles acted as stable reference points, and the maxims acted as floating resources, in making decisions. Quantum mechanics has produced a similar paradigm in modern physics.

The genera and species of the scholastic rules, turned legal choice upside down, so that it was difficult to see the behavioural choices in the law. If genera and species are set out in a pyramid or tree paradigm, then the choices lie at the bottom of the pyramid and the consequence at the top. The scheme must be looked at from bottom to top, whereas people usually read from top down. Using a Chinese paradigm, there are many paths to the top of a mountain. However, if a mountain has many summits, like a mountain range, there are many paths to each summit. Some summits may share part of a path. The choice of paths up a mountain may be obscure if some paths originate in another mountain.

The Paradigm of 13. Critical Philosophy

The revival of classical learning of the law was followed by a renewal of philosophical investigation within the Church. Perhaps the sense of entering a new millenium inspired a critical perspective and the search for intellectual improvement. Peter Damian (fl.1059), questioned the dialectic method. Berengar of Tours (d. 1088), maintained the superiority of reason over authority, and, by relying on the views of Erigena, brought about a posthumous condemnation of the Irishman.

The Paradigm of 14. Continuity and Change

In 1066, William the Conqueror of Normandy, forcefully established himself on the English throne and settled his Norman barons on English estates. In England, there was an established tradition which permitted the monarch to make new laws. William claimed to be the lawful successor to the English throne and, accordingly, he confirmed that the existing law in England should remain the law of the land until he changed it. He depended upon this law to sustain his prima facie entitlements and to establish the basis

from which to expand or improve these royal benefits. The state of the law in England at the time of the Conquest is summarized in Potter's Outlines of English Legal History, as follows:

> Prior to the Norman Conquest the English legal system was an involved, if not conflicting, mass of oral customary rules varying from place to place, fitfully illuminated in places by the recorded Dooms of the Anglo-Saxon or Danish kings.
>
> ... In spite of guarantees that the old law would be preserved, little Anglo-Saxon law survived the Conquest, except a few customs in Kent and in the city of London.(17)

The Paradigms of
15. The Battle for Law
16. Adversaries in Trial
17. Knowledge of Law

Trial by battle and inquests were also introduced into England by William. Weeramantry describes trial by battle as follows:

> Trial by battle meant that the issue would be determined on the outcome of a contest between the contending parties. It sometimes happened that great landowners or abbots had so much litigation that the participants could not appear in person. It was permitted that trial by battle could take place through representatives of the parties, these representatives being called champions. Landowners with considerable litigation on their hands were often known to employ full-time champions to defend their causes.(18)

Louis the Pious, son of Charlemagne, used inquests to determine his royal rights; he sent his officials into a district to enquire of those inhabitants who had a reputation for knowing the local conditions and traditions, what the royal rights were. Their answers had to be given under oath. Twenty years after the Conquest, on William's instructions, a census was carried out and the results recorded in the Domesday Book as the rightful status quo. These records were collected by the Exchequer and assisted the king to determine his royal rights and profits. The censorial investigation, used the continental inquest method to establish the facts which were to be included in the Domesday Book. The people who were summoned were given the task of discovering and

stating the facts of legal rights or entitlements. In the inquest, there was no distinction drawn between law and fact. The customary law was discovered as part of the facts. The power to require attendance at the inquest and to convene the meeting or assize of people summoned, was a royal prorogative.

The Paradigm of 18. Separation of Secular and Religious Law

Ecclesiastical matters were made the province of the Church and subject to canon law. The creation of eccesistical courts separated the secular matters of law from the religious domain. It also permitted a clear development of canon law in England. Lawyers trained elsewhere in Europe in canon and Roman law came to England to assist these courts. Lanfranc, an Italian who had studied law at Pavia and mastered the dialectic method, entered a monastery at Normandy, where he conducted a school. In 1070, he was appointed Archbishop of Canterbury by Willliam the Conqueror. The new learning in Roman law arrived in England at this early time. St. Anselm (1033-1109), an Italian who entered a monastery in Normandy became Archbishop of Canterbury in 1093; he considered that belief was a prerequisite for reason and drew much of his philosophy from Plato.

The Paradigm of 19. Foreign Languages of Law

The Normans introduced two foreign languages as the languages of the royal courts. Latin was used for documentation and Norman-French for oral proceedings. Legal language developed with these influences and the law became susceptible to jargon, abstractions and fictions.

The Paradigms of 20. Rationalization of Belief

Toward the close of the eleventh century, there was a reform movement in the Church. In 1079, the doctrine of transubstantiation which was already a belief, was adopted by the Church as an article of faith and the clergy assumed ritual powers which could aid a Christian to go to heaven after death. Sacerdotalism gave the clergy greater power but, at the same time, they were expected to conform to the moral standards required by the

rituals. Consequently, the clergy became more studious. By the end of the eleventh century, scholastic philosophy was established within the framework of the Church. It was in the context of scholasticism that British empiricism first emerged.

The Common Law Period - 12th Century to 14th Century

The Paradigm of 21. Systemic Delegation
22. Centralization and Hierarchy of Power

William brought the systematization of feudalism to England. First, he established a fundamental Norman structure, systemic delegation, throughout a spectrum of substantive and procedural aspects of the administration of law. This centralized and reinforced executive power and law enforcement. As royal power was extended through delegation, so other changes became extremely effective. The administration of royal justice was centralized by the delegation of royal judicial power to justices who were appointed to hear disputes throughout the country. The royal prerogative to send itinerant judges into the countryside to hear disputes, was exercised to achieve an effective system of control and order. The initial changes to the legal system which were introduced, provided the means for weaving the common law of England. The monarch became the source of all estates in land so that property disputes were resolved in the royal courts. This was a feudal notion of landholding. It permitted a hierarchical system of ownership with the monarch at the summit, mesne lords who held grants from the crown at intermediate levels and beneficial occupiers at the lowest places. The Exchequer was established to deal with fiscal administration.

The major Norman developments in the English legal system, which came to fruition in the twelfth century, are explained by Baker.

> But obviously there is a limit to what one man can do in person, and initially the Crown seems to have confined itself to the review of ordinary jurisdictions and the provision of extraordinary remedies in special cases. Everyday matters belonged to the shires, hundreds and private courts. Later constitutional theory was to convert all private courts into franchises, notionally derived through the Crown as the

> fountain of all temporal justice. But more important for the future of the law, the Norman and Angevin kings greatly expanded the original jurisdiction of the Crown. These kings made enormous advances in the control they exercised over the central government. Perhaps, however, their greatest achievement was the development of the principle of delegation.
>
> The notion that a royal agent, a iusticiarius, could transact business and exercise powers of judicature which belonged to the king's own person, made possible the common law judicial system. The unifying effect brought about by the employment of a nucleus of professional, or at any rate habitual, iusticiarii produced, within two centuries of the Norman conquest, a central system of law strong enough to resist the regeneration of Roman law on the Continent. As early as 1200 King John could speak, through the rolls of his court, of "the custom of our kingdom"; by 1300 the common law was a complete system, with its own judges, its own records, its own profession and its own literature.(19)

The Paradigm of 23. Right to Peace

After the Norman Conquest, the slave trade was confined to the realm so that no subject could be sold abroad, and, for the short time before the reign of Henry 1, capital punishment was replaced with mutilation. The King and each individual had a right to peace, the breach of which constituted an offence. Breaches of the King's peace were tried in the royal courts. When Edward 1, who took the throne in 1272, went away on crusade, he extended his peace to the whole of England at all times. Thus the royal courts received jurisdiction over all breaches of the peace at all times and fines were paid into royal revenue. This effectively established a wide jurisdiction over all forms of disruptive behaviour. The jurisdiction remains to this day.

The Paradigm of 24. Nominalism

In 1088, the first European university was established in Bologna. Cathedral schools elsewhere in Europe developed into universities. The school in Paris was recognised as a university in 1160, Oxford in 1167, Cambridge 1209, Padua 1222, and Naples 1224. These universities were mainly engaged in training the clergy who had a monopoly on literate occupations and were responsible for all

administration. As the universities became established they adopted an authoritative role in respect of knowledge and, during the later part of the Middle Ages, hindered cultural change.

Amongst the early scholastic philosophers were Roscelin (c.1050-1122), the first of the nominalists, and Pierre Abelard (1079-1142). During this early period of scholasticism, Aristotle was known as a dialectitian. In later scholasticism, more of Aristotle's learning was rediscovered and, to some extent, displaced the influence of the Platonic theory of ideas. Roscelin began the trend away from Plato and this characteristic of scholasticism culminated in the Aristotelian philosophy of Thomas Aquinas.

Roscelin reasserted the importance of individuality and maintained that things came before names or ideas, the primary nominalist view. The result of this argument is that all reasoning which depends upon language, may be ill-founded. Since rational theology relied on the dialectic of language and on perfection discoverable through Platonic ideas, the early nominalists could no longer support their faith by such reason. So they added to their basis of belief, matters of blind faith. Roscelin was accused of heresy and recanted his views before the council at Rheims in 1092.

The Paradigms of
25. Sic et Non
26. Meaning in Language and in Reality

The French philosopher, Abelard, a pupil of Roscelin, did much to destabilize theological authority. In his book, Sic et Non, he collected opposing authoritative statements in a dialectic examination of many of the important tenets of the Church. He explored the distinction between meaning in language and meaning in reality. As a teacher, he was successful but, at the hands of the Church, he suffered castration after it was discovered that he had engaged in a sexual relationship with his student, Heloise, a niece of Canon Fubert. He was also twice condemned by the Church for his unorthodox works.

The early scholastics were concerned to establish the fundamental starting point of thinking and the subsequent valid processes of thought. Feudal society and the Catholic religion implied hierarchical authority as a paradigm for validity of thought. Berengar of Tours posed reason rather than authority as the starting point. A century later, St. Anselm suggested that reason presupposed belief. Contemporaneously with St. Anselm, Roscelin claimed that things came before ideas which provided the realms of belief. Damian had questioned the validity of the dialectic method which manipulated ideas to elicit the validity of further ideas. The implication of the nominalist position was that such manipulation may not produce a true representation of things.

Nominalism raised doubts about the validity of the dialectic method. If reasoning was not a justification for belief then some things could only be sustained as a matter of blind faith. Abelard compounded the view that the dialectic method was not reliable by demonstrating its paradoxical dimensions through the distinction between meaning in language and meaning in reality. Thus, the scope of Zeno's invention of dialectic reasoning, including the dilemma of paradoxes, was recovered and located within the new scope of nominalism.

In his Dialectica, Abelard stated that a maxim contained various alternative antecedents, all of which carried the same abstract consequence and the same process of reasoning to reach that consequence. He recognised that where the antecedents were the particular instances of the physical world, the abstract consequence were an invention of the mind to express the similarities or relationships between the instances. As a nominalist, he rejected the Platonic reality of forms. Berman states clearly the philosophy of Plato which the nominalists rejected.

> Plato postulated that universals exist in nature - that the idea of justice or beauty, the idea of a triangle, the idea of color, the idea of a rose, and other general ideas in people's minds are imperfect reflections of "paradigms," or "forms," that exist in external reality.(20)

This is to say that human intelligence distorts reality by its paradigms and could not deal with the wilderness of particular instances, and that human perception can not elicit the exact nature of the form which appears fragmented in the various instances that are recognised. The scholastics were not concerned to take account of the distortions of abstraction in formulating their system of law, except in terms of reconciling conflicts and making equitable exceptions. The nominalist notion of system is explained by Berman as follows:

> For the Nominalists, universals are invented by the mind, by reason and will, and therefore can be revised by reason and will; at the same time, they inhere in the particulars that they characterize, and can therefore be tested by those particulars. Extreme Nominalism denies that "the whole is greater than the sum of its parts," but a more moderate nominalism, such as that of Abelard asserts that the whole is in the parts, holding them together, so that the parts taken in isolation from each other (rather than as "parts") are not as "great" as the parts taken in relation to each other. Thus the parts are not, strictly speaking, derived from the whole (deduction), nor is the whole, strictly speaking, derived from the parts (induction), but rather the whole is the parts interacting with each other. Therefore Nominalism was congenial to the systematizing and synthesizing of law; for in law there can be no such separation of the whole and the parts, the general and the particular, the form and the substance, the ends and the means, as is inherent in both Platonic and (though to a lesser extent) Aristotelian philosophy.(21)

The scholastic system was a jurisprudential system. In Berman's view scholasticism was a jurisprudence and a theology as well as a methodology. It amounts to a holistic jurisprudential system.

> The scholastic dialectic was more than a method of reasoning and more than a way of organizing thought. Its criteria were moral as well as intellectual; it was a way of testing justice and not only truth. Thus the scholastic antitheses included not only general versus special, object versus subject, argument versus reply, but also strict law versus dispensation in exceptional cases, precept versus counsel, absolute rule versus relative rule, justice versus mercy, divine law versus human law. These and similar "oppositions" were used as

> means of logical reconciliation of contradictory texts, but they were also used for shaping the legal institutions of both the Church and the secular society in such a way as to manifest alternate values. For God himself was conceived to be a God both of justice and of mercy, both of strict law and of equity. The paradoxes of divine justice were now for the first time systematically applied to human laws. Thus "scholasticism" was not only a method but a jurisprudence and a theology.(22)

The Paradigm of 27. Justice and Equity
28. Moral Belief and Natural Custom

In order to settle conflicts, the early courts applied existing custom and if there was no rule of law to settle a dispute, the matter was settled according to contemporary notions of justice and equity. They adopted the Roman practice of making new law, as necessary, according to natural justice and contemporary morals. The law of nature, as a source of law, was regarded as synonomous with law for the common weal or common good. In Potter's Outlines of Legal History, the judicial practice of the royal courts in the period from 1066 until Edward 1 took the throne in 1272, is described in this way:

> During the whole of this period the judges were virtually making new law, and to a great degree administering "natural justice." Where no general custom was found to bar them, they did substantially what was right between the parties according to existing notions of right and wrong.(23)

For two hundred years after the Norman Conquest, the seignorial courts of the feudal overlords and the old communal courts conducted most of the litigation. During this period, the distinction between Norman and English ancestry ceased to carry social significance. In 1278, the Statute of Gloucester fixed 40s as the maximum that could be recovered in the local tribunals. From this time the business of the royal courts expanded greatly, while the communal courts fell into disuse. The royal courts could compel attendances at court and enforce their judgements. The system of law which they developed came to prevail throughout the country.

In about 1090 work began by an anonymous author on the Leges Willelmi, or the Leis Willeme. It was a private collection, written in three divisions and completed in about 1135. The first division contained the Anglo-Norman laws, the second the Roman civil law and the third the dooms of Cnut. The intention seemed to be to state the amended law of the period. Early in the twelfth century some attempt was made by another anonymous author, to collate the laws of England. The work was called the Liber Quadripartitus. It was followed in about 1118 by another anonymous work, written in Latin, the Leges Henrici, which appears to be a mass of confused rules, most taken from the texts of the Anglo-Saxon dooms. In about 1135, a further anonymous law text, the Leges Edwardi, or Laws of Edward the Confessor, was completed. It incorporated Anglo-Norman law.(24) Pollock and Maitland describe the state of jurisprudence at this time.

> The picture that these law-books set before us is that of an ancient system which has received a rude shock from without while within it was rapidly decaying. The men who would state the existing law are compelled to take the old English dooms as the basis for their work, even though they can hardly understand the old English language. The old dooms are written law; they have not been abrogated; they have been confirmed; other written law there is none or next to none; Normandy has none; northern France has none, or none that is not effete. At a pinch a man may find something useful in the new science of the canonists, in the aged Lex Salica, in vague rumours of Roman law which come from afar. Any rule that looks authoritative and reasonable is welcome; we may say that it is law because it ought to be law.
>
> ...Everywhere in western Europe new principles of social and political order were emerging. New classes were being formed; the old laws, the only written laws, were becoming obsolete; the state was taking a new shape.(25)

During the twelfth century a school of Roman and canon law grew up in Oxford. The Italian scholar, Vacarius, taught Roman law at this school during in the early days of its establishment. In about 1149, he published a Roman law text for the use of poor students. A class of clergy learned in both Roman, canon and

English law became available to act as judges in the royal courts. As a result, Roman law and supernatural jurisprudence(26) influenced English law.

The Paradigms of 30. Equity of God
31. Hierarchy of Offences and Penalties

The church was in the throes of stabilizing and systematizing morality. In order for the clergy to assist people to go to heaven, a scale of offences was required together with directions on how to atone for these offences. The canon law was an attempt to provide the guidelines for clerical services and professional conduct. The goal of the canon law was to preserve the church and give effect to the morality which had been expressed by its influential members. In the twelfth century, Gratian, a monk of Bologna, who was a contemporary of Vacarius, produced a Digest for the Church. The decretals or edicts issued by the church provided the material for a Code and Novels to complete the Roman model of canon law. Between 1139 and 1142, the works of Gratian were published as a collection which became known as the Decretum. It was a Christianized Roman system of law.

In order to bridge human and divine law, Gratian interposed the concept of natural law. Natural law was to be found in both divine revelation and in human reason and conscience. Consistency was required between human, natural and divine law. Monarchs were bound by these laws. Customary law which did not conform was invalid; customary law must be consistent with human reason and conscience. Criteria for determining the validity of a custom were developed and are still used in evaluating modern rules of law: how longstanding, widely applied, widely acknowledged, and reasonable the custom might be taken into account. Gratian recognised that some law was stable and other law was variable. Circumstances might show that variable law should not always be applied and that exceptions to its application should be made as a matter of equity. The ultimate guide in the creation and application of church law was the supernatural equity of god. This amounted to a relativity in the system of rules to accommodate the real circumstances of human life from time to time. Equity was linked to relatiivity. The concepts of reason

and equity were modified by Christian values and the notion of conscience.

The Paradigm of 32. Legal Forms of Morality

While the clergy exercised power in the secular courts, canon law and secular law could be reconciled. Pollock and Maitland summarize the influence of the burgeoning canon law in this period.

> During the age of which we are to speak in this book a grand attempt was being made to reduce morality to legal forms. In the system of the medieval Church the whole of 'external' moral duty is included in the law of God and of Holy Church. Morality becomes a thing of arguments and judgments, of positive rules and exceptions, and even of legislative declaration by the authority supreme on earth in matters of faith and morals. ... We shall often have to observe that the wide and flexible jurisdiction of the spiritual power was of great service in the middle ages, both in supplementing the justice of secular courts, and in stimulating them by its formidable competition to improve their doctrine and practice.(27)

The Paradigm of 33. Trusts and Common Law

In canon law, the notion of trust was developed to regulate the administration of Churches and monasteries. The term ius commune was adopted to indicate the common law of the universal church as distinct from the local customs of individual churches. Canon law used the theoretical model of Roman law. The wealth of this learning was used to weave the common law out of the systemic Norman innovations and the idiosyncracies of English customary law. The influence of canon and Roman law on the development of English law was extensive, according to Pollock and Maitland(28), between 1150 and 1250. However, by the fourteenth century, English law had evolved some distinguishing features of its own, and its further development proceeded from this basis.

The Paradigm of 34. Constructive Criticism

During this period, John of Salisbury (d.1180), who was secretary to three Archbishops of Canterbury and became bishop of Chartres, was influential as a free thinker within the framework of Christianity. He was an active scholastic who challenged the authority of the ancient Greek philosophers and advocated critical reasoning to discover improvements.

The Paradigm of 35. Clerical Judges in Civil Courts

Pollock and Maitland describe the civil courts during the reign of Henry 11 (1154-1189) and his successor Richard 1 (1189-1199), at the height of the development of English medieval law.

> We can then see the king's court as it sits day by day. Often enough it was composed of the archbishop of Canterbury, two other bishops, two or three archdeacons, two or three ordained clerks who were going to be bishops, and but two or three laymen. The majority of its members might at any time be called upon to hear ecclesiastical causes and learn the lessons in law that were addressed to them in papal rescripts.
>
> ... It is by 'popish clergymen' that our English common law is converted from a rude mass of customs into an articulate system, and when the 'popish clergymen,' yielding at length to the pope's commands, no longer sit as the principal justices of the king's court, the creative age of our medieval law is over.(29)

The Paradigm of 36. Equity as Natural Justice
37. Constancy and Flexibility in the Law

From the time of the Norman Conquest, the royal courts exercised an equitable jurisdiction, meeting unprecedented circumstances with new expedients and granting relief in harsh cases. During the reign of Henry 11, the king's justices became interested in developing and maintaining a system of law which was their own creation rather than an emulation of Roman or canon law. The king's courts provided equitable solutions to modify the harsh effects of existing law. They maintained a notion of natural justice which provided both a constancy and a flexibility. This duality characterized English law and gave it a distinctive form.

The Paradigm of 38. Legislative Reform

The Angevin and Norman ordinances are not regarded as statutes but insofar as they introduced new law, they might be regarded as legislation rather than custom. Before 1300, royal ordinances were sometimes addressed to judges. They applied as common law and sometimes amounted to a codification of customary law.

The Paradigm of 39. Relative Rights

It would seem that Henry 11 was intent on expanding royal power and revenue through the legal system. He introduced innovations which made the royal courts accessible and attractive to litigants. Possessory remedies were offered as an alternative to proprietary remedies to protect interests in land. One of the effects of this was that the court's property jurisdiction was freed from the system of feudal landholding. The comments of Milsom are worth noting.

> In a possessory remedy discussion could not go behind the facts alleged by the claimant, behind the possession from which his story started. And since by this time there was a possessory remedy for virtually every constellation of facts, and since they were all quicker, more convenient and more acceptable than the proprietary, the proprietary was becoming otiose, a little-used reserve.
>
> In this scheme the actions are ranged up and down a single scale. A claimant can nearly always choose between the high point on that scale, the troublesome but conclusive proprietary remedy, or something lower down, based upon easily established facts, but inconclusive in that the loser can always begin a new action going higher into the right. This was the scheme which existed in the late thirteenth century, and which gave the common law its distinctive and sensible notion of relative title.
>
> Each stage offered the claimant a new alternative to the writ of right, and, since the possessory remedies were all royal, a new escape from feudal jurisdiction. From the point of view of the king, therefore, the desire to extend his jurisdiction may have been a motive.(30)

The Paradigms of 40. Issues of Law and Issues of Fact
41. Forms and Abstractions

This new relativity in English law was supported by the bureaucratic inventions of various forms of writ which supplemented the older method of instigating a suit by count or plaint. There had to be a new writ before there could be a new action. The maxim, ubi remedium ibi jus, where there is a remedy there is a right, meaning no right without a remedy, was adopted. The law then developed through the elaboration of forms of action. The form of the writ defined the form of the action. Milsom describes the English law as formalistic law.(31) The formalism of the originating process was extended by the requirements for formal pleading in the conduct of the action. From the time of Henry 11 a formulary era in English law began and lasted into the nineteenth century. Royal revenue was boosted by the fees for writs. The forms provided a fabric for legal theory but confined its scope for rational structures. The forms also contributed to the recognition of the distinction between issues of law and issues of fact which influenced the development of trial by jury. As Pollock and Maitland observed, 'procedure is the life of ancient law'.(32) The extension of forms might be regarded as an expansion of procedure into the realms of abstract thought. The various writs which were available to commence the various court actions were drafted according to precedent forms. A new writ meant an extension of substantive law. Legal argument was concerned with whether the facts of a case were covered by the requirements of the writ. These arguments influenced the development of pleadings. At first pleadings were oral and formal. Settlement of an argument about the merits of a plea amounted to a determination of the law.

The Paradigms of 42. Choice of Remedy - Dilemmas
43. Custom and Precedent

The development of actions in the royal courts during the reign of Henry 11 is described by Pollock and Maitland in terms of the choices that became available to litigants.

Thus before the end of Henry's reign we must

> already begin to think of royal justice - and this is becoming by far the most important kind of justice - as consisting of many various commodities each of which is kept in a different receptacle. Between these the would-be litigant must make his choice; he must choose an appropriate writ and with it an appropriate form of action. These wares are exposed for sale; perhaps some of them may already be had at fixed prices, for others a bargain must be struck. As yet the king is no mere vendor, he is a manufacturer and can make goods to order. The day has not yet come when the invention of new writs will be hampered by the claims of a parliament. But still in Glanvill's day the officina iustitiae has already a considerable store of ready-made wares and English law is already taking the form of a commentary upon writs.(33)

Pollock and Maitland describe the list of pleas of the crown, by this stage, as 'long, disorderly and elastic'.(34)

In about 1179, the treasurer, Richard Fitzneal, completed a major work on fiscal and administrative law, the Dialogue on the Exchequer, Dialogus de Scaccario. The task of mapping the private and criminal law was undertaken by Ranulf Glanvill, a cleric, who became Henry 11's Chief Justiciar in 1180. It is likely that he supervised rather than wrote the work. The text, the Summa quae vocatur Glaunvile, Tractatus de Legibus Angliae, was completed in about 1187. In it, the influence of the teaching of Vacarius is evident. Where there were gaps in the English law or some innovation was required, there was recourse to the Roman civil law. This was probably the judicial practice of the time. Roman law assisted where equity was required. The work describes the writs and procedures as the basis of English law without reference to precedent cases. However, Glanvil acknowledged the importance of precedent because he maintained that equity should be considered if there was no precedent. Although, superficially the text appears concerned with procedure, it reflects an underlying abstract system of thought. The importance of the Tractatus is summarised in Potter's Outlines of English Legal History:

> The important fact remains that the Tractatus was the first statement in connected form of the law administered through the procedure of the royal courts. It did not attempt to embrace all the customs of the country, but simply to explain the course of the King's courts, what

> justice might be had there, and how it might be had. The writer's preface shows that he had some acquaintance with Roman law, but he began his work by dividing pleas into civil and criminal, which is not the plan adopted by Justinian's Institutes, and the body of the work is intensely practical, giving little evidence of being influenced by any theories of law. It is mainly concerned with the procedure in litigation concerning land, and it practically takes the form of a commentary on the forms of writs, few of which concerned anything outside the land law. Its interest is largely limited to the history of writs, but it was of importance as providing a method for future legal textbooks. The work, divided into fourteen books, was written in Latin, and became very popular, so that it was translated into Anglo-Norman in the middle of the thirteenth century.(35)

These early law books are encyclopaedic works, after the fashion of learning established by the Greeks, developed by the Roman jurists, maintained in the Islamic Empire during the Dark Ages, and then used by the scholastic philosophers of medieval Europe.

Pollock and Maitland identify in Glanvill's work a new form of jurisprudence which they call dilemmatic.(36) In a dilemmatic scheme, opposing courses are open to be followed. This might be regarded as an Abelard paradigm. The practical tasks of the law required an evaluation of alternatives and a selection of a course. Various choices may be considered to find a suitable course. In the English legal system, courses were mapped out to deal with the different situations which might occur, given the choices available in human interaction. The dilemmas in English law might sometimes have been due to the unsettled complexity of various conflicting customs in the process of being moulded into a common law which permitted equitable relief. The doctrine of precedent would eventually assist in stabilizing the dilemmatic processes. To a certain extent the notion of precedent is implicit in custom. The formalization of precedent permitted a disassociation of law from custom and provided a structure within which rules could develop in a consistent and coherent fashion.

The Paradigm of
44. Opinions of Juries
45. Empiricism as a Social Responsibility

Another attraction in the offerings of royal justice was an alternative form of trial. In the place of trial by battle, trial by ordeal, or trial by the compurgation of oath-helpers, the royal courts made available trial by inquest, an early form of jury trial. According to Pollock and Maitland,(37) the first class of disputes which were subject to this form of trial as a matter of common practice, were claims by the church against the state. Neither could be a judge in its own cause. The inquest was used to reach an impartial decision. Whether or not this form of trial was impartial may have depended upon the allegiances of those summoned to the Assize and the scope for bias permitted by the issues. The law provided rules as to the classes of land to which the state and church were entitled respectively. The jury determined the question of fact as to which class a particular piece of land belonged. Inquest was a prerogative of the crown. Henry 11 made the procedure available to his subjects by gradually extending the sorts of cases dealt with at the Assizes. During his reign the Assizes became the norm rather than something exceptional.

The early juries or assizes (meaning sitting together), were summoned by original writ in accordance with an ordinance of the crown. The assizes were used to detect offences as well as to decide cases. They were required to inform the court of all wrongdoings in the district for prosecution in the king's court. Where cases were to be tried, the assize was instructed to decide the case, both the matters of law and of fact, on the basis of their own knowledge or information. The assizes saved the judges the time and effort required to make inquiries and they provided the courts with new business. During the conduct of a case by pleadings, if an issue of fact arose, the parties could agree to resort to the jury, or iuratores, and be bound by its verdict. The assize then became a jurata or recognitio: they determined issues of fact only. Judges encouraged the parties to consent to the use of a jury. For the litigant they offered a more rational method of resolving disputes, especially for those who were incompetent in battle and ordeal. Pollock and Maitland(38) describe the development of the jury as follows:

> In course of time the jury, which has its roots

> in the fertile ground of consent, will grow at the expense of the assize, which has sprung from the stony soil of ordinance. Even an assisa when summoned will often be turned into a jury (vertitur in juratam) by the consent of the parties. But still trial by jury, if we use this term in a large sense, and neglect some technical details , is introduced by the ordinances of Henry 11. as part of the usual machinery of civil justice. Already before the end of his reign it fills a large space in Glanvill's text-book. The old modes of proof are not abolished; proof by battle we shall have with us until 1819, proof by oath-helpers until 1833; but from this moment onwards they are being pushed into the background.

Jury trial, in the modern sense, developed as it became the practice to allow jurors to hear the evidence of witnesses to facts in issue. The course of this development is described in Potter's Outlines of English Legal History describes the emergence of the modern jury.

> The steps by which the jury became judges of fact upon the testimony of other witnesses and not of their own knowledge were much more gradual. At first, if the jury did not know, it had to find out and was allowed a fortnight to do so. In the later Plantagenet period, however, the jury was "afforced," that is reinforced, by others who knew the facts, although the jury empanelled did not...
>
> The procedure passed from afforcing the jury, through the stage of informal inquiry by the jury, probably assisted by the judge, to the production by the parties of witnesses, sworn, examined and cross-examined. This was not finally reached till the end of the fifteenth century, though as early as the reign of Edward 111 witnesses were sworn to tell the truth, and jurors only to tell the truth to the best of their knowledge.(39)

It may be that this regal entrepreneuring produced a social responsibility which could only properly be discharged by empirical inquiry. This may have fostered a disposition to empiricism in English communities and set the stage for the emergence of British empiricism.

The Paradigms of
46. Circuits and Records
47. Common Law and Reasons

Henry 11 not only made inquests available by empowering the assizes to deal with private land disputes and other matters, he also ensured that the new method of trial became more widely accessible by regulating the itinerant royal court. The Justices of Assize and the Justices in Eyre, travelled in systematic circuits hearing cases. The Assizes were taken in specified places while the General Eyre moved from place to place so that many years might elapse between the sittings in a particular place. The justices sought from the assizes an account of unlawful behaviour in the district of the sittings, and trial of disputes. The inquiries of the General Eyre were more concerned with cases involving fines, forfeitures and other revenue-raising matters but in addition they might hear cases seeking equitable relief from the strict application of the common law. The inquisitorial consultation with the common folk in the process of administering the law provided a basis for establishing a House of Commons. In 1195, after the death of Henry 11, a limited jurisdiction was conferred on Knights to Keep the Peace who soon became known as Justices of the Peace. Their permanent courts alleviated the workload of the itinerant justices. The circuits increased the opportunities for the royal courts to develop a common law that applied uniformly; the different customary laws of the various districts were gradually displaced by the rule of common law.

During the reign of Henry 11, the royal courts began to keep plea rolls, following the practice of the Exchequer Pipe Rolls which had been kept from 1156(40). The rolls were kept in Latin until legislation in 1730 and 1732 required them to be kept in English: 4 Geo. 2, c. 26, and 6 Geo. 2, c. 14 required all pleadings, deeds etc. to be kept in English. In Potter's Outlines of English Legal History the content of the plea rolls is described as follows:

> The entries on the rolls themselves underwent some change during the course of history. Originally they were full, and not only recorded the facts and decisions or formal judgment, but often a brief note of the reasons on which the latter was based. Later the entry became more formal and contained a bare narrative of the writ issued, the pleadings as finally settled between the parties, the verdict and judgment and such execution to enforce judgment as may have

been issued.(41)

The Paradigm of 48. Empiricism

Robert Grosseteste (c.1168-1253) became Chancellor of Oxford University and made empirical studies of light and the refraction of lenses. St Albert the Great (1193-1280) is regarded by Bernal as the medieval scholastic who should be treated as the patron saint of science.(42) He was head of the Dominican friars in Germany and an Aristotelian who engaged in studies of natural history and minerals.

In 1215, Pope Innocent 111 in the Fourth Lateran Council, decreed that the clergy should cease to participate in trials by ordeal. Henry 111, who became king in 1216, was compelled to issue an order to the justices of England forbidding trial by ordeal. Trial by battle became obsolete but was not abolished in England until 1819 (43) after there was an attempt in 1918 to rely upon this method of trial in Ashford v Thornton 1 B. & Ald. 405.

The Paradigm of 49. Legal Experts

As litigation grew in complexity, a secular legal profession emerged. Probably the earliest legal advisers were members of the clergy who assisted litigants during the twelfth century. Potter's Outlines of English Legal History describes the early English legal profession.

> Practically all the lawyers of the day were also clerics, who would have to plead causes before the Roman Curia under the civil and cannon law as well as in the common law courts.(44)

The jurisdiction of the ecclesiastical court concerned religious matters and the rules were developed to resolve disputes and maintain Christian standards. The Church administered both religious and secular law. However, during the thirteenth century the clergy were discouraged from participating in secular affairs. Henry 11, in using the clergy as judges, had turned the economic and educational resources of the church to the service of the state. The clergy were more likely to be motivated by the standards of a universal ethic propounded in their religion than

by personal interests associated with wealthy classes. They also had extensive experience, through their counselling in sin, of the many aspects of wrongdoing. This made them suitable as impartial judges who would be seen to be attaining justice for all people. Such judges would reinforce the people's confidence in royal justice because they belonged to a profession which served human welfare rather than any form of human power or wealth. However, conflicts in secular and religious interests became prevalent. Lay judges were selected and then appointed to high positions in the church. Some judicial tasks, such as imposing the death penalty, which had been reintroduced in England, were contrary to the tenets of the church. In 1219, Pope Honorius 111 forbad the teaching of civil law in the university of Paris. This was followed in 1234 by an ordinance of Henry 111 which precluded the teaching of law in London Schools, meaning the schools of St. Paul's Cathedral. As a result the London Law School where the Civil Law was taught, was closed. There is also evidence that a decree of Pope Innocent 1V in 1254, banned the study of Roman law in England, Scotland, Wales, France and Hungary unless the monarchs of these countries approved. Pollock and Maitland assert that during the reign of Henry 111, from 1216 to 1272, the clergy were forbidden by church law to study temporal law or decide temporal causes and that by the end of his reign, lay judges had displaced the clergy.(45) With the withdrawal of the clergy from the courts, a secular class of professional lawyers whose services were available generally became established in their place. In the ecclesiastical courts, the tasks of litigation were divided between the canonical proctor and the canonical advocate. This division was followed by the lay profession: the attorney took the role of the proctor and the countor or narrator undertook the tasks of the advocate. The legal profession underwent changes but in contemporary times, there exists only two major practices, those of solicitor and barrister respectively.

The Paradigm of 50. Experimentation

A pupil of Grosseteste, Roger Bacon (c.1214-1294), who was a Franciscan friar at Oxford, sought confirmation of faith and reason in experience. He engaged in experimentation as a means of scientific research and used considerable resources in these

activities. He produced three books outlining his philosophy at the request of the papacy, Opus Majus, Opus Minus, and Opus Tertium. However, in subsequent works he attacked the most learned of his contemporaries including St. Albert and St. Thomas Aquinas, members of the rival order of Dominican friars, who were engaged in the task of reconciling Aristotle and Christianity. Consequently, in 1278, Bacon's works were condemned and he was imprisoned for fourteen years. Bacon did speak highly of his colleague, Peter the Pilgrim, who was a pioneer of experiments in magnetism and carried out extensive empirical studies of nature without attracting clerical disfavour.

The Paradigm of 51. Survival Logic

St Thomas Aquinas (1225-1274) may have been influenced by the Islamic philosophers, Avicenna (Ibn Sina) of Persia and, to a lesser extent, Averroes of Spain. Avicenna (980-1037), who taught medicine and philosophy in Teheran, was Aristotelian and empirical in his social philosophy and was the author of an encyclopaedia which was translated into Latin and became influential in the west from the thirteenth century. In Avicenna's philosophy there is the same concern to discover those survival needs of people that might motivate morality. This influence can be seen in the philosophy of Aquinas. Avicenna also recognised that survival motivations might conflict and that a hierarchy of motivations or priorities was required to fix the relative value of each survival requirement in various circumstances. Averroes (1126-1198) sought to reconcile reason and pleasure; he maintained that reason in religion would lead to the greatest happiness and the happiness of the masses was the greatest good. He was also of the view that there is only one intellect, in which all people participate, a mystical view of the collective conscious of people. Averroes' works were translated into Latin early in the thirteenth century and attracted a following from the growing class of freethinkers in Europe and some theologians. There was a strong school of Averroists at the Paris University when Aquinas spent three years there from 1269-72.

Of all the scholastic philosophers, Aquinas is often regarded as the most impressive. He was educated at Naples University and

subsequently studied under St. Albert, Albertus Magnus, in Cologne. In his philosophy, he maintained that reason had produced a range of alternative laws, each of which was consistent with the facts established about nature. In this, there is a similar paradigm to the relativity established by the Alexandrian mathematicians. In the selection of their laws, people should be guided by their sense of synderesis, a human disposition to understand and sympathise with others. Whichever rule would develop human reason and sociality, should be the preferred rule. He considered that the development of reason and sociality should be preferred above the interests of procreation and self-preservation.

Although Aquinas was largely concerned with theological and ethical matters, his major work, the Summa contra Gentiles, is systematic and founded in practical reasoning, rather than mysticism. For instance, he argued that matrimony should be indissoluble and monogamous so that paternity would be certain and the father would be available to assist in the upbringing of the children. Unlike Averroes, he affirmed the individuality of the intellect but found a collective synthesis in his concept of synderesis. The method of reasoning used by Aquinas was, to first establish matters by reason, and then to look at their consistency with theological doctrine based on revelation. He used Aristotelian philosophy to expand the rational basis of religion and displace the reliance on Platonic mysticism.

The Paradigm of 52. Restraints on Power

In addition to the royal courts, the Anglo-Saxon communal courts and the feudal courts of the mesne lords, administered justice. Judicial power, known as seignorial justice, was attached to the land rights of mesne lords who might then hold court to resolve the disputes between tenants in the estate. Through this scheme, the barons of England participated in law-making and law enforcement, so that they were concerned when the practices of the royal courts interfered with the management of their estates. The royal courts which were conducted by the clergy, were creating an alternative jurisdiction with more rational methods of trial, and they exercised an appellate jurisdiction. Potter's Historical

Introduction to English Law describes the appellate control exercised by the royal courts.

> Sitting as courts of appeal from customary courts, the common law courts discountenanced such customs as were contrary to the new statutes of Parliament or inconsistent with the new social and economic order or repugnant to legal reasonableness as they saw it.(46)

There was some rivalry between the royal courts and the courts of the mesne lords. The barons had common interests in this regard and could combine as they did to regulate the spheres of royal and baronial power. Magna Carta arose in this way. Henry 111 confirmed the Magna Carta which John had sealed at Runnymead in 1215. It was revised several times during Henry's reign. The form in which it was confirmed by Henry in 1225 is regarded as the first chapter of the enacted law. The barons met as the Commune Concilium, the precursor of the House of Lords. The first statute passed by Parliament, the Provisions of Merton (1236), was issued by the king with the consent of the prelates and nobles. From this time it was generally acknowledged that the crown could not legislate without the counsel of the prelates and nobles. He might make ordinances after reference to his habitual counsellors. However, the distinction between the subjects for ordinances and for statutes respectively was not always clear. In the two centuries that followed Magna Carta, Parliament gradually separated from the Monarch's Council, and then Parliament was divided into two Houses, the House of Lords and the House of Commons. Ordinances continued to be made by the monarch in Council, while the parliament passed statutes or acts. Petitions could be presented to the monarch in Parliament for enactment. The practice of making Ordinances became obsolete in the Tudor period of the sixteenth century when the monarchs worked successfully through parliament.

In 1258, the barons attempted to control the creation of new writs by the royal courts through the Provisions of Oxford in which they forbad the issue of any new writ without the consent of the Commune Concilium. This act of the barons was subsequently rejected as illegal but it did have the effect of curbing the development of the common law. In any event, when the Lords

separated from the King's Council to form part of parliament, their House of Lords retained appellate jurisdiction over the royal courts. This resolution of power restored some of the law-making freedom which the royal courts had enjoyed but for a time this was rather chaotic.

The Paradigm of 53. Substantive and Procedural Law

In about 1258, Bracton's comprehensive coverage of the laws and customs of England, the Summa, or Tractatus de legibus et consuetudinibus Angliae was substantially completed. It was not finished and it is not certain that it was published in his lifetime. However, it was a successful work and substantially influenced legal literature during the reign of Edward 1 (1272-1307). It was not so influential in the fourteenth century when the implications of the 1285 Statute in Consimili Casu became significant. Bracton's work is described by Pollock and Maitland as 'the crown and flower of English medieval jurisprudence'.(47) In the arrangement of his material, Bracton was influenced by the form of presentation used in Roman works. His work, written in Latin, was divided into two parts. The first part, the Liber Primus, attempted to state general principles of law according to the divisions of the Justinian Institutes, namely persons, things, obligations and actions. In his work it is apparent the there is an increasing use of abstractions in the law. For instance the distinction between possession and ownership was emerging. These abstractions may have provided a basis for the development of fictions in the centuries that followed. He adopted the Roman concept of equitable administration of the law in his discussions of equity: where there were similar cases, they should be treated equally. This notion of equity assisted in the development of the doctrine of precedent. The second part of his work was the Liber Secundus, an unfinished treatise on writs and procedure. Bracton clearly distinguished substantive and procedural law. By adopting a Roman approach to substantive law, he gave a structure to custom while maintaining the empirical and traditional element of English legal theory. He managed to fashion a reasonable system of English law from traditional customs and substantive principles which were largely dependent upon procedure. In his work he recognised two sources of law, lex (statute) and consuetudo

(custom), but he was not concerned with the concept of enacted law in relation to unenacted law, nor with what the law ought to be. No clear distinction between law and custom is yet apparent. Like Glanvill, Bracton was concerned with matters of procedure, yet his work reveals an extensive system of abstract thought.

The Paradigms of 54. Precedent Cases
55. Custom and Justice

Bracton whose real name was Henry of Bratton was initially a cleric and then a royal justice with access to the judicial rolls. In his text he cited some five hundred cases from these rolls as evidence of custom, thereby establishing a practice which provided a basis for the doctrine of precedent. This use of cases was intended to illustrate judicial decision-making and the cases were not presented as authorities for propositions of law. The cases themselves were not regarded as binding. It was the evidence of binding custom contained in the precedent cases which was considered. The law existed independently of cases. Justice was regarded as the ultimate principle in deciding a case. Equitable considerations could over-ride custom or precedent cases. New law might be made if none existed, but the courts were reluctant to depart from ancient usages.

The Paradigm of 56. Common Law and Common Right

The Anglo-saxon dooms had fallen largely into disuse but the concept of the common law had not yet emerged as the confines of a theoretical structure of rules. Pollock and Maitland refer to Bracton's use of the terms common law and common right in the context of the development of the notion of the common law.

> In connexion with English temporal affairs we may indeed find the term ius commune in the Dialogue on the Exchequer: the forest laws which are the outcome of the king's mere will and pleasure are contrasted with the common law of the realm. A century later, in Edward 1.'s day, we frequently find it, though lex communis (commune lei) has by this time become the more usual phrase. The common law can then be contrasted with statute law; still more often it is contrasted with the royal prerogative; it can also be contrasted with local custom; in short it may be contrasted with whatever

> is particular, extraordinary, special, with 'specialty' (aliquid speciale, especialte). When Bracton speaks of common law or common right - and this he does but very rarely - it is to distinguish from rights which have their origin in some specially worded contract or donation, those rights which are given to all men by the law of the land.(48)

In Bracton's work the limits of thirteenth century English jurisprudence can be appreciated. The significance of Bracton's contribution is described in Potter's Outlines of English Legal History

> It practically summarises the results of a century's rapid development of what was to be the common law, at a time when that development had received a check which was to force its current to flow in the restricted channels of the existing writs.(49)

Bracton was one of the last of the clerical judges of the common law courts. The influence of the Church had greatly waned in his time and legal practice was soon to be dominated by matters of procedure rather than principle. Following Bracton, two epitomes of his work were published, namely the anonymous Fleta, thought to be written by a displaced judge while incarcerated in the Fleet prison, and the lost work of Gilbert of Thornton, Chief Justice of the King's Bench. These works appeared in about 1290. Hengham (c.1270) and Britton (c.1290) published other epitomes or digests which were more suited to the practical requirements of the profession. Britton's work was written in the form of a code based on royal authority.

The royal courts were establishing their procedure and customs which would emerge as the common law of England. In order to rely upon a local custom, a litigant had to show that it was an esablished practice of the local court. Local custom had to be proved. The royal courts would give effect to the local rule in these circumstances only and in this way they hindered the further growth of local custom. Where customs were common throughout England, they were incorporated in the common law. The assizes produced a mass of unenacted law, some of which was probably new law rather than custom. In deciding questions of law, the jury had the opportunity to make law. However, such law might not be

applied again or become established as custom. As the law became more complex, it was recognised that juries should be confined to issues of fact only. In 1285, the Statute of Nisi Prius required the assize to make findings of fact only in an action of disseisin. The responsibilities placed upon juries meant that it was necessary for ordinary people to be aware of the law. Pollock and Maitland describe the effects of this in the thirteenth century.

> The freeholders of the shire, besides attending the communal and the manorial courts, would have hard work to do as jurors; often they would be called to Westminster, and as yet the separation of matter of law from matter of fact was not so strict that a juror could afford to know nothing of legal rules. In one way and another the common folk were constantly receiving lessons in the law; the routine of their lives often took them into the courts, even into courts presided over by a Pateshull, a Raleigh, a Bracton. This healthy co-operation of all sorts and conditions of men in the work of the law prevents the jurist from having it all his own way and making the law too fine a thing for common use.(50)

The Paradigms of
57. Extensions of Remedies by Analogies
58. Extension of Records

After the royal courts gained exclusive jurisdiction of all claims over 40s in 1278, they became unpopular and had a reputation of being unscrupulous. In 1285, Edward 1, who had been abroad, appointed a commission of inquiry. As a result of the inquiry the judges were punished. In the same year the Statute in Consimili Casu was passed to counter the effects of the Provisions of Oxford. It permitted writs to be framed "in like case." This statute may have provided much of the character of the doctrine of precedent. It certainly sustained the development of actions on the case and determined confines which the courts subsequently circumvented by fictions. In 1290, the Statute Quia Emptores, began the erosion of the seignorial power of the feudal lords. It permitted the sale of fee simple estates free from feudal bonds and prohibited the creation of new feudal bonds on the sale of freehold. The effect of this was to dismantle the hierarchical structure of feudal society. This opened the way for alternative theories of social relationships, pertaining to power, such as

democracy and the social contract. The new opportunities for holding land also provided property, governed by a property law suited to the development of towns.

The rolls of Parliament, the Rotuli Parliamentorum, which was a transcript of parliamentary sessions, commenced in 1290 and was discontinued in 1503. In 1299 the Chancery commenced a statute roll. In these early times, these rolls were incomplete and statutes which were not enrolled sometimes were forgotten and fell into disuse. The Chancery also kept State Papers which included the Close Roll of sealed letters of instruction from the monarch to individuals, and the Patent Roll which recorded formal instructions from the monarch in Letters Patent to individuals. The State Papers also included the acts of the Privy Council, reports of discussions, and some treatises.

The Paradigm of 59. Law-making and Legal Practice

Once the legal profession became established, it played a major role in the development of the law. A claim might not be pursued in court if the professional advisers refused to support it. The courts were limited in their law-making by the nature of the cases which were brought before them.

By the thirteenth century, the legal profession was sufficiently established to produce the earliest court reports, the Year Books. The form of the reports was derived from an early tract on pleadings which referred to cases, namely the Brevia Placitata (circa 1260). In the fourteenth century, the form of this tract was followed in the further tract on pleadings, the Novae Narrationes. Law as well as facts had to be pleaded and this gave the legal profession the opportunity to formulate the rules of law. The Year Books commenced in 1289 and were probably used initially in the instruction of law students. They were written by members of the bar and students in a fairly informal style, in Norman-French or Anglo-Norman and circulated like a newspaper. Anglo-Norman was the prevailing legal language spoken in the courts until the fourteenth century. By Tudor times this form of French was anglicised. At first, the Year Books recorded arguments between counsel and judges; the decision reached was not

always included. Initially arguments were concerned with procedural technicalities but later questions of law became more predominant. In the pleading of a case, specific precedents (exempla) were occasionally cited and distinguished. In the reports, if a judge laid down the law, it was usually expressed through an example, which might be a hypothetical illustration, rather than by a statement of principle. The preferred methodology was concrete illustration rather than abstract principle. This may have been the reason why, early in the fourteenth century, Bereford C.J. affirmed the Roman maxim, non exempli sed rationibus adiudicandum est: judgement is to be by reason rather than by example.(51) Judges applied their knowledge of law rather than their knowledge of cases in order to reach a decision. A practice developed of referring to the cases in the Year Books as evidence of the existence of a law. The record of a case then included this argument. The later Year Books became much fuller and the judgment was sometimes dealt with at length.

The Paradigm of 60. Common Law, Precedent and Reason

The dicta of judges was regarded as evidence of the customary law. The custom of the royal courts which were the first courts to sit throughout the country, was the basis of the common law. These courts enforced customs which applied throughout the country and customs which were proven to apply locally. The custom had to conform to reason but the courts were not concerned to discover any coherent theory in the collective customs. Baker explains the common law as something independent of the doctrine of precedent.

> The common law was based on "reason" rather than sovereign authority, and the lack of a precedent or written source has never meant the lack of a legal rule but merely a difficulty in ascertaining it. Decided cases were illustrations or examples of what the law was, not "sources" of the rules in an authoritative sense. It is perhaps not an exaggeration to say that statutes were generally regarded in medieval times as examples, albeit put into certain words, of the same kind of law. If the law required clarification, if the precise operation of a general principle was in controversy, if the spirit of the law was being evaded by technicalities, then the legislature might set the law back onto its proper course.(52)

The Paradigms of 61. Nature of Knowledge
62. Justification for Abstraction

John Duns Scotus (1266-1308), a Scot philosopher, considered the nature of information in relation to knowledge, and distinguished three forms of knowledge: principles which are comprehended intellectually, things known by experience, and human action. He became a Franciscan at Oxford and later taught at the Paris University. The English scholastic, William of Ockham (c.1285-1349), a pupil of Duns Scotus, who studied at Oxford and Paris as a Franciscan monk, developed a nominalist philosophy which instigated the breakdown of medieval scholasticism and established a basis for modern scientific theory. He is sometimes seen as a precursor of Descartes and Kant. In the relationship between facts and theory, William of Ockham distinguished between speculation which might represent and link facts at the level of abstraction least removed from the facts, and speculation based on more remote abstractions or abstractions which could not entirely rest on facts. He suggested that the explanation which retained the greatest proximity to the facts should be preferred to more remote metaphysical invention: simpler explanations are per se more valid than systems of abstractions which are unnecessarily extended. This distinction in metaphysics could minimize doubt in the metaphysical aspects of science and limit the proliferation of speculation. The principle is known as Ockham's razor. Ockham was excommunicated for heresy in 1328 and found refuge with the Emperor Louis in Munich.

Arguments which the nominalists developed were later used in the revival of natural science. This was the case with Ockham's razor, which was used by the Parisian scholars, Buridan (c.1297-1358) and Oresme (1320-1382) to discredit Aristotle's theory of motion; this permitted the development of the revolutionary dynamics of Galileo (1564-1642).

The Paradigm of 63. Democracy

Ockham's friend, Marsiglio of Padua (1270-1342), who was also excommunicated and took refuge in Munich, posed the introduction of democracy in both the secular and clerical domain. This

instigated a new form of opposition to the papacy which had been moved to Avignon in 1309 and had become subservient to the French monarchy. This subservience antagonised the Emperor in Munich and the English monarchy so that they were inclined to protect Ockham and Marsiglio.

By the fourteenth century, medieval towns were well established throughout Europe. In Germany and Italy, the towns were politically independent of the feudal order. In France and England, the towns were subordinate to royal but not feudal power. Guilds of craftsmen who produced various manufactured goods, and a class of merchants who traded in manufactured goods and excess produce from the feudal lands, formed the basis of the town economy. They were secular in outlook and critical of the clergy. A scientific outlook appealed to their economic interest in the development of technology and resources.

During the fourteenth century, when towns were growing, the Black Death raged through Europe. Whatever religious doubts had been raised in the preceding centuries must have been compounded by the bewilderment which people would have felt in the face of this threat to human existence. Leadership in the Church fell into disarray. Its moral teaching and religious influence was greatly weakened. Town life seemed conducive to corruption, and impersonal human relationships.

It is thought that during the Dark Ages in Europe, when China was enjoying a flourishing civilization under the Wei (A.D. 386-549) and T'ang (A.D. 618-906) dynasties, some major inventions were produced in China, namely, gunpowder, the compass, paper and printing. These discoveries were introduced into Europe in the Middle Ages, at about the time when the first signs of British empiricism appeared. In Europe, the uses of these inventions were developed and the results produced fundamental social changes. The cannon was developed and used in warfare; firearms soon followed. Warfare became more devastating and scientific. Later the compass permitted extensive sea voyages which changed the medieval perception of the universe. Paper and printing extended the opportunities to record and communicate thought.

In 1340, the General Eyre was discontinued. This weakened the control by royal justice in the countryside. By the close of the fourteenth century, the peasants in England had begun to revolt. The revolt movement is associated with the communistic philosophy developed in the order of St. Francis of Assisi (1182-1226). John Wycliffe (c. 1320-84), a secular priest and doctor of theology at Oxford developed a socialist political philosophy, which was condemned by the Pope. Since England was at war with France, the English monarchy and Oxford University, defended Wycliffe. This prepared the way for the Reformation and eventually religious freedom which would permit the emergence of modern science as a powerful social force.

The Paradigm of 64. Foreign and Abstract Concepts

From the time of the Norman Conquest, Norman-French was spoken by the ruling classes and in the royal courts. Where English law was enforced, English legal terms were preserved. Norman-French became anglicised. It became the practice to use English in oral proceedings in court during the reign of Edward III (1327-1377). English had not yet developed its orthography, so that it was not suitable for written records. In learned circles, Latin was universally used. The Normans introduced Latin as the language of official records and Latin became the language of legal documents. As the royal courts developed remedies, French and Latin terms became part of the legal language. Gift, sale, letting, hire, borrowing, bequest, deeds, wills, bonds, manslaughter and theft are English terms, whereas, contract, agreement, covenant, condition, obligation, debt, bill, note, guarantee, pledge, lien, property, possession, purchase, easement, money, payment, money, grant, devise, descent, marriage, heir, guardian, infant, ward, master, servant, partner, tort, trespass, slander, damage, crime, felony, misdemeanour, assault, battery, robbery, burglary, larceny and arson are all French terms, some derived originally from Latin. The various languages which were used in the administration of law may have contributed to the difficulty of settling an orderly system. With the forging of a single language a wealth of legal concepts was derived from these various sources. It could be said that the mixture of French, Latin and English worked to ensure that the language of the courts became a

professional language and that the legal system developed a mystique and awesomeness which prevented ordinary people from understanding and challenging its processes.

The Paradigms of 65. Abridgements
66. Extension of Analogous Precedent

From the late thirteenth century until the fifteenth century, legal texts were mainly concerned with procedure. The Year Books were not systematically glossed and, being concerned largely with procedure, were not a suitable subject for glosses. However, a practice of abridging the Year Books began early in the fourteenth century. Abridgements were published as a sort of Digest to assist in the location of relevant decisions. Headings were arranged in alphabetical order. Under headings, relevant cases were arranged in chronological order. The use of references to earlier cases promoted the development of legal reasoning by analogy, distinction, induction, and deduction. Apart from these juristic developments, in the fourteenth century, a small tract called Old Tenures pointed out the increasing complexities of land law.

The technicalities of contemporary procedure were of more immediate concern to lawyers in the fourteenth century than the scholarly commentaries of the early clerical judges. Judges were no longer appointed from the high ranks of the Church and clerical views were becoming of less concern to the common law courts. The innovation of law reporting constituted the new form of learning and the need for juristic texts would only re-emerge when several centuries of reporting amounted to chronological chaos.

The Paradigm of 67. A Common Law Index and Equity

Chancery, which held the Great Seal, maintained a Register of Writs which became an index to the common law. In the royal courts equity was developed through the notion of justice within the customary law. The distinction between aequitas and rigor iuris was understood and the royal courts did not allow the law to be used to produce an injustice. They might exercise a discretionary power to defeat those consequences and to sustain

the substantial purposes of the law. Although there was a growing presumption that only parliament could make new laws, the courts still held to the view that it was the business of the crown through its judiciary to resolve conflicts, as they arose, by a just determination of order or priorities. There must be a remedy for every wrong. The equitable discretion aided in this task where the claims of parliament were setting up restrictions.

However, in the fourteenth century, the common law courts became increasingly conservative in the exercise of their equitable discretion. They may have had difficulties adjusting to the social changes that came with the breakdown of feudalism, the lessening of the moral influence of the Church, the development of town life and the effects of the plague. Hard times made the law rigorous rather than flexible. Potter's Historical Introduction to English Law describes these times.

> But by the middle of the fourteenth century there are dicta in the courts showing that law must be strictly enforced and that a wide discretion was no longer exercisable, Parliament alone having the power to change the law.(53)

Wherever the common law produced injustices, litigants applied to the monarch for relief. These applications were heard by the king in Council at first but the practice was then adopted of referring the case to the Chancellor. The earliest Chancery petitions appeared in the fourteenth century. Initially the Chancellor gave relief to litigants who were poor. His jurisdiction was founded on the Aristotelian model of equity; it dealt with exceptional cases where the application of the general rule could be seen to produce harsh results. Christian conscience and the Roman notion of natural justice determined when equity should grant relief. Litigants pleaded right, reason, conscience and good faith in support of their claims. They relied on the ecclesiastical theory of law in which God was the ultimate authority and lawmaker. God determined the laws of nature, the laws of reason and, through his earthly agents, human laws. These various laws were consistent with each other. A state law which was inconsistent with the laws of nature or reason was invalid. The Great Seal was used to control the injustices of the conservatism of the royal courts. Equity became a subsidiary to the common law. The influence of

the Church and thus Roman law, in the development of English law was revived through this jurisdiction of equity. Potters Outlines of English Legal History describes this influence.

> All the Chancellors till Wolsey, with one or two exceptions, were clerics as well as statesmen, and consequently learned in canon and civil law, systems to which they would naturally turn for a reason, if it could be found, when it was necessary to "abate the rigour of the common law.(54)

Conclusion

Just as scientific laws of the universe extend human control over the physical world, so a common law system is a source of social control and co-ordination. The common law of England developed as a means of resolving human conflict. The cannon law methodology fashioned a system of rules which would achieve religious goals. Insofar as the scholastic jurists influenced the development of the substantive common law, some goal attainment was introduced into the system of common law. Scholastic goals were concerned with the attainment of religious ideals rather than the satisfaction of individual needs and wants in some equitable manner, although there is some overlap of the these matters. The development of common law removed the choice of different sets of laws in England. The scholastic systematization also standardized the moral goals of the jurisprudential system of the common law. The scholastic system limited the choice of moral standards which the law permitted. Uniformity and universality gave the law the characteristic of an Absolute straight-jacket. In the next era, the doctrine of precedent was forged. This infused the legal system with predictability. However, the law remained oriented to conflict prevention and the maintenane of uniform standards. It was not until scientists propounded the relative nature of the universe in the twentieth century, that the uniformity of the middle ages could be qualified by choice.

Footnotes

(1) An Introduction to English Legal History, Butterworths, London, England, 1971.

(2) A.K.R. Kiralfy, Sweet and Maxwell, London, England, fourth edition, 1962 page 631.

(3) Ibid. page 9.

(4) Ibid. p.10.

(5) Dooms of Cnut, c. 17.

(6) Op. cit. page 10.

(7) Invitation to the Law, Butterworths, Sydney, Australia, 1982, page 183-4.

(8) op. cit. page 302.

(9) History of English Law, Volume 1, Cambridge Press, Cambridge, England, 1968, second edition, page 24.

(10) Op. cit. p.331.

(11) The Origins of Western Legal Science, Volume 90 Number 5 Harvard Law Review, March 1977, 894, at page 899.

(12) Ibid. page 908.

(13) Ibid. page 909.

(14) Ibid. page 916.

(15) Ibid. page 917.

(16) Ibid. page 918-9.

(17) A.K.R. Kiralfy, Sweet and Maxwell, London, fifth Edition, 1958, page 7.

(18) Op. cit. page 184.

(19) Op. cit. page 19.

(20) Op. cit. page 919.

(21) Ibid. page 920.

(22) Ibid. page 921.

(23) Op. cit. page 11.

(24) See F. Pollock and F.W. Maitland, History of English Law, Volume 1, second edition, Cambridge Press, Cambridge, England, 1968, page 101-107.

(25) Ibid page 104-5.

(26) A term used by F. Pollock and F.W. Maitland, ibid. page 4.

(27) Ibid. page ciii.

(28) Ibid. page civ.

(29) Ibid. page 132-3.

(30) In his Introduction to the second edition of F. Pollock and F.W. Maitland, ibid. page xxix.

(31) Ibid. page lxiv.

(32) Ibid. page ciii.

(33) Ibid. page 151.

(34) Ibid. page 109.

(35) Op. cit. page 34.

(36) Op. cit. page 166.

(37) Ibid. page 144.

(38) Ibid. page 149.

(39) Op. cit. page 124.

(40) The Pipe Rolls continued to the nineteenth century.

(41) Op. cit. page 30.

(42) Op. cit. page 302.

(43) 59 Geo. 3, c. 46.

(44) Op. cit. page 269.

(45) Op. cit. page 205.

(46) Op. cit. page 20.

(47) Op. cit. page 206.

(48) Ibid. page 177.

(49) Op. cit. page 36.

(50) Op. cit. page 220.

(51) J.H. Baker, op. cit. page 104.

(52) Ibid. page 99.

(53) Op. cit. page 572.

(54) Op. cit. page 271.

CHAPTER FIVE

SCIENCE OF PRECEDENT

Introduction

The Theoretical Period

The Casuistry Period

Conclusion

Introduction

The second major scientific age in the evolution of English law is characterised by the development of the doctrine of precedent. This doctrine added certainty to the legal system and provided a framework for a massive expansion of legal theory. The paradigm of binding precedent in common law was followed in science. In order to expand the system of universal laws of nature, scientists adopted a methodology of experimentation which posed a prediction by way of hypothesis. The prediction suggested that if a law applied in a certain way, then a certain result might be expected. The law was modified or verified according to the result of the experiment. Jurists worked empirically from the past; scientists worked empirically from the future. They employed a similar theoretical framework for expansion of laws. It is the same framework that was developed by the scholastic jurists of Bologna in the twelfth century.

Two periods of this age of precedent, or age of empiricism, are identified in this Chapter, corresponding to the theoretical and the casuistry periods of the Roman legal system. The first period, the theoretical period, spans the fifteenth to the seventeenth century. During this period, the basis of the doctrine of precedent was founded, together with a method of developing legal theory. In the second period, from the eighteenth to the twentieth century, the practice of reporting cases became standardized to suit the theoretical method and the doctrine of precedent. The history in this Chapter, extends from the fifteenth century to the Judicature Acts of the nineteenth century. The developments in science and law since the Judicature Acts, are too numerous to incorporate in this thesis. Instead, some relevant aspects of the modern period are selected for special treatment in the next two Chapters. There can be little doubt that the casuistry period has extended throughout the twentieth century. However, in this century, some of the threads of the final period, the codification period, can be identified.

Chapter Six and Chapter Seven are concerned with specifying the form of an inevitable codification. In Chapter Six there is an emphasis on the ethical characteristics of a codification jurisprudence. Chapter Seven is concerned with the technological characteristics of the codification. Each poses a new interaction of law and science. A knowledge-based

survival jurisprudence is fashioned from Darwinian philosophy in Chapter Six, and artificial legal intelligence is explored in Chapter Seven. The proposals in these two Chapters can be seen to have origins in the full range of history covered in this thesis. Further development of the ethical and technological systems, which are considered in the next two Chapters, is likely to depend increasingly upon the historical resources. Intelligence must look back on itself to see itself. It can not simulate itself artificially, unless it has a model of itself. For the automation of the doctrine of precedent, within an appropriate ethical framework, the operation of the doctrine requires extensive review. This Chapter is mainly concerned with exploring how the doctrine was founded and developed. It does not investigate the many uses of cases in modern times. The American jurist, Karl Llewellyn, has identified sixty different ways in which cases have been used in legal reasoning, and showed authorities for each use.(1) To fully evaluate the many uses of cases, there must be an understanding of the historical foundations of the doctrine.

In each of the two periods covered in this Chapter, the theoretical period and the casuistry period, some of the prevailing paradigms of human intelligence are identified. These paradigms may provide leads for further analysis or synthesis of systemic fragments of jurisprudential systems which have evolved through to contemporary times. It is also possible to examine the relevance of the science of precedent to a science of legal choice.

The Theoretical Period - 15th to 17th Century

The Paradigm of 1. Parliament and the Judiciary

Parliament had become an established organ of government by the end of the fourteenth century. At this time it ceased to exercise its jurisdiction as a court of first instance. The House of Commons had never been a part of the King's Council, the Curia Regis, which acted as a court, whereas the House of Lords had been. The House of Lords retained its appellate jurisdiction. The Commons did not contest this. At this time there was much warring and savagery between the barons, enhanced by the new gun power. The Commons may have wished to avoid involvement with the Lords. They may have been content with the power of juries to effectively ignore principles of law in order to achieve a

just result in a particular case. Juries may have hindered the development of principle in these early times. Furthermore there was little appellate control of juries. In 1400, the Commons expressly disclaimed any share of the judgements of the Lords and confined democracy to the limited realms of legislative reform rather than the broader realms which would encompass judicial law-making. This decision confined judicial law-making in the centuries to come and obviated the need for members of the Commons to have specialised knowledge of the law. The Upper House had power to make and interpret legislation as well as to make judicial law, however covertly.

The Paradigm of 2. Secular Humanism

In the fifteenth century, a secular humanism which was associated with a new learning and a revival of the study of the works of the ancient Greek and Roman authors, became popular. This may have been the beginnings of a search for an urban spirituality or morality. This period is known as the renaissance and marks a transition from medieval to modern life. After Constantinople was captured by the Turks in 1453, the western merchants had to discover new routes to the east. Sea voyages were undertaken to explore alternative trade routes. The success of these adventures was partly due to new navigation aids produced through scientific enquiry. Information brought back from these voyages provided the early scientists with material which stimulated revision of medieval astronomy. During the renaissance, learning was regarded as a pleasant social pursuit rather than a cloistered preoccupation with the justification of clerical orthodoxy. The learned professors of Constantinople who favoured Plato above Aristotle, found refuge in Italy, following the Turkish conquest. The new learning replaced scholasticism and produced a revival of Platonic thought.

Cosimo dei Medici (1389-1464) and his grandson Lorenzo the Magnificent (d.1492), effectively ruled the city state of Florence and fostered the new learning. The Medici family, under the title, the Grand Dukes of Tuscany, governed Florence until 1737. The Florentine Academy, which was founded by Cosimo dei Medici, promoted the study of Plato. The scholars of the renaissance were free thinkers rather than rationalists. They sought to explore novel ideas rather than to devise new systemic philosophies. The genius of Leonardo da Vinci and the voyages of

discovery of Columbus and the explorers who followed him, represent the best of renaissance learning. The empirical investigations and creations of Leonardo are reminiscent of the diversity of enquiry of Aristotle and Archimedes. It was Leonardo's friend, Amerigo Vespucci, who explored and gave his name to the newly discovered continent of America.

From the time of Nicholas V who was Pope in the years 1447-1455, until Rome was sacked in 1527 by a large protestant army, papal policy was humanistic and the Church patronised secular scholarship. During the fifteenth century, the Church supported the persecution of witchcraft. Free thought produced not just the excitement but also the insecurities of new discoveries. At the same time, there was a decline in orthodox morality; corruption, treachery and cruelty became rife.

The Paradigm of 3. Arbitrary Equity

In England the fifteenth century was dominated by wars. The Hundred Years War with France ended in 1453 and the Wars of the Roses (1455-1485) spanned much of the second half of the century. Henry V (1413-1422) was the first monarch to use guns on a large scale, both on land and at sea. He conquered France but after his death, the French eventualy drove the English out of France aided by the inspiring spiritual leadership of Joan of Arc who was captured and burned by the English. During the Wars of the Roses, the English law might have appeared inadequate. The reliance on forms and chronological reporting was not conducive to the development of sound, comprehensive, substantive principles. The emergence of the court of Chancery during this period may have been a response to the difficulties of the times. The Chancellor undertook the development of the equitable jurisdiction and the court of Chancery was established. The early period of development of the equity jurisdiction as an area of discretionary relief, may have contributed to the sense of uncertainty and chaos in the law. By the middle of the fifteenth century most of the Chancellor's work was concerned with the enforcement of trusts of property, and the Court of Chancery became as important as the common law courts. The Chancellor was acquainted with Roman law and introduced some of its concepts and rules in the practice of his Court. Recourse to natural justice, as the standards of a constant and common God, may

have been difficult in wartime, but, from this foundation of equity, the medieval ideas of conscience and equity evolved.

During the fifteenth century, the monarch's Council began a practice of sitting in the Star Chamber at Westminster to administer a form of criminal equity as a measure to counteract the lawlessness of the Wars of the Roses. It sought to enforce order at any price and it largely enforced the arbitrary will of the monarch. This was once a source of equity but it could also be a source of the greatest injustices. Roman inquisitorial procedure was adopted and the court exercised a large measure of discretion.

Although the common law was steadily evolving, the disturbances of the period were reflected in the operations of the royal courts. Baker asserts that they

> carried on an eccentric, extraordinary, hand-to-mouth administration of rough-and-ready justice more concerned with peace and good order than with the elaboration of legal rules.(2)

The Paradigm of 4. Precedent: Custom of the Court

During the fifteenth century, the courts began to regard judicial rulings as persuasive authority and frequently used the notion of precedent as a recourse to constancy and certainty. Even if the reason for decisions was not apparent, judges preferred to follow earlier decisions. The adherence to precedent may have been adopted as a judicial technique to overcome the uncertainty of the law and to curb the chaotic development of rules. They reverted to reliance on custom and authority rather than coherence. The higher the authority, the more binding was the rule considered. The custom of the courts began to operate in the same way as the earlier customary law.

From this time, in Europe, beginning with Melancthon's Epitome of Ethics, a new view of natural law emerged. Melancthon, who was a disciple of Martin Luther, drew a distinction between the law of nature and positive law. He set about to discover the first principles of universal law. Subsequent jurists sought to establish natural law as the basis of positive law.

The Paradigms of 5. Fictions
6. Truth and Consistency

With the parliamentary prohibition on judicial law-making, the courts began to employ fictions where legal reasoning could not be extended to rectify a wrong. Litigants began to twist the forms of action to obtain a jury trial. Potter's Outlines of English Legal History gives examples of medieval fictions.

> For example, the court might allow an allegation that Marseilles was in Cheapside in order to try an action for breach of a contract made abroad, or it might permit a plaintiff to allege that his chattel had been lost and found by the defendant, when in fact the defendant had taken it from the plaintiff.(3)

An action in Trover was tried by jury whereas the defendant could claim trial by wager of law in an action in detinue. These fictions added to the chaos and confusion of the common law in the fifteenth century. The adoption of fictions by the court introduced new notions of truth. Presumptions rather than absolute truths became acceptable. A fiction might amount to a false assumption of a fact, a legal premise or a jurisdiction. There must have been some sense of injustice that some fictions and not others were acceptable, especially as, in the context of the pretence, the courts gave no reasons for this. The early methods of trial, particularly battle and ordeal supported the dominance of the physically fitter litigant. The power to adopt fictions was, ex facie, irrational, but it extended the opportunities for dominance by reason. Potentially, a jury trial was more consistent with rational social management and the preservation of diverse survival skills and interests. There was scope for the jury, in their verdict, to introduce a measure of equity where it might not otherwise exist. However, this was not an equity that could be relied on in the future or contribute to the development of the law. Reliance on a jury, in some ways, hindered the development of legal principle but also avoided the necessity to state and justify interpretations of natural justice. If a group of people held a view unanimously, this was likely to be a sound basis for law enforcement.

Despite the procedural and jurisdictional fictions, the verdict of the jury had to be unanimous. Truth was regarded as an absolute. There

could only be one true version of the case. Discord was eliminated by a physical endurance test if need be. Juries were confined without food or heating until they produced a unanimous verdict. The 'truth' was sometimes extracted painfully. Baker describes the extreme forms of this 'legal science'.

> ... if they could not agree they were to be put in a cart and dragged round the circuit until they did. Thus in 1578 a juror was imprisoned and fined for eating sweets. In 1600 a divided jury agreed "because of the danger to their health" to return a verdict for the defendant unless the court showed its disapproval of the verdict, when they would change it to a verdict for the plaintiff. When these facts came out, the jurors were imprisoned and heavily fined for giving a verdict contrary to their conscience.(4)

Where it was not possible to convene a jury which had knowledge of the case, it became necessary to call witnesses. A statute of 1562 provided that witnesses could be compelled to attend the hearing. Parties to the proceedings were not permitted to give evidence because they were presumed to be biased. The evidence of witnesses provided a more scientific means of trial. When juries were confined to deciding issues of fact only, their law-making function ceased and the law of evidence began to develop. Legal argument was confined by the facts established in the case. The reasons given by the court for its decision were similarly confined. Custom was extended by analogical reasoning so that the law began to develop by theoretical consistency in the management of custom.

The Paradigm of 7. A Fabric of Theory : Facts, Rules and Orders

English law was taught in association with legal practice. The schools of English law were the Inns of Court, not the universities, until late in the eighteenth century. The academic was constrained by the practice of law; theory worked through judicial decision-making and court orders. This fostered a major paradigm of English law as the inter-relationship of facts, rules and court orders. The facts indicate the relevant rules to be applied. The rules become the reasons for the orders and the orders direct any changes to the circumstances of the parties. The facts might vary from case to case; the body of rules are formulated through abstractions and generalizations to funnel the facts through to one or more of a few forms of court order.

From the fifteenth century, manuscript lecture notes of readings in the Inns of Court were circulated. Practitioners kept commonplace books in which points were entered, whenever they were encountered, according to predeterminwed divisions. Glossing of statutes, cases and treatises was also practised. Comprehensive and systematic abridgments of the Year Books were undertaken by the Inns of Court or under the supervision of judges, for example Statham's (c.1480) abridgment. In these abridgments, or digests, which were written in Anglo-Norman, topics were set out, usually in alphabetical order, and the parts of Year Books which dealt with a topic would be precised and included under that head. These abridgements provided a basis for the development of lexicons and law dictionaries which might encompass all relevant information, not just information from one given source.

The growing pride in English law is reflected in the work of Fortescue C.J., De Laudibus Legum Anglie (c.1470), in which it is maintained that English law has earlier origins than Roman law and is the best in the world, a conceit still prevalent in the legal profession in contemporary times, despite the studies of the realist school, the attacks of critical legal theorists, the failures of welfare law and the ongoing alienation of ordinary people from the law by its ever-increasing inaccessibility. Political considerations may have contributed to Fortescue's view. The Star Chamber and the Court of Chancery had adopted some aspects of Roman law. Fortescue C,J. supported the House of Lancaster, the losers, and as a result he went into exile. His book was not concerned with procedure and practice. It revived the broader considerations of law through the comparison of Roman and English systems. The work marks the beginning of a new era of English law texts.

The Paradigm of 8. Encyclopaedic Specialisation in Legal Theory

As the customary law of Englland gradually settled into a body of precedent cases to be applied uniformly, and, no doubt, to assist the judicial task of reconciling inconsistencies in such a way that the rules of law could be developed as a coherent body of rules, textbook writers undertook the collation and presentation of the principles and rules of law recognised and expanded in the cases. These works brought encyclopaedic dimensions to specialised areas of law. In 1481, Thomas Littleton's treatise, New Tenures was published and subsequently

received judicial recognition as an authoritative text. Littleton was a Yorkist judge in Common Pleas. His text, which was written in a clear, simple style, was the first attempt to state the law of real property, in a reasoned manner, by reference to the cases reported in the Year Books. It details the estates in land, the incidents of tenure and related matters. In the fifteenth century, printing became available in England. Littleton's text was the first printed law book.

The Paradigm of 9. Reports

The first printed collection of statutes was published in 1481. In the reign of Henry V111 (1509-1546), the printing of legal works expanded. A few Year Books were printed initially and then the Year Books were printed as a set of reports. No regular printing of the Yearbooks was undertaken. Publication of the Year Books as a series ceased in 1536. The series was replaced by reports which identified the authors. Law reporting was then carried out under the name of the authors. In Potter's Outlines of English Legal History, there is a description of the early reports from which their scientific qualities, if any, might be evaluated.

> Until the end of the seventeenth century the reports varied very greatly in character and quality . Some of them were little more than bare notes of simple facts and findings, or the statement of a rule; others were long, and not always very coherent, accounts of what took place at the trial. Some of the earlier reports are written in a very garbled form of Anglo-Norman, mingled with English, and are couched in such ambiguous language and expressed with such brevity that the modern lawyer, remote from the problems of that age, can hardly appreciate the point which they are meant to decide. To this is added the difficulty that much of the law turned upon technical points of pleading which are now unimportant.(5)

A Tudor judge, William Staundforde, recognised the need for a digest of the common law which would have an order through which principles of law could be stated clearly.(6) The earliest reports which followed the Year Books, such as those of James Dyer (d.1582), printed in 1585, were similar to the Year Books. In the 1570's, Edmund Plowden's reports were published as Commentaries and included a fuller academic treatment of the cases. Some of the sixteenth century reports were not published

until the seventeenth century, for example, those of William Dalison (d.1559), William Bendlowes (d.1584) and Edmund Anderson (d.1605). The reports were regarded as sources of law, so that commentaries became appropriate. The reports of Plowden amounted to glossing of cases. When the reports became fuller from the sixteenth century, it became the practice to cite many precedents. The courts began to look at the reasons for the decisions.

In the sixteenth century, abridgments, written in Anglo-Norman, incorporated report material other than that from the Year Books. Anthony Fitzherbert's Graund Abridgement published in 1516, contained over 14,000 entries and Robert Brooke's Graund Abridgement was printed posthumously in about 1558 with over 20,000 entries. Fitzherbert was a judge in the reign of Henry V111. He also wrote a commentary on the Chancery Register of Writs, entitled, the New Natura Brevium. In 1531, the Register of Writs was printed and circulated. From this time, it ceased to expand. In the Tudor period, the monarch led parliament in the formulation of new law.

Pleadings had become more technical with the expansion of writs. Poor people found it necessary and cheaper to appear personally in a suit with pleadings drawn up in writing by a lawyer. By the end of the fifteenth century, written pleadings had become an established practice. With this practice, the issues of law and fact could be resolved before the trial. Furthermore, the issues could be more precisely formulated and this required a more precise resolution of law. During the sixteenth century it became the practice to use written pleadings. Precedents for pleadings were published in collections known as Books of Entries. These became popular references by the seventeenth century. When, eventually, pleadings were simplified so that law was not pleaded in the procedural documents, the statements of law could only be found in the transcript of the hearing or in the judicial reasons for the decision. The legal profession became less influential in the precise formulation of rules.

The Paradigm of 10. The Law Merchant

The reformation began under Pope Leo X (1513-1521). There is evidence that in the early sixteenth century, there was a movement in England to replace English law with Roman law which was more suited to the

requirements of the new merchant classes and the law-making authority of the monarch. Roman law had become popular during the renaissance. In 1534, the English parliament passed the Act of Supremacy which established the Church of England with the English Monarch as head of the new church. This permitted Henry V111 to divorce and remarry in an attempt to produce an acceptable heir to the throne. It also severed England from the influence and power of the Roman Church. It is likely that the establishment of the Church of England, served the purposes of the common lawyers and prevented the Roman imperial theories of absolute monarchical power from being adopted in England. The early customary law contained a rule that the monarch was bound by the law. The Law Merchant found its outlets in England, firstly, through the merchant courts, namely the Piepowder courts of the fairs and, later, the borough courts, and, secondly, through the royal courts of Chancery and Admiralty. These courts applied the Roman mercantile law, which was regarded in Chancery as part of the law of nature, to maintain a consistency and reciprocity in international trade. Admiralty administered Maritime law which was derived from Roman Law. The availability of mercantile law to settle merchants' disputes was a matter of rivalry between the courts during the sixteenth and seventeenth centuries when merchant venturers became prominent in English society. The common law absorbed the customs of the Law Merchant in much the same way as it absorbed local customs. Once the custom had been proved in a case, this became a precedent and no further proof of the custom was required in later cases. If new customs were proved, they could be established as law, provided they were not inconsistent with existing rules of law.

The Paradigm of 11. Appeals

By the sixteenth century, various royal courts had been established with some specialist and some overlapping jurisdictions. The Court of Common Pleas had a civil jurisdiction and the King's Bench heard matters with a criminal element as well as supervising the other courts. The courts used fictions to expand their jurisdiction. King's Bench increased its civil jurisdiction by writs which alleged an offence fictitiously and then a common plea. The House of Lords was the ultimate court of appeal. Judges met informally in the Exchequer Chamber to discuss difficult cases. In 1584, the Court of Exchequer Chamber was created to hear appeals from King's Bench. Its decisions were binding on all

courts except the House of Lords. Appeals could be made to the House of Lords. This appellate hierarchy reinforced the development of the doctrine of precedent.

The Paradigm of 12. The Intention of the Law

During the Tudor period, particularly in the reigns of Henry V11 (1509-1547) and Elizabeth 1 (1558-1603), parliament was submissive to the crown. The modern form of legislation was settled as well as the procedure for passing an act. Parliamentary procedures were so popular that Ordinances became obsolete and the volume of legislation increased. When the judiciary first began to interpret statutes, they sought to explain the intention of the legislature. Until the seventeenth century, judges took an equitable approach to the interpretation of a statute: if it was contrary to reason, it was treated as void. This attitude is explained by Baker as follows:

> If the judges could reserve cases of difficulty for the king to decide in person, with the advice of his Council, then by the same authority the king might give general directions to his judges for the future. And if the judges were privy to these directions in advance, as advisers or members of the Council, they would respect the policy of the legislation and give it the same liberality of interpretation and flexibility as they would the unwritten common law.(7)

The Paradigm of 13. Equity Measures the Categories in a Rule

In 1584 Heydon's Case (8) laid down a much stricter approach to statutory interpretation. The court was to first consider the common law before the act was passed and discover the mischief or defect in the common law which the legislation sought to remedy. In applying the act, the reason for the remedy was to be a guide. The freedom of judges to interpret legislation however they saw fit was curtailed as parliamentary power usurped judicial power. By the end of the Tudor period (1603), the Aristotelian concept of equity as the method of correcting the inadequacies of general rules, was preserved only in the judicial interpretation of statutes. The categories in the statutory rule would be extended or limited in their meaning to avoid or cover an exceptional case. This preservation of equity in legislative rules was adopted in both the courts of common law and Chancery. As a

methodology, it was also adopted in the operations of the doctrine of precedent, in respect of the common law.

The first common law Chancellor, Thomas More, was appointed during the reign of Henry V111. As the Chancellor's jurisdiction expanded, hostility grew between the courts of common law and the Court of Chancery. More's appointment alleviated this hostility and began the transformation of natural justice to principles of law. The antipathy of common law and equity was examined by Christopher St. Germain in his Dialogue between a Doctor of Divinity and a Student of the Laws of England published in 1523. This work discusses the sources of the common law and examines the relationship between conscience and law. The rules of law are viewed critically and the need for the Chancellor's jurisdiction is justified. In the course of the discussion the nature of equity is explored. Equity, it was maintained, was concerned with all the circumstances of a case. As the first philosophical study of English law, St. Germain's Doctor and Student had an extensive influence on legal thinking for centuries thereafter. More was thorough in his judicial investigations and ensured that unconscionable use of legal rights did not occur.

The Paradigms of
14. Sets of Rules
15. A Flexible Doctrine of Precedent

By the sixteenth century, the use of fictions was entrenched in procedure and courts used fictions to compete for business. Whereas, the different ethnic groups of England had once maintained their separate customary law, by the time of the reformation, divisiveness in the English legal system was represented in the different rules applied in the several courts. Considerable rivalry and conflict developed between the various courts. The doctrine of precedent was only loosely applied by the courts in the sixteenth century. It was recognised that a precedent case might be wrong. If it were incorrect it should not be followed by any court. It was not reasonable to extend wrongs simply because they were established. This flexibility may have assisted the common law courts to compete with the Court of Chancery.

The Paradigm of 16. Formal Errors

During the Tudor period, the Norman-French which was used by the legal profession was considerably Anglicised. Not only were foreign languages used in the administration of the legal system, but they had to be used in the official records with academic perfection. This requirement is reminiscent of the archaic Roman ritual where the priests required a perfect utterance both in word and cadence of the formula for legal redress. This theme of ritual reverberated temporarily in the transition from the burgeoning paradigm of common law to the burgeoning of legal theory. Any error in the English written record rendered the whole proceedings ineffective. Legislation was introduced to permit some amendments, and some errors carried consequences for the method of trial. If the defence wished to rely on a formal error, then the right to jury trial was lost.

The Paradigm of 17. Evidence : Facts

The fallibility of juries became apparent in the course of time. The widespread use of fictions added confusion to the task of the juries. Jurors became judges of facts, and the assizes were no longer regarded as expert witnesses on customary law. Customs were largely superseded by the common law or fell into disuse. By the middle of the sixteenth century, the jury judged facts by reference to the evidence of witnesses. The common law courts ceased to require that jurors be personally acquainted with a case. This procedural change opened the option of trial by jury to the merchants whose disputes were concerned with events abroad. English judges developed the method of jury trial rather than the inquisitorial procedure of carrying out their own interrogation of witnesses. The distinction between law and facts was a major development in the English legal system. As observed by Milsom

> Substantive law is the product of thinking about facts. What takes a legal system beyond the mere classification of claims is the adoption of a mode of trial which allows the facts to come out. In England, the starting point was the introduction of jury processes.(9)

The Paradigm of 18. Pleadings

The early court actions had commenced by some originating procedure.

The defence was a simple denial of the claim and the suit was then tested by the appropriate method of trial. As originating claims became varied, so too did defences. The facts relied on by the defence could be pleaded specially to disclose an injustice which would not otherwise be apparent. As pleadings raised facts, so the task of the jury became more specifically directed to the facts of the case as distinct from the law. Special pleading also provided the basis for modifications to the law which required royal authority and coulld not be found by a jury. English law developed by reference to factual distinctions pleaded in accordance with procedural requirements. Abstract notions could only arise from these sources. Milsom portrays substantive law as a superstructure built on a procedural substructure.(10)

The Paradigm of 19. Truth by Financial Dominance

In the Elizabethan period (1558-1602), oath-helpers could be hired cheaply in Westminster Hall where the court sat. At this time, procedures of pleading had developed to preclude the oath-helpers from making law. Where law did not recognise that the facts alleged provided the remedy sought, new law might be settled by the court, probably at the outset of the trial in much the same way as issues of law might be tried as a preliminary matter in contemporary procedure. In this event, the oath-helpers might be seen as a biased jury or, if they were hired, as an indication of financial dominance. Wager of law as a form of trial was available in actions for debt and certain other actions until 1833.

The Paradigm of 20. Human Games in the Resolution of Conflict

Michel de Montaigne (1533-1592), embarked on a study of animals from which he gained some insights into human behaviour. These insights contain something of an appreciation of human relations as game playing. He explained the abandonment of human reason as a strategy in human conflict; if one party to the conflict abandoned reason, this forced the other party to abandon reasonH also. Through these investigations, Montaigne formulated a human philosophy suited to the new scientific thinking. It was a philosophy which recognised human beings as part of the relative cosmos. He thought that human beings were creatures of flux and therefore limited in their understanding: they could not know the flux of which they were a part, or the nature of being. One

individual was unable to understand another individual. The examples of human consciousness which Montaigne observed around him, demonstrated these facts. He did not seek a solution so much in attitudinal change as inH the acceptance of human limitations and the clarification of expectations. His prescription for human happiness and wisdom was the understanding of one's exact duties to others and to oneself.

The Paradigm of 21. Complex Chaos

Potter's Historical Introduction to English Law describes the increasing chaos and corruption which developed in the legal system in the sixteenth century.

> The medieval requirement of the proper writ and proper process led to even greater complexity and technicality. This was enhanced because the number of actions increased and lawyers took fine distinctions. The rivalry of the courts encouraged further complications, and process steadily became archaic and cumbersome. By the seventeenth century these facts had made delays and hardships intolerable to honest suitors, because they had become weapons in the hands of the dishonest.(11)

The Paradigm of 22. Peaceful Co-existence and Freedom

During the Middle Ages, the Church had settled the nature of the domains of god and sometimes, accordingly, hindered scientific change. In the sixteenth century, the reformation movement of the protestants looked for a new rationale in Christianity. This climate of questioning created was a suitable intellectual environment for science. The counter-reformation began in Spain, where Moslems had been driven out by the Spanish Inquisition. In 1542, the Inquisition was introduced into Italy. Support for the Inquisition amounted to a revolt against the moral and intellectual freedom of renaissance Italy. The new scholars who posed freedom of and from religion, and tolerance of diversity became the martyrs of modern science. In 1572, when a new star appeared, Tycho Brahe (1546-1601), pointed out that it was in Aristotle's sphere of fixed stars where no change was supposed to occur. In the face of this new fact, the Aristotelian view of the cosmos, which had prevailed for about two thousand years, entered its first stage of dismantlement. The Church persecuted the new scholars, especially toward the close of the sixteenth century when protestantism had become

widespread. In Italy, Galileo (1564-1642) was condemned and forced to recant. Another Copernican supporter, Campanella (1568-1639) was imprisoned.

The struggle between Catholicism and the various Protestant movements dominated the sixteenth century. The Italian free thinker, Giordano Bruno (1548-1600), proposed that there should be peaceful co-existence of all religions, based upon mutual understanding and free debate. This view sought to establish a consciousness of the nature and potential of renaissance thinking as a social standard. It revived the Greek notion of freedom. However, in Italy, the tide had turned against renaissance attitudes. In 1600, Bruno, who also strongly supported Copernican astronomical theory, was burnt at the stake. These persecutions in Italy brought the Church into greater disrepute with the learned schholars of Europe and further delineated the Protestant movement.

The Paradigm of 23. Recursive Power : A Harmony

The divine right of kings claimed by the Stuart kings of England in the seventeenth century, was an attempt to preserve religious dominance and authoritarianism as a basis of English law at a time when the wave of modern science had begun to roll. The common law was entrenched by the time ofH Edward Coke (1552-1633), Chief Justice of the Common Pleas (1606-13) and Chief Justice of the King's Bench (1613-1616). He countered the divine right of kings with the ancient rule that the monarch was not above the law. This was so even if the authorised law-maker was some person or persons other than the monarch. The crown was still regarded as the source of the authority. Coke framed a closed circular system of rules: the source of power by which the rules were created was bound by the rules. The interface of power and order was thereby kept harmonious and as a result the order was strengthened by the power. Coke attempted to harmonize reason and authority in this way. He affirmed that the law of nature was administered in England. However, law-making power was, to some extent, unsettled. The courts and parliament were seeking dominance over the crown and parliament was seeking dominance over the courts. On Coke's view, if the source of human law-making power was constrained by existing laws, then presumably newly created laws could not be inconsistent with existing law. The nature of changes to the law was limited accordingly. This became one of the paradigms of the doctrine of precedent but it did not constrain

legislation. James 1 dismissed Coke in 1616 when he refused to allow the king to interfere with the conduct of the Case of Commendams.

The Paradigms of 24. Equity as Rules and Precedent
25. Hierarchical Rules, Patterns and Facts

Lord Ellesmere became Lord Chancellor in 1603. He held an Aristotelian view of equity. In the Earl of Oxford's Case he stated:

> The cause why there is a Chancery is, for that men's actions are so divers and infinite, that it is impossible to make any general law which may aptly meet with every particular act, and not fail in some circumstances.(12)

Good conscience, natural justice and reason were the guides for correcting the law and for providing for exceptional cases. This view of equity, as a qualification, was not a sound basis for the development of equitable rights and principles. It tended to produce a wilderness of instances without any guide as to how a case might be decided. In 1614, Sir Julius Caesar, a doctor of Roman Civil Law, was appointed Master of the Rolls, a deputy of the Chancellor. A royal decree in 1615 confirmed the jurisdiction of the Chancellor to hear suits which challenged judgements in law.

When Francis Bacon (1561-1626) became Chancellor some of the harmony between law and equity was restored. He was appointed in 1618, but only held the position until 1622 when he was impeached for bribery and lost office; on his own admissions he took customary bribes from litigants and he was convicted accordingly. As Lord Chancellor, Bacon was in a position to greatly influence the development of equity. He sought more predictable applications of law through principles of equity rather than the exceptional instances of the Aristotelian model. However, the Aristotelian form of equity was accommodated in the flexibility of the application of the rules of equity and common law. Wherever a rule required the court to consider all the circumstances of a case in order to determine which category or rule applied, there was an opportunity to consider the effect of any rule in a particular case. This suggests an explorative approach to the application of rules, as a method of achieving an equitable result in exceptional cases.

In providing a new framework for law, Bacon also set out a format for scientific theory. Just as the law could grow, case by case, founded on the facts of cases, with a hierarchy of principles or rules, interlocking as a theoretical system, so, according to Bacon, the body of scientific laws or knowledge might grow. In the application of established principles to new cases, refinements could be made if necessary by the introduction of a qualifying rule in the hierarchical complex of rules. Thus rules of equity could be incorporated in the theory of law, not just as exceptions, but as qualifying rules giving refinement to the rules of common law.

In his scientific works, he posed a means of discovering principles that would take account of all instances in which the principles might apply. His major work, The Advancement of Learning, suggested that induction by simple enumeration might be improved by reference to systematic empirical proof of the existence of the hypothetical principle. He sought to discover, through empirical patterns, the principles of the metaphysical structure and functioning of nature. He maintained that patterns which might be ascertained from observations, could establish laws in the first instance. By testing the extent of these laws in relation to each other, further layers of the metaphysical entity of nature, could be discovered. His methodological system, by its design would produce a theoretical system of knowledge, founded on, and interwoven with, empirical information.

The Paradigms of 26. Judicial Induction
27. Rhetorical Error

In Potter's Outlines of English Legal History, the inductive method in law is described succinctly.

> This process of reasoning step by step, which we may call "judicial logic," is the basis of our modern law of precedent and it is fundamental to all legal study in England. We now call it the "inductive method," the synthesis of a general principle from a study of all the reported cases where such a principle has in effect been applied, though the individual judges refrained from laying down any wide principle in each case.(13)

Bacon recognised the importance of arrangements of empirical information as a means of discovering the natural law. At the same time he

acknowledged that some human artifice in arranging information could produce error. He identified these techniques as the four idols and thereby explored the nature of rhetorical error; in this sense, Bacon contributed to the development of critical theory.

The four idols consisted of the idols of the tribe, or inherent human dispositions which produce distortions, the idols of the cave, or personal prejudices, the idols of the market place, or salesmanship distortions, and the idols of the theatre, or the underlying indoctrination of the established culture. These idols might be sources of error in establishing matters of knowledge, but they may be rational considerations in systems of practical reasoning, especially where the preservation of human diversity, individuality, or sociality is concerned.

The Paradigm of 28. Natural Law and Theoretical Necessity

The effect of Bacon's method was to further confine judges in their law-making function. It is pointed out in Potter's Outlines of English Legal History that in the middle ages, the law was regarded as reason but if there was no existing rule to remedy a wrong, the courts had recourse to the notion of the law of nature to find a rule that would be beneficial to society generally.(14) Furthermore if something was regarded as being in the interests of the common weal, then it would not be punished. The courts were curtailed in this judicial freedom by the requirements of a growing democracy. The judicial methodology developed by Bacon allowed the courts to continue their traditional practice within the defensible structures of theoretical necessity in the place of the catholic notion of natural law.

The Paradigm of 29. Speculation in the Hypothetical case: Obiter

The concept of hypothesis was not fully developed in Bacon's scientific theory. Hypothetical cases might be discussed in obiter dicta in order to explain the range of instances to which a rule might apply consistently. As in science, speculation indicated theoretical development consistent with existing legal theory. Law was fixed by theory, as was science. Customary rules of law were not posed as effective social order or effective social interaction, although distributive law was used to determine conflict resolution. Law

developed when rules of law evolved from other rules as required by new cases. However, the social structures implied in the existing legal theory might be unsuited to the developing social structures. Social development might not correspond to the consistent development allowed by the system of rules. Bacon's method did not allow the judiciary to adopt theoretical principles in pursuit of social engineering goals. The consideration of an hypothesis did not indicate the adoption of a goal, although there might be a suggestion of one, within the confines of existing legal theory. The appearance of legal experimentation was avoided; to allow any doubt as to the validity of the law was to question the authority of the law-maker. Law was to be obeyed, even if it might be wrong, until it was changed by recognised authorities and proceedures. The law was developed by posing legal or social requirements already implicit in law and by formulating further rules to effect these requirements. Authenticity of custom and the authority of precedent continued to direct the scope for judicial resolution of conflict. The changing nature of human conflict and methods suitable for its resolution, was not been fully by the judiciary. Even contemporary judicial perspectives of the complexities of twentieth century life, are constrained by the theoretical paradigm which is associated with Baconian scientific method. The resolution of similar disputes in a similar way and the maintenance of consistency between the principles of resolution of different sorts of conflicts, might be a requirement of justice but this uniformity may not be appropriate for all human conflict, given the individual characteristics of the litigants. A systematization of legal choice might provide a paradigm for expansion of legal choice which reflects, and provides for, actual social change. A choice system is inherently flexible; a rule system is not.

Bacon was concerned at the accumulation of legislation which had produced intricate cross-referencing and considerable uncertainty in many areas of the law. He proposed a codification which was commenced but not finalised. The codification was a response to the need for a new legal system which arose as the money economy of the new merchant classes eroded the feudal order, and as the religious changes demanded a new moral basis of law. The pleasure of renaissance learning had superseded the mystical earnestness of scholastic labours which strived to reconcile rationalism and the form of religious consciousness. In the explorations of the renaissance, rationalism became associated with

the concept of science as a secular pursuit. Bacon expressed the secular advantages of expanding scientific knowledge. He saw science as the key to human control over Nature. The growing merchant classes already appreciated this viewpoint.

The Paradigms of 30. Human Control and Chance
31. Random Relativity

Through this attitude, the responsibility for human survival was removed from the religious to the secular domain. Bacon saw great hopes for human control and fashioned a relationship between chance in the physical world and human will. He asserted that human will could control and offset chance. Implicit in this view is the idea that choice, through the exercise of conscious human selection, can control randomness or chance. The paradox of Baconian philosophy was that it both limited choice to the induction-deduction paradigm, and maintained the vast potential of choice. Bacon recommended the study of human life in order to determine the matters which shape and control mental faculties. He saw a wide range of matters which affected human thinking: the powers and energy of custom, exercise, habit, education, example, imitation, emulation, company, friendship, praise, reproof, exhortation, reputation, laws, books, and studies.

Bacon maintained the Aristotelian view of the dynamic world as a continuum, punctuated by efficient causes and terminating in final causes. Scientific investigation could make these teleological truths useful to human society. In the preface of his Maximes of the Common Lawes published in 1630, Bacon admitted that there was a lack of order in his own work. He suggested that the random order he had used might promote new perspectives of the relationship between the ideas. It was probably this incoherence which prevented him from seeing the paradoxes in his disconnected ideas.

The interest of Bacon in science was considerable. He admired William Gilbert whose work on magnetism clearly illustrated the inductive method. William Harvey, who discovered the circulation of blood, was Bacon's doctor. After he left the Bench in disgrace, Bacon continued his scientific pursuits and died as a result of a chill caught while experimenting with the preservation of meat by freezing. Despite the

disgrace which ended Bacon's political career, his views had an extensive influence in the development of both law and science.

Even though rules of equity were developed, and the doctrine of precedent was adopted by Chancery, equity remained a fragmented supplement to the common law. It was random, and relative to the system of common law rules. There was no reconciliation of the Aristotelian notion of equity as exception to rules and the medieval standards of conscionable rules and conscionable application of rules. These different aspects of equity can still be found in the law. Potter's Outlines of English Law put the picture simply: " It is a collection of topics and not a system."(15) The legislature did not advance the jurisprudence of equity; rather, it advanced the chaos.

The Paradigms of 32. Systematized Reports
33. Legal Categories and Classifications

In the seventeenth century, printing of legal literature was common, but many of the printed reports were not of high quality. After his dismissal, Coke continued to make a contribution to the law. The reports of Coke, published between 1600 and 1659 provided a model for future jurists. He followed the practice of Plowden by adding his own comments and references where appropriate in the report. Coke's reports amounted to a glossing of cases. George Croke's (d.1641) reports, published by Harbottle Grimstone from 1657 to 1661 are short, concise, comprehensive and typify the seventeenth century reports. In the seventeenth century, Chancery reporting commenced although this was initially irregular. During this period, the reports were written in Law French. The last of the Law French reports, the Lutwyche reports was published in 1704. Weeramantry summarizes the history of law reporting following the Year Books, as follows:

> Thereafter a series of private reporters brought out reports under their own names. Some of these were of high authority, for example Dyer's Reports, Coke's Reports, Vaughan's Reports. Others were of middling authority, such as Lord Raymond, Fortescue and Comyns, while some few were so unreliable, for example Barnardiston, Bunbury, Atkyns, that some judges even forbad their citation in court. In 1704, Holt C.J. lamented the existence of 'these scrambling reports'. Later, law reporting became more reliable and by the eighteenth century reports appeared which have been described as being like pure gold after so

> much dross. From the end of the eighteenth century until 1865, well over 300 appeared of a high average standard and in 1865 there commenced the semi-official series of the Incorporated Council of Law Reporting, instigated by the legal profession. Today there are both official and unofficial reports in nearly every common law jurisdiction, and they are of an extremely high standard of reliability.(16)

The encyclopaedic work of English jurists continued with Coke's Institutes, the first of which was Coke Upon Littleton published in 1628. This amounted to a gloss or commentary on Littleton's Tenures incorporating all relevant information from the Year Books, statutes and earlier texts as well as an extension of topics according to Coke's own views. It was so comprehensive that there was no longer a need to refer to the Year Books. In Potter's Outlines of English Legal History it is suggested that this work instigated the decline of knowledge of the Year Books.(17) The remaining three Institutes were published posthumously in 1641. The Second Institute dealt with Magna Carta and major legislation, the Third with criminal law and the Fourth with the jurisdiction of the courts. Coke also compiled a Book of Entries which was used in the seventeenth century.

Other seventeenth century texts, such as Nomotexnia (1613) and Law, or a Discourse thereof (1617) by Henry Finch, Maximes of the Law (1641) by William Noy, and Marrow of the Law (1651) by Serjeant Sheppard, were little more than abridgments. Finch adopted the theoretical framework posed by Bacon. Other abridgments appeared in the seventeenth century: Sheppard's Grand Abridgment (1675), W. Hughes' Grand Abridgement of the Law (1660-1663) and Rolle's Abridgment des Plusieurs Cases (1668). Rolle introduced sub-headings and thereby increased the orderliness and analysis of the topics. The abridgments provided categories and classifications as structures of law. Baker summarizes their effect as follows:

> They were the channels through which the confused mass of legal ideas in the reports were systematised, and the authorities on particular areas of law brought together for comparison.(18)

These texts established the form of specialist legal encyclopaedias which have continued to expand to this day. The influence of Bacon's theoretical structures can be seen in the development of rules from precedent cases, which are reflected and promoted in the legalist

encyclopaedias. Development of pleading requirements and jury trials produced a conception of law as a body of rules that were applied to the facts of a case. The texts were still largely concerned with procedure. However, a knowledge of substantive law was required to frame pleadings. Thus procedural references led back to more substantive juristic works.

The Paradigm of 34. Legislative Hermeneutics

By the seventeenth century, the Ordinance could not be used by the Crown to make new law. The Star Chamber was abolished in 1641. In the Stuart period, when the monarchy favoured a return to Catholic Christianity, parliament rose in Civil War to displace the crown as the seat of government. During the period of the Long Parliament and the Commonwealth (1649-53) there was a brief attempt to amalgamate law and equity as one system of law to be administered in one court. The judiciary ceased to question the dominance of legislation over case law and relinquished or disguised its law-making functions. Even the Chancellor sought to develop theoretical necessity in equity. From the revolution of 1648, led by Oliver Cromwell, until the restoration of the Stuart king in 1660, there was a decline of the rationalist view of legislation and of the requirement that legislation be equitable. The rule in Heydon's Case (1584), known as the mischief rule, still enabled the courts to preserve some equity. However, there was no longer a presumption that only reasonable statutes were valid law. The doctrine of 'equity of a statute' was restricted to interpretation. The requirement for reasonableness was maintained in the rules of construction so that the judges would look for a reasonable interpretetion. Judges were required to find the meaning of the statute from the words used and not their own view of the legislative intent. The literal rule became the dominant approach. The mischief rule survived as a remnant of medieval statutory interpretation.

Parliament took up some of the tasks of preserving equity in the system of law but its rules continued to attract the problem of exceptional cases which Aristotle had posed as the basis of equity. Equity, in the sense of exceptions, became a matter of protecting minorities and eccentricities. In turn, minorities and eccentricities became a measure of freedom, and freedom a measure of equity.

In 1650, it was decided that members of the jury who wished to rely on their own knowledge should be sworn as witnesses.(19) Pleading became more complex as it was necessary to resolve what facts were to be decided by the jury. As the judicial view of legislation changed, the nature of legislative law became different from the nature of the common law. Statutes were applied according to the letter of the law. On the other hand, the common law was a matter of understanding the rules rather than a strict interpretation of a judicial statement of a ratio. Baker explains this dichotomy.

> Enacted law is subject to the severe limitation that it reduces legal rules into particular words which have to be interpreted, whereas the unwritten law is understood and developed from case to case according to legal reasoning. The approach of the judiciary to the sovereign commands of the legislature has become so different from their approach to the common law that interpretation is often represented as a merely mechanical process.(20)

In the seventeenth century, theoretical consistency and the doctrine of precedent provided the certainty and objectivity which justice required, in the application of judicial law; but, due to a lack of understanding of judicial law in the legislative process, legislation was generally not devised by reference to the stucture and content of the judicial system of rules.

The Paradigm of 35. Equity and Reason

Just as in the times of civil war of the fifteenth century, the workload of Chancery grew enormously in the seventeenth century. However, Chancery procedure and pleadings became extremely complex and costly. The backlog of cases awaiting trial became enormous. The Chancery provisions for equitable relief were defeated by the bureaucracy of the court which supported the corruption of its officials.

Initially, the Chancellor was concerned with the notion of conscience, rather than rules, as a basis for judgements. This produced some amount of uncertainty. A more objective standard was thought desirable. Bacon had developed the logical systematization of the rules of law and the method of deriving rules from cases. This methodology was adopted in the development of equity in the seventeenth and eighteenth centuries. As the common law settled into a body of principles, so Chancellors

relied less on the Roman notion of natural justice and began to develop a system of rules of equity which complemented the rules of common law. Lord Nottingham, who was Chancellor from 1673 to 1682 introduced the practice of always giving reasons for a decision. This established a basis for developing equitable principles and precedents. Thereafter, Chancellors gave reasons for their decisions. The right of appeal from Chancery to the House of Lords was introduced. In the seventeenth century, the doctrine of precedent was adopted by the Court of Chancery as well as the common law courts. This gave equity greater certainty but less discretion and flexibility. It further limited the scope for judicial law-making and constituted an acknowledgement of the supremacy of the legislature. Equity became a body of rules extending and qualifying the common law. The dictates of conscience were confined to areas where equity had not yet established a rule. Extensions to the existing body of rules were made as a matter of rational consistency or logical necessity. Chancery cases were reported and the doctrine of precedent was adopted in the equity jurisdiction. Some flexibility and discretion was retained in the application of the rules of equity, but the settling of rules began to limit the effectiveness of the Court of Chancery to deal with those exceptional cases which Aristotle posed as the domain of equity. From the seventeenth century, Chancellors ceased to be innovative. Equity became as rigid as the common law and the legislature assumed the task of ensuring equity in the law.

By the end of the Stuart period, monarchical power had been diminished. The right of the crown to hold a court no longer entailed the right to sit as a judge. The crown was a symbol of law-making power, but the personal role of the monarch was that of a figurehead and advisor. Parliament became the dominant authority.

The Paradigms of
36. Association and Purpose
37. The Collective Personality of the State

By the middle of the seventeenth century, the medieval world had disintegrated and a firm basis had been laid for the development of modern science. Further philosophical basis for the new science was laid by Thomas Hobbes (1588-1679) in England and the Frenchman Rene Descartes (1596-1650) who spent much of his life in Holland where he was less open to religious persecution for his works. At the same time, in France, Pierre Gassendi (1592-1655), a priest, revived the atomic theory

as set out by Epicurus and Lucretius. His definition of atoms was adopted by Newton.

The major work of Hobbes, The Leviathan, published in 1651, treats the state of human society as a collective personality, named Leviathan. The personality is held together by the covenant between its members to vest law-making and law enforcement power in the government chosen by the majority. The unity of this Leviathan is a commonwealth. The Leviathan is a metaphysical explanation or rationale for social cohesion. It is derived from Hobbes' nominalistic and deterministic view of the facts about human life. His extensive study of human characteristics is the earliest English work in the science of psychology. He maintained that reason is not innate and had to be developed by an individual. The order in which thoughts occur is determined by laws of human thinking. Such laws include the association of ideas and the purpose in the thinking. He established a psychological approach to law. Hobbes contributed to the development of British empiricism and his works were influential both in Europe where he travelled and lived for many years and in England, despite political and religious opposition.

The Paradigms of
38. Systemic Infinity
39. Cogito Ergo Sum
40. Relative Certainty

Descartes was more concerned to establish a new systemic picture to replace the overturned Aristotelian view of the cosmos. In the course of doing this he answered the question posed by Socrates: what can people know ? His answer instigated a form of modern philosophy which led to the separation of science from both philosophy and from the subjective lifestyles posed by twentieth century existentialism.

In his work, La Monde, Descartes posed the infinity of the universe. At the same time he maintained that the quantity of motion in this infinite expanse, was constant. However, the direction of motion could be controlled to some extent by the exercise of human will. He invented co-ordinate geometry, i.e. the determination of the position of a point in a plane by the measurement of its distance from two fixed lines in the plane. This permitted the algebraic expression of relative matters of geometry, and introduced algebraic method into the study of physics.

where the two lines constituted axes, the point could indicate the nature of a graph. Curved lines could thus be expressed in algebraic terms. Descartes also gave form and motion to the Aristotelian notion of ether. He posed the idea of a vortex in space, like a whirlwind, carrying the celestial bodies in their orbits. Within this vortex of the universe, he conceived the possibility of a multitude of sub-vortices, of different sizes, arranged at various angles to each other, each carrying material particles. In his system, were the structures and perspectives of relativity which have been refined in modern physics. In establishing his ideas, Descartes used the analytic method whereby the state of affairs constituting the solution to a problem, is stated, and then examined in relation to the problem. He developed the scientific method of speculation through the use of hypotheses: a hypothesis had to be consistent with fundamental laws, and in addition, contain some new principle which would permit the deduction of statements about observable phenomena. An adjustment of hypotheses might remove inconsistencies between the laws of nature and observed phenomena. This paradigm has proved useful to the judiciary who must deal with the principles of human survival in a hypothetical way.

Apart from his work in mathematics and physics, Descartes formulated a proposition which might be regarded as the ultimate limits of skepticism and cynicism. Like Bacon, he appreciated the worth of experimentation and recognised the utility and potential benefit for humankind of the knowledge which could be thereby discovered. He established a basis from which creative thought might proceed. This basis is known as the Cartesian cogito: I think therefore I am. Scepticism recognises the doubtfulness of knowledge and reason. Descartes doubted everything and then distinguished degrees of doubt. The premise which he maintained as a priori and the least doubtful was the assertion of cogito ergo sum. Thus, by a method of doubt he built up a system of thought, characterised by relative certainty.

Descartes' system of thought was both relatavistic and deterministic. The duality which he conceived in his mathematical co-ordinates reflected these characteristics. His method of reasoning from cogito ergo sum, also entailed a duality. Mind and body interacted, as in the exercise of will which could control the physical world.

The Paradigms of 41. Doubt and Probability

It is interesting to note that the standards of proof which were established in the English courts, were a compromise between the doubt of scepticism and the certainty of empirical investigation.
In the criminal court, the burden of proof was 'beyond a reasonable doubt'; in the civil jurisdiction, the determination of the facts is required 'on the balance of probabilities'. The rules of evidence ensure that the only admissable evidence is that of witnesses who can testify to facts from their own observations and experience. Absolute truth, as a standard in law, was modified by the advances of science.

The Paradigms of 42. Self-preservation
43. Voluntary Systemic Restraint

Bacon and Descartes had avoided the problems of ethics in their pursuit of scientific methodology and the establishment of the usefulness and benefits of knowledge. Spinoza (1632-77) who was born a Jew but was excommunicated from this religion, and also rejected by Christianity, developed a metaphysical system from the materialistic and deterministic framework which had been established by Bacon and Descartes. Like Descartes, Spinoza lived in Holland which was, in the seventeenth century, the country in Europe which offered the greatest tolerance of free thought and speculation. The influence of the Dutchman, Erasmus, the renaissance man of letters, in the early part of the sixteenth century may have founded this cultural development in Holland.

Spinoza had an interest in science and wrote a treatise on the rainbow. His major work, the Ethics, was published posthumously. It is concerned largely with the psychology of human passions upon which ethical constraints are built. This human condition he regarded as part of an interdependent whole. Like Descartes, there is a sort of duality in Spinoza's thinking as he deals, on the one hand with self preservation, and on the other hand with freedom. He conceives freedom as personal autonomy limited by the external matters which can not be controlled. Russell provides an interesting summary of some of Spinoza's philosophy:

> Self-preservation is the fundamental motive of the passions, according to Spinoza; but self-preservation alters its character when we realize that what is real and positive in us is what unites

> us to the whole, and not what preserves the appearance of separateness.(21)

And further:

> In so far as a man is an unwilling part of a larger whole, he is in bondage; but insofar as, through the understanding, he has grasped the sole reality of the whole, he is free.(22)

Through his systemic or monistic concept of the whole, Spinoza affirms the value of eternal constancy as an ethical orientation. The passions which conflict with this deterministic eternal constancy should be foregone in favour of an objective view consistent with it. Spinoza explored the intellectual methods of controlling those passions that permit external factors to control the individual. His view of social relations would therefore appear to recommend rational bonding rather than any emotional bonding which would displace the individual autonomy. This description of the desirable ethical personality provided a model for the school of modern scientists. The problems of ethics and personalities suited to a technological lifestyle and society, have not, in modern times been solved by the philosophy of Spinoza. Despite his religious alienation, Spinoza's philosophy proved influential in the realms of learning. The emotional repression which he advocated became a subject of concern in modern psychology.

The Paradigm of 44. The Courts of Science

From the time of the renaissance, with the growth of cities, scholars began to congregate, independently of the Church, to exchange information, discuss and debate their ideas and share in the development of scientific thought. With the increasing diversity of religion, an educated laity was needed to replace the clergy in the tasks of state administration. This need for secular education, combined with a growing empiricism in the pursuit of science, provided the basis of modern learning. Science became secular and the secular became materialistic. Human goals replaced godly goals in learning. With the Restoration of the monarchy in 1660, England enjoyed sufficient freedom for modern science to flourish. The last vestiges of feudalism were removed with the 1660 Act for the Abolition of Military Tenures. Through royal patronage, the informal gatherings of scholars were given societal status. The Royal Society of London for Improving Natural

Knowledge which was founded in 1660, was given its first royal charter in 1662. The French Academie Royale des Sciences was founded in 1666.

The industrial revolution began in the seventeenth century and became well established in the eighteenth century. Wealth had shifted to the merchants during the renaissance. Further wealth shifted with industrialisation to the manufacturers. There was urban development with the introduction of factories. Science became associated with practical profit-making. Whereas the new merchant classes of the sixteenth century, in England, had supported the monarchy, the capitalists of the seventeenth century sought to assume political power as well as economic power. The merchants were itinerant, whereas the industrialists, like the feudal lords, had a stable holding.

In 1688, there was a constitutional crisis in England which amounted to the English Revolution. James 11 was a papist and a threat to protestantism. His daughter, Mary had married the protestant Prince William of Orange and they lived in Holland. Prince William was a grandson of Charles 1. Mary was heir to the English throne until 1688 when a son was born to James 11. This intensified the English fear of papism. Parliament invited William to come to England with his Dutch fleet to rid England of the papist problem. William landed in Devon and marched to London. James 11 fled to France and gave up the throne. Parliament was summoned by William as a Convention. The Bill of Rights was drawn up and William and Mary were declared joint king and queen. This established a constitutional rule which effectively displaced the monarchy in favour of parliament as the law-making authority. The new monarchs became the regal figureheads of the English legal system. The Prince became William 111 and continued to rule after Mary's death until his death in 1702. These political changes further promoted an intellectual environment in which science could develop.

The Royal Society assisted in the establishment and maintenance of a stable society with religious diversity. A new tolerance accompanied the objective, secular orientation of the prestigious movement of science. The scientific societies acted as courts for the evaluation of new ideas and discoveries. Acceptance of ideas in this domain was a form of official recognition or admission to the realms of scientific authority. The expansion of science provided a sound basis for the development of the social sciences which were to contribute to the

motivations of the American Revolution in 1776 and the French Revolution in 1789. The English Revolution of 1688 was followed by the period known as the enlightenment or the age of reason.

The Paradigms of
45. Scientific Natural Law
46. Joint and Several Laws

European jurists began the task of examining the ancient notion of natural law employed in the legal system, in the light of the new science of natural law. In Germany, the jurist Pufendorf considered the uniformity of human laws as evidence of natural laws. This was an empirical study of posiitive law and established a new dimension of legal science. His Elementa Juris Universalis was published in 1660 and followed in 1672 by his De Iure Naturae et Gentium. A similar approach was adopted in England by Cumberland whose work, De Legibus Naturae Disquisitio Philosophica, was published in 1672.

During the middle ages, the tendency had been for the Catholic Church to produce a synthesis of religious dogma, law and custom through a collective wisdom. Following the humanism of the renaissance, the period of the enlightenment restored individualism, and a revision of the basis for uniform laws was required. Individual differences and similarities were on the knowledge agenda. The law-making power of the national legislature provided the collective wisdom of an expanding democracy, while the new toleration increased the complexity of its decision processes. With the passing of the Toleration Act 1689 parliament set the legal system the task of balancing freedom and uniformity. The problems of achieving this balance, provided an impetus for the further development of the human sciences.

Paradigms of
47. Experience
48. Perception and Cognition

John Locke (1632-1704), the English empiricist, made a major contribution to this new age of reason. In the year following the English Revolution, his A Letter Concerning Toleration (1689), was published. This was followed by the publication of his, Essay Concerning Human Understanding (1690) and his Second Treatise of Civil Government (1690), which sets out a social contract theory. Locke

brought a systemic harmony to the intellectual faculties. Russell describes the essence of his empiricism as follows:

> Reason, as Locke uses the term, consists of two parts: first, an inquiry as to what things we know with certainty; second, an investigation of propositions which it is wise to accept in practice, although they have only probability and not certainty in their favour. 'The grounds of probability,' he says,'are two: conformity with our own experience, or the testimony of others' experience.'(23)

The structure of knowledge framed by Locke consisted of ideas which have come from sense perception and ideas which have been devised by cognitive processes. This provided a basis for modern psychology theory and artificial intelligence design. Perception is regarded as a response to external stimuli. Ideas are formed in response to perceived stimuli. These ideas may be regarded as the internal stimuli of cognition. They are a form of consciousness about external stimuli. This form of consciousness is cognitive stimuli. An operational consciousness may follow as cognitive processing; ideas may be processed. Cognitive processing consists of a series of cognitive stimuli and responses, in cognition chains, like synapse networks. Legal reasoning occurs in this way. External existences may be examined through cognitive processing. New information or ideas may be produced by sequences of perception and cognition, and by arrangement and rearrangement of the linking of ideas. Through cognitive processes, a person can examine the consistency or inconsistency of ideas, and the nature of their relationship.

The Paradigm of 49. Tolerance

In dealing with Lockes' philosophy, Russell points out that there is no reason to suppose that a self-consistent system contains more truths than some other modus operandi. However, truth is only one aspect of a course toward goal-attainment, and Locke was concerned with achieving toleration of different views of what might be the truth where there is no certainty. He saw the relativity of temporary truth. Until an absolute truth is available, various forms of truth may be tenable, although some forms may be more tenable than others. Russell also assumes that paradoxes are necessarily an indication of falsity,

whereas, with the addition of appropriate dimensions, paradoxical matters may be rendered coherent, either true or consistent with truth.

The Paradigm of 50. Stabilization of Uncertainty and Potentiality

Socrates had posed the problem of what people can know. Plato claimed that the true nature of everything was beyond human experience. Aristotle explored the extent to which truth was accessible through cognitive processing of experience. The cynics saw a licence in the uncertainty, while the Stoics bore the uncertainty without licence. The mystical philosophers of the early Christian period searched for a way to access the least accessible entity in a Platonic cosmos, God, who, by definition was an ideal rather than an earthly entity. The scholastics began the return to earthly perspectives. Nominalism emerged as a minority view which the majority attempted to suppress. From a nominalist perspective, religious faith was distinguished from matters of knowledge. The investigations of the human intellect, which had been diverted into the creative faith of Christianity, was restored to science. Nominalism provided the bridge from faith to materialism. Locke abandoned the Platonic premise in favour of a pragmatic human reality. A synthesis of barabarian reality and classical philosophy was then forged as modern science. The philosophy which Locke developed within his framework of knowledge, stabilized uncertainties and recognized that uncertainties were also potentialities, subjects for exploration.

The Paradigms of 51. Uniform Happiness
52. Freedom as Happiness
53. The Science of Morality
54. The Science of Happiness

Locke maintained that the pursuit of happiness was the basis of freedom. Happiness was to be determined by theological ontology and morality. Insofar as people adopted this common position, private and public interests should coincide. Since it was prudent to adopt this position, prudence was thought to be the essence of virtue. This early liberalism was concerned to salvage sociality through the bonds of religion. It is suggested by Locke that the validity of morality could be demonstration if an appropriate methodology were devised. The examination of duties and rules of behaviour might constitute the science of morality.

The Paradigms of

55. Natural Unhappiness
56. Natural Freedom
57. Equality in Liberty
58. Natural Rights
59. Society's Protection Contract
60. Division of Power

To establish his political philosophy of liberalism, Locke had recourse to an anarchistic view of human beings in the state of nature. Hobbes, who was an atheist, perceived the natural state of human life as 'nasty, brutish and short'.(24) Locke on the other hand was not an atheist and he may have been influenced by the biblical ontology of the first natural state of people, namely the myth of the garden of Eden. He described the natural human state as people living together according to reason without a common government, making their own judgements about each other and being free to order their own actions and property within the bounds of the law of nature. Liberty and equality are therefore primordial. Locke then poses protection of property as the reason for government. Laws which governments enforce should achieve this protection and otherwise maintain the natural rights which people had in their state of freedom and equality. The protection of property provided a reason for obeying law. Presumably living according to reason without a common government would produce threats to property. The government is a party to the social contract whereby law-making power was surrendered collectively in return for individual protection. In order to prevent any abuse of power by government, the legislature and the executive (the Crown) should be kept separate to balance, and exercise checks on, each other.

The Paradigm of

61. Fictions as Substantive Ideals

To pose an ideal as a goal was to invite Platonic uncertainty as the basis for action. Locke placed his social ideals and goals in the context of lost traditions and natural states that should be restored and given clear definition in law. These natural states and 'lost' traditions were fictitious, but in the English legal system, fictions were acceptable. However, Locke's fictions were not procedural; they were substantive and ethical. Locke's philosophy provided some of the basis for the development of a human welfare equity.

The Paradigm of 62. Reconciliation of Minority and Majority Interests

The adoption of religious tolerance and diversity introduced a form of social organisation which offered greater personal freedom but also required a more complex co-ordination of personal activities to avoid social conflict. The courts responded by seeking principles of law which were common to the majority of people and, wherever possible, consistent with minority interests. This led to the development of institutions such as banks and insurance organisations which provided new structures for social co-ordination. The Bank of England was established in 1694. Locke assisted in the establishment of the Council of Trade (later the Board of Trade) in 1696 with a view to applying new mathematical methods to business.

The Paradigms of 63. Mechanism
64. Forces of Attraction and Repulsion

In the year that Galileo died, Isaac Newton (1642-1727) was born. He studied at Cambridge University where he became Professor of Mathematics in 1669. The work of Galileo was continued by Newton. Amongst his friends were Locke and the astronomer, Halley, who edited and paid for the publication of Newton's major work, Philosophiae Naturalis Principia Mathematica (1687). Newton was also influenced by a religious group of Platonists led by Henry More. The ontology of gravity, which was established by Newton scientifically, introduced mechanism as a prevailing paradigm in science. However, his work also had major methodological significance: he developed the axiomatic method. Axioms take the place of a priori propositions. They can not be deduced from any other proposition in the axiomatic system. Theorems are propositions which are deduced from axioms. Concepts in the axioms are defined and remain constant in the theorems. Through the axiomatic method, Newton applied the metaphysical abstractions of mathematics to metaphysical abstractions of the physical world. He claimed to have eliminated hypothetical reasoning from his studies. However, his axiomatic system could be used to make successful predictions about the behaviour of matter and to achieve some consequent control. The axiomatic system was distinguished from its empirical application. He devised a method of measuring the forces of nature as attraction and repulsion, and thereby converted theoretical principles of mechanics

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into quantitative calculations capable of verification by observation. He called his mathematical calculus, the method of fluxions, which dealt with the even flow of a continuous function. It was suggested by Newton that further investigation of his theory might proceed by examining the forces by which the particles of bodies are impelled to adhere to, or are repelled by, each other. Expansion of the axiomatic system proceeded by posing questions about the existing propositions. Further axioms and theorems could be added, but, if the original reeasoning was correct, none could be taken away. Since the axiomatic system excluded hypotheses, Newton acknowledged that he could not offer an explanation of the cause of the forces which he measured.

The Paradigms of 65. Monads
66. Calculating Machines

Gottfried Wilhelm Leibniz (1646-1716), the German philosopher, who studied law, claimed to have invented the method of fluxions, the infinitesimal calculus, as he published it a few years before Newton. Leibniz developed the Platonic model of forms further in a metaphysic of monads, He described monads as indiscernible units of substance which are infinite in number. The theory of monads is set out in The Monadology, which was published in 1714. Russell describes the monads of Leibniz as follows:

> Leibniz held that every monad mirrors the universe, not because the universe affects it, but because God has given it a nature which spontaneously produces this result. This is a 'pre-established harmony' between the changes in one monad and those in another, which produces the semblance of interaction. ...
>
> Monads form a hierarchy, in which some are superior to others in the clearness and distinctness with which they mirror the universe. ...(25)
>
> Each monad sees the world in a certain perspective peculiar to itself; in this sense we can speak, somewhat loosely, of the monad as having a spatial position. ...(26)
>
> What I, for my part, think best in his theory of monads is his two kinds of space, one subjective, in the perceptions of each monad, and one objective, consisting of the assemblage of points of view of the various monads. This, I believe, is still useful in relating

perception to physics.(27)

Leibniz maintained that each monad, as a unique independent substance, located in the infinite gradation of monads, contains all of its own attributes, including its functioning, its changes, and its life history. According to its attributes, each monad behaves mechanistically to fulfil the pre-established harmony of the supernatural teleology. The monads agree on the mirroring of the universe, and the results are the appearances and experiences of the physical world. This view could be regarded as a precursor of the contemporary notion of the information and programming contained in the genetic material of DNA.

Leibniz derived his ontology from the nature of logic. He sought some basis from which all thinking might become a matter of calculation which would simplify the resolution of philosophical conflict. In his creative work he formulated the logical abstractions of monadology as the essence of all existence. Monads incorporated abstractions, generalizations and instances, all of which were subject to logical operations, and suitable for mechanistic processing. He invented a symbolic mathematical logic, and suggested that mathematics could be played as a game. On the basis of these mathematical symbols, he devised a calculating machine which is sometimes regarded as the first computer. Also, he saw a synthesis in mechanism and teleology: natural processes achieve natural ends.

Leibniz claimed that all true propositions are analytic: the subject contains the predicate. Insofar as the subject is mutually exclusive of other subjects, it is a substance. Each monad is a substance and no two monads are alike. Monads may have common attributes. The metaphysical correspondence of monads is the essence of their relativity: they do not interact, but they are related by virtue of their common attributes. Common attributes may produce the appearance of interaction. Monads may be understood to some extent through the experience of their force, through perception or through apperception. They are eternal, but change from time to time according to their attributes which determine change. Leibniz denied the reality of empty space: monads exist in a spatial dimension of their own which is three dimensional. They fill this space completely and are arranged according to the positions that reflect the universe.

The Paradigm of 67. Sufficient Reason

A distinction between truth based on reason or logic, and truth based on facts or experience, was recognised by Leibniz. He relied upon the notion of sufficient reason, rather than logical necessity, as a justification for any state of affairs or human behaviour. Sufficient reason might incline a person to act in a certain way. Choices could be made for sufficient reason, rather than as a matter of logical necessity. Within the scope of logical possibility, there may be a considerable range of choices, from which one might be selected for sufficient reason.

The Paradigms of 68. Essence
69. Compossibles

Another distinction was drawn by Leibniz between essence and existence. Essence might be an abstract, such as agreement, the true meaning of which could be determined hypothetically without reference to its existence. The essence or definition of any finite substance does not imply its existence. Thus all possible essences could be considered in any way. Matters of essence can be known independently of experience or existence. Propositions concerning essence, rather than existence, are always either true or false. Leibniz maintained that every particular thing, and the whole universe, has a contingent existence: it would be logically possible for it not to exist. All propositions asserting existence are contingent, not necessary. There is no a priori reason why one thing should exist rather than another. However, contingent truths must be founded on necessary truths. Not all possibles can exist simultaneously. Leibniz assumed that possible existences preferred to exist rather than not exist. He suggested that whatever might exist, struggles to exist. However only compossibles can exist simultaneously, that is, things which can co-exist. Compossibles combine and the largest group exists. Leibniz maintained that things which exist are those things which are compatible with the most things. Since logic can determine the largest group of compossibles, logic may decide what should exist as the actual world. This implies that logic processes occur in a realm where hypothetical combinatorial explosions are managed. Leibniz also maintained that there are an infinite number of possible worlds, that is, worlds which do not contradict the laws of logic.

Like Plato, Leibniz does not explain how his own philosophy can be true in the context of monadology. Russell explains a paradox in the substance-based theory.

> The difficulty, of course, is one that besets the whole monadology: if the monads never interact, how does any one of them know that there are any others ? What seems like mirroring the universe may be merely a dream.(28)

Leibniz uses the paradigm of logic to construct a metaphysic. Consequently, the nature of syntax determines the nature of his real world. His methodology was to use language to discover more than is apparent from experience. However, without experiential verification, such a metaphysic can only be hypothetical. Logical discoveries do not necessarily have real counterparts.

The Paradigm of 70. Empirical Determination of Human Law

During the Enlightenment, scientists were concerned to delineate the laws of nature which were the basis of human laws, and the laws of nature which were matters of the physical sciences. Natural law, as the basis of human law, was more closely examined by reference to the laws common to all nations, a form of international law. Natural law had for a long time been bound up with religion as the dictates of god. An empirical study of what God had done could reveal the dictates of God, scientifically. Leibniz contributed to these studies in his works, Observationes de Principio Juris, Nova Methodus discendae docendaeque Jurisprudentiae, and Codex Juris Gentium (1696).

The Paradigms of 71. Social Physics
72. Social Evolution
73. Human Motivation

In France, Nicholas Malebranche (1638-1715) recognised that human society and knowledge was limited by ideas. Inspired by Newtonian mechanics, he sought to discover a social physics. The Italian philosopher, Giambattista Vico (1668-1744) explored the development of civilizations in his philosophy of history. In England the philosopher Anthony Ashley Cooper, Third Earl of Shaftesbury (1671-1713) suggested that altruistic feelings and utilitarian purposes provided natural senses of right and wrong.

The Paradigms of 74. Pleas in the Alternative
75. A Choice of Pleas

In 1705, an Act of Parliament permitted several special pleas in the alternative to be raised by a litigant with the leave of the court.(29) This introduced a new dimension of relativity into the procedural aspect of law as it might bear on substantive matters. There was a recognition of the different matters which might jointly or severally constitute a defence where the law was settled or where there might also be issues of law. However, the requirements remained that at the conclusion of the case there should be one version of the material facts only.

Matthew Hale (1609-1676) wrote two works which were published posthumously. His Pleas of the Crown, published in 1730, became an authoritative text on criminal law. During the seventeenth century, while he was Chief Justice, he supported the trials of witches. In his History of the Common Law, which is incomplete, he undertook an analysis of the rules of law.

The Paradigm of 76. Right and Moral

In 1705, the major work of the German jurist, Christian Thomasius (1655-1728), Fundamenta juris naturae et gentium ex sensu communi deducta, drew the distinction between the Doctrine of Right and ethics. He recognised that ethical compromises became necessary in practice. Further treatment of the limitations of the idea of the laws of nature in relation to natural laws was carried out in the subsequent works of Gerhard, Delineatio juris naturalis (1712), Gundling, Ius Naturae et Gentium, Koehler, Exercitationes (1728) and Achenwall, Prolegomena Juris Naturalis, and Jus Naturae (1781).

The Paradigm of 77. Scientific Precision

Official and judicial records were kept in Latin until 1731, save for the period of Cromwell's Protectorate (1653-1660) when English was used. Until about the same time, lawyers continued to keep their private notes in Law French. The standard of meticulousness required for the written record might indicate that there was precision to exclude error in the

judicial process comparable to scientific standards. It could indicate simply that the legal profession wished to preserve itself from lay criticism by the non-accessibility of its information. The mystique and awe, perhaps even mild hypnosis, induced by perfect ritual, might also have been regarded as essential to the preservation of power over and coercion of the subjects who were controlled by the system. The precision of forms was not a scientific methodology that ensured the resolution of conflict in a particular case; rather it might pertain to the structure of archaic social control or the aberration of scientific methodology.

The Paradigms of 78. The Reasonable Person
79. A Full Report

With the growth of rationalism from the seventeenth century, the 'reasonable' person test was developed to achieve Aristotelian equity. The reasonable person would have regard to all the relevant factors as they might be determined and evaluated rationally.

In the eighteenth century, reports such as the Raymond reports and the Burrows reports were more concerned to reproduce judgements in full. By 1826, further glossing of Coke amounted to an edition which went beyond the subject matter of the cases.(30) Other reports such as Dyer's reports and Saunders reports were glossed in succeeding editions. The practice of personal reports resulted in variations and inconsistencies between reporters. Some courts did not attract reporters at all. From 1700 to 1770 Common Pleas cases were not reported regularly.

In about the middle of the eighteenth century, the modern form of report appeared. Burrow's Reports (1756-72) contained a headnote, the facts of the case, the arguments of counsel, and the judgment of the court containing the reasons for the decision. Toward the close of the eighteenth century, periodical series were reintroduced and provided a reporting service which was almost contemporaneous with the handing down of decisions. The first of these was Durnford and East's Term Reports (King's Bench cases 1785-1800), Henry Blackstone (Common Pleas cases 1788-1796) and Vesey Junior (Chancery cases 1789-1817). Subsequent series provided continuous reporting of cases in the four major courts until semi-official reporting commenced in 1865.

According to Baker, the legal discussion in cases, and juristic writings about these discussions, were of great importance in the development of abstract legal principles and thus contributed to the 'science of jurisprudence'(31) and 'the development of law as a science'(32)

Reporting cases required accurate observation and recording, fundamental scientific skills. In contemporary times, recording devices have to a large extent been introduced as a measure to eliminate human errors. The accumulation of reported decisions provided an opportunity to develop further legal theory and the doctrine of precedent. It was recognised that principles might be applied in different ways so as to produce conflicting results. Precedent cases could be used to study the way in which a principle was applied to specific facts. Analogies might be relied on to argue that a case before the court was similar in its facts to the precedent decision. Precedent cases might be distinguished on the basis that there was a significant difference in the facts. Reasoning about application sometimes led to finer definition of a rule of law or an extension of principles. Where no existing law could be applied to resolve a case, new principles might be developed. Modifications could eventually transform the original law. Consistent application of consistent principles and rules was regarded as necessary to achieve certainty and uniformity in the law.

The scope for development of the law was (and still is), limited by the nature of the conflicts which people chose to litigate and the cases which the legal profession were prepared to support. The extension of legal theory depended upon the design which happenstance, rather than science, permitted. Yet the view was often expressed that judges simply declared the law which already existed, presumably in some ideal Platonic state. Where there was no evidence of custom or established rules, the concepts of justice and natural law still provided some basis for the specific formulation of newly declared law.

The Paradigm of 80. Ratio Decidendi

In the eighteenth century, legal argument was directed to the ratio decidendi. Deductions arrived at in particular cases were seen as valid extensions of the law. Stare decisis became a popular principle of the courts and precedent cases were followed more rigidly. By the nineteenth century, the ratio decidendi was identified as the binding

precedent. When the modern appellate structure of the hierarchy of courts was established, the notion of a binding ratio was developed as part of the doctrine of precedent. In 1833, Parke, B., in Mirehouse and Rennell(33) stated the doctrine as it is regarded today: to achieve uniformity and certainty, precedents should be followed, even if they are "not as convenient and reasonable as we ourselves could have devised."

The eighteenth century abridgments were more concise and more comprehensive than earlier abridgments. Comyn's (d.1740) Digest was amongst the last of the law texts written in French. It was printed posthumously in 1762-67. Mathew Bacon's New Abridgment (1736-66) was published in several editions. Charles Viner's General Abridgment of Law and Equity appeared in twenty-three volumes (1741-53). Following the advanced development of abridgments, the first legal texts in the modern tradition appeared. The earliest may be found in the works of Chief Baron Gilbert (d.1726), who wrote prolifically. In his works there are some of the features of legal reasoning through which legal principles are related. From the eighteenth century, the use of abridgments declined as textbooks provided a sounder and more efficient means of research.

The Paradigm of 81. Alternative Reasoning

The Italian jurist, Giovanni Battista Vico (1668-1744) produced a comprehensive history of human society, Principii d'una Scienza Nuova (1725), which examined both the logic and the evolution of epochs in the development of civilization. He demonstrated that although there was unity in society there was not just one natural order that was reasonable. Society was to be understood not by reason alone but also by its products such as its laws.

The Paradigms of 82. Relative Methods
83. Conceptual Relativity

Christian von Wolff (1679-1754), a pupil of Leibniz, popularized the enlightenment in Germany. He was concerned with the different methodologies in determining physical laws of nature and natural laws of human society. He treated the subject in his Jus Naturae Methodo Scientifica Pertractatum (1748) and Institutiones Juris Naturae et

Gentium (1754). His numerous works were published under the general title, Vernunftige Gedanken, Rational Ideas. In his studies he explored the nature of conceptual relativity.

The Paradigms of
84. Collective Human Minds
85. Social Variables
86. Conscience as a Reasoning Force

The Irish philosopher and bishop, George Berkeley (1685-1753) developed further the notion of social physics by posing a collective of human minds, the operation of which amounted to a social physics and produced the characteristics or reality of society. He maintained that laws were computational devices for describing and predicting phenomena. His view of the world was relative. In his study of motion he pointed out that motion had to be measured in terms of the changing position of the moving body relative to other bodies. Charles-Louis de Secondat Montesquieu (1689-1755), in France, posed a comparative social physics and looked for explanations of the variations in societies by reference to different combinations of various environmental and physical factors. He published his Spirit of Laws in 1748, in which he reviewed legislation extensively to ascertain the reasons for the laws. The British theologian, Joseph Butler (1692-1752) considered the psychology of morality and suggested that self-love and benevolence are directed by an over-riding conscience.

The Paradigms of
87. Inference from Systemic Classification
88. Reasons for Change

During the eighteenth century, scientific classification of plants and animals with a view to establishing patterns, began.
The first system of classification was devised by the Swedish naturalist, Carolus Linnaeus (1707-1778). He classified plants according to a scheme of class, order, genera and species. Order was founded on class characteristics, genera on order characteristics and species on genera characteristics. On the basis of this system of classification, he founded modern taxonomy. His system of species of plants and animals demonstrated the relatedness of life forms. Within human life he identified cultural variations. His major work, Systema Naturae, was published in 1735. George-Louis, Comte de Buffon (1707-1778), the French naturalist, undertook to catalogue the King's

museum which was part of the Jardin du Roi, and from this work produced his Histoire Naturelle, generale et particuliere. He investigated the processes of change in life and distinguished variation, adaptation, descent, and extinction. In considering these changes, he examined the time required to effect the process. Human variations were explained as the result of either environment or culture. Physical, mental and cultural factors were closely related in human life. Buffon recognised the importance of human language as a determinant of intelligence.

The Paradigms of 89. Common Sense
90. System of Natural Law

The Scottish philosopher, Thomas Reid (1710-96) founded the school of common sense. He developed, from the practical principle of common sense, the notion of systems in natural law. His major works were Essays on the The Intellectual Powers of Man (1785) and Essays on the Active Powers of Man (1788) which included an essay Of Systems of Natural Jurisprudence. Other Scottish philosophers developed the notion of system in natural law. Adam Ferguson published his Essay on the History of Civil Society in 1767, followed by Principles of Moral and Political Science in 1792.

The Paradigm of 91. Laws of Association

David Hume (1711-1776), another Scottish philosopher, is generally regarded as the greatest of the British empiricists. His major works were his Treatise of Human Nature (1739) and his Essays (1742). He recognised that human observation was a matter of impressions or constant tendencies to associate ideas in particular ways. In the Treatise of Human Nature, he examined chains of reasoning in mathematics and found that uniform and unchanging laws of association might be regarded as reliable information. Hume also pointed out that ethics could not be logically derived from knowledge because an 'ought' statement cannot be deduced or induced from an 'is' proposition. However, the association of 'is' and 'ought' might be reliable. As will be seen in Chapter Six, cognitive and ethical factors may be associated systemically in practical reasoning. Heuristics may be developed to specify the conditions for switching from the 'is' to the 'ought': 'is' factors are concerned with establishing possible action and its consequences, while 'ought' factors are concerned with the selection and

implementaion of action on this basis. Hume did not pursue the association of 'is' and 'ought' metaphysically. Rather, he reduced Justice and Right to the products of empirically established public utility.

The Paradigms of
92. Justification for Use of Power
93. Social Purpose

Contemporaneously with Hume, the Swiss philosopher, Jean-Jaques Rousseau (1712-78) added his views to the idea of the social contract. He thought that the collective will of society provided the justification for the use of power to achieve the social purpose or goals of freedom and equality.

The Paradigm of
94. Reasoning as Arrangement of Ideas

In his Essay, The Orgin of Human Knowledge, Etienne Bonnot de Condillac (1715-1780) explored the principles that organize knowledge. The correctness of knowledge is judged according to the way it is communicated. Complex operations of the mind must be expressed through a language, and they occur through language. Reasoning which links various facts in the real world, is dependent upon the identification of those facts. Once the facts are identified, they can be rearranged to present the series of associations which amount to reasoning or scientific explanation.

The Paradigms of
95. Cultural System
96. Positive Law

Antoine Yves de Goguet (1716-58) set about to review the establishment of positive laws, and the ranks of positive laws, as the basis of civilizations in which science, commerce and society might flourish. His work, The Origin of Laws Arts and Sciences and their Progress amongst the Most Ancient Nations, was an encyclopaedic history which opened up a systemic view of culture and placed law within the system. In his preface to the book, Goguet stated:

> It was by little and little, by a long course of experience, trials, and reflections, that mankind were enlightened, that they formed principles and systems, and brought their discoveries and their

knowledge to that degree of perfection which deserves the name of science.(34)

The Paradigm of 97. Rational and Moral Right

In 1755, the work of the Scottish philosopher, Hutchison, System of Moral Philosophy, was published. It contained a full and careful treatment of the Doctrine of Right. Another Scottish philosopher, Adam Smith (1723-1790), developed a moral philosophy based on moral sympathy rather than reason. Contrary to this view the Welsh philosopher, Richard Price (1723-91) maintained that right and wrong could be ascertained from a knowledge of the real character of actions, ascertained by reason.

The Paradigms of 98. Organic Systems
99. Romanticism: Mystical Reason

The period of romanticism which followed the enlightenment, from the late eighteenth century to the mid-nineteenth century, attempted to regain the coherence of religion by a synthesis of reason and experience in organic rather than mechanistic paradigms of nature. Many of the writers of the romantic period were dogmatic. This may have assisted the reinstatement of social stability, after the shakedown of the enlightenment. However, their indeterministic metaphysics relied upon mystic explanations.

The Paradigm of 100. Social Reasons for Laws

In 1758, Oxford University established its first chair of English law. William Blackstone, who had been lecturing in English law since 1753, was appointed to the chair and, subsequently, in 1765 his Commentaries on the Laws of England was published. It consisted of four volumes, The Rights of Persons, The Rights of Things, Private Wrongs and Public Wrongs, following to some extent the Roman juristic divisions. This was the first comprehensive statement of English law since the work of Bracton. It was presented in an elementary, orderly form and attempted to explain the principles of law with some reference to political and social history. This holistic systematization permitted an understanding of the branches of law and their relationships to each other. An interesting evaluation of the works of Coke and Blackstone is noted in Potter's Outlines of English Legal History.

> As Coke summed up the Middle Ages, so Blackstone gave a sketch of the developed common law. Coke, indeed, provided the richer feast for the lawyer, but Blackstone's fare could be digested by the multitude.(35)

The Paradigm of 101. The Onus of Planning and Communication

During the eighteenth century, the forms of commerce were changing. Merchants travelled less. The merchant jurisdiction exercised at the markets and fairs fell into disuse and disputes were brought in the royal courts or in the County Courts which were introduced from 1749, to hear small claims with minimal formality. Transactions involving the production and distribution of manufacted products introduced new planning requirements in business. Promises had to be reliable to keep commerce viable. The modern law of contract was developed to suit these new requirements. An onus to plan and communicate is implicit in modern contract law.

By the end of the eighteenth century, the jury was not permitted to find a verdict from their own knowledge.(36) Committal proceedings developed from the sixteenth century and displaced the role of the assize as grand jury.(37)

The Paradigm of 102. Technical Equity

In the eighteenth century, as the principles of equity were formulated, equity began to influence the development of the common law. There was a tendency to integrate equity and the common law, as a result of which equity ceased to operate as an Aristotelian failsafe. Lord Mansfield C.J., who had practised extensively in the Chancery jurisdiction, brought the influence of equity to the common law. He attempted to fuse the two systems. In 1773 he stated the three facets of the law as 'equity, reason and good sense.'(38) Potter's Outlines of English Legal History describes this period in the development of equity.

> Towards the end of the period (1660-1830), too, Chancellors became more and more reluctant to introduce a new remedy or to depart from the fixed rules of the court. Equity therefore had largely become mature before the close of the eighteenth century.
>
> Its procedure, however, designed for simple cases

and less crowded trial calendars, was scarcely able to fulfil its purpose when called upon to supply the needs of a more modern and complex civilization. Towards the end of this period the legal profession became alive to the necessity of some reform to prune it of the excrescences of technicalities and the absurdities of obsolete and anomalous practices and bring them within bounds.(39)

The Paradigm of 103. The Science of Legislation

In 1780 the Italian scholar, Gaetano Filangieri (1752-88), completed Books 1 and 11 of his work, The Science of Legislation. These books were published and widely circulated. Book 111 followed in 1783 and Book 1V in 1785. This application of the concept of science to legislation was concerned with morality as well as law. The work was concerned to establish rules for fashioning laws to suit human life. In the scheme of the work, the general rules of the science of legislation are set out in Book 1 while the remaining books deal with various areas of substantive law. Filangieri's general rules of the science of legislation have been summarized by Marcello Maestro in a paper presented in 1976 to the American Philosophical Society, Gaetano Filangieri and his Science of Legislation.(40) The basis of the legal system is the first consideration. This is a social contract whereby people have foregone personal independence for better survival and peace through laws. This contract determines the goals of the legal system, viz. the preservation and tranquility of society. Laws which do not secure these goals are useless.

Next Filangieri poses a distinction between absolute and relative laws founded on absolute and relative goodness. The absolute category is equivalent to the concept of natural law; it is the collection of universal principles of morality common to all people, such as anti-slavery rules, while relative laws are a matter of convenient regulation, such as traffic rules. To achieve the goals of the legal system, laws must be absolutely and relatively good. Laws which are relatively good must not be inconsistent with the absolute good.

Paradigm of 104. The Legal Machine

According to Filangieri, the science of legislation is like other sciences: it requires some stable base of rules from which to expand and operate. It needs parameters and a framework for the time being, in the

same way as mathematics works through defined concepts and their relationships. Maestro summarizes the position adopted by Filangieri.

> It is true that the state is a complicated machine, that its wheels are not always the same, and that the forces which keep it in motion vary at different times; but this does not prove that the rules which tell us about these wheels and forces, and the way to handle them, cannot themselves be constant and unchangeable. It seems unthinkable that a science closely connected with social order, where an error might be as destructive to whole nations as the worst scourges from heaven, should be devoid of precise and immutable rules. The different ways in which men think, the countless combinations of our ideas, derived sometimes from false and mistaken data, and the existence of different standards, religions and prejudices, are all proofs that we need a guide to lead us through the immense and complex expanses of legislation.(41)

Filangieri viewed the legal system as a Newtonian machine, rather than a rational and coherent metaphysic of collective life as it was portrayed in Montesquieu's Esprit des Lois.

The Paradigms of

105. The Science of Right
106. Integrated Reasoning
107. Natural Purpose
108. Free Choice
109. Self-imposed Laws
110. Irrational Discontent and Conflict

Emmanuel Kant (1724-1804) also applied the concept of science to morality. His early works were scientific treatises on earthquakes and wind. In 1755, his most important contribution to scientific ontology was published, General Natural History and Theory of the Heavens, in which he advanced the nebular hypothesis in regard to the origin of the solar system. He then moved to methodological studies and critically examined the processes of human reasoning in three major works, Critique of Pure Reason (1781), Critique of Practical Reason (1788) and Critique of Judgment (1790). In 1785, his work, The Foundation of a Metaphysic of Morals was Published and formed the basis for a sequel, The Metaphysic of Morals. The first part of this sequel contained The Philosophy of Law: An Exposition of the Fundamental Principles of Jurisprudence as the Science of Right, published in 1796.

Kant distinguished truth-oriented logic, pure reason, from goal-attainment logic, practical reason. The two overlap and a valid judgment sometimes requires an integration of each form of reasoning. This resolved the problem of knowledge-based ethics which had been posed by Hume. Kant also posed a teleology or purpose in nature which might be regarded as a precursor to the Darwinian notion of natural selection. It gave rise to the romanticism which superseded the enlightenment, and dominated thought from the 1790's to the 1840's. To Kant, Nature's purpose was its own realisation. He recognised in the natural behaviour of animals, natural laws of survival. So for example the hedgehog rolls into a ball as a form of self-protection; this suggests that nature had endowed this creature with this mechanism so that it could protect itself from its enemies.(42) In order to understand nature, its purposes must be understood. These purposes could be studied through historical explorations. Kant recognised that human beings profited by the work and experience of earlier generations. He suggested that human minds were gradually progressing through education and that eventually there would be a full development of reason when individuals would be truly free in terms of choice, autonomy and self-imposed laws. According to Kant, discontent and conflict keep human life on the move. In order to solve these problems, reason would have to displace the inherent irrationality in the discontent and conflict.

The Paradigm of 111. Informed Selection

The method of argument used by Kant was an a priori formalism which amounted to a Practical Reason. He combined speculative insight and the realities of common experience. The argument proceeded by a method of dialectical and critical reasoning. He made clear distinctions systematically. His dialectic was used to discover opposite views in order to critically evaluate a justifiable ethical basis. W. Hastie sums up the thrust of Kant's work as follows:

> Here, too, the cardinal aim of his Method was to wed speculative thought and empirical fact, to harmonize the abstract universality of Reason with the concrete particularities of Right, and to reconcile the free individuality of the citizen with the regulated organism of the State. And the least that can be said of his execution is, that he has rescued the essential principle of Right from the debasement of the antinomian naturalism and arbitrary

> politicality of Hobbes as well as from the extravagance of the lawless and destructive individualism of Rousseau, while conceding and even adopting what is substantially true in the antagonistic theories of these epochal thinkers; and he has thereby given the birthright of Freedom again, full-reasoned and certiorated, as 'a possession for ever' to modern scientific thought.(43)

The Paradigm of 112. The Metaphysic of Morals

In the Science of Right, a priori formalism was used to establish the autonomy of reason as a system of Right. Kant developed his system by reference to Roman law. Hastie summarizes the work in this regard:

> For while Kant rightly recognised the Roman Law as the highest embodiment of the juridical Reason of the ancient world, and therefore expounded his own conceptions by constant reference to it, he clearly discerned its relativity and its limitations; and he accordingly aims at unfolding everywhere through its categories, the juridical idea in its ultimate purity. In Kant the juridical Idea first attains its essential self-realization and productivity, and his system of Private Right is at once freer and more concrete than the Systems of Hobbes and Rousseau, because it involves the ancient civil system, corrected and modernized by regard to its rational and universal principles. This consideration alone will meet a host of petty objections, and guard the student against expecting to find in this most philosophical exposition of the Principles of Right a mere elementary text-book of the Roman Law.(44)

Kant develops his Science of Right within a psychological context which he calls the Metaphysic of Morals. He first poses a Faculty of Action or Desire which is tenuously defined as the power of an individual to act in conformity with his own representations so as to cause objects to correspond to these representations. The structures and processes of this faculty are identified in feelings of pleasure and pain which are the cause or effect of representations of external objects or representations simpliciter. Where an object is desired, pleasure is practical; where there is no desired object, pleasure is contemplative. A desire may be habitual giving rise to an inclination. If Understanding judges an habitual desire to be valid, then it is called an interest. The Faculty of Desire can make determinations about the activity of the faculty. If it determines what Pleasure should be felt,

then this is an Intellectual Pleasure and a Rational Interest. Pleasures which are not based on these determinations may produce Sensuous Interests and Inclinations. Kant later defines Will as follows:

> The Faculty of Desire, in so far as its inner Principle of determination as the ground of its liking or Predilection lies in the Reason of the Subject, constitutes THE WILL.(45)

The activity of the Faculty of Desire 'may proceed in accordance with Conceptions'.(46) The Principle which determines the Faculty to action is the Power of acting or not acting according to liking. There may be 'power of the action to produce the object'.(47) This is Kant's primordial way of saying that an individual may have the power, through self-directed action, to attain a personal goal and satisfy personal needs and wants. Where the activity of the faculty 'is accompanied with the Consciousness of the Power of the action to produce the Object, it forms an act of Choice'. Without this power, the individual can only wish. Kant explains the relationship of Will and choice as follows:

> The Will is therefore the Faculty of active Desire or Appetency, viewed not so much in relation to the action - which is the relation of the act of Choice - as rather in relation to the Principle that determines the power of Choice to the action. It has, in itself, properly no special Principle of determination, but in so far as it may determine the voluntary act of Choice, it is THE PRACTICAL REASON ITSELF.(48)

Kant's operational structures of the mind require multi-perspective dimensions in the metaphysics of mind. He uses the dialectic method with a tenuous grasp of the methodological distinction between aspects viewed and the position from which views may be established. The aspects and positions portrayed by Kant are not clearly unified. Kant has posed but not mastered a model of conceptual relativity.

The Paradigm of 113. Choice

In the Metaphysic of Morals, which introduces the Science of Right, Kant distinguishes five forms of human choice in relation to the rational and emotional structures and the individual's power to achieve satisfaction. These are as follows:

1. Choice affected by pure will without reference to reason or sensuous impulse.

2. Choice determined by pure reason or free will.

3. Choice determined by habitual reason.

4. Choice determined by reason and sensuous impulse or stimuli.

5. Choice determined by sensuous impulse or stimuli.(49)

Presumably, a pure will choice would include a random selection. Kant points out that pure reason can be practical. Where it is practical, it may be characterized as will. This is the positive aspect of freedom, the rational will. The negative aspect of freedom, according to Kant, is the overthrow of determination by sensuous impulse. Will is further defined as the Faculty of Practical Principles, which cover the formation of a rational wish and the volitional act of choice according to reason. The form of this faculty is contained in the Maxim 'that every action be practicable as a universal Law'. This Maxim is an absolute Imperative of prohibition or command, a universal law, and the determining Principle of Will. It sets the scope for further particularisation of laws.(50)

The Paradigm of

114. The Laws of Freedom

Kant then distinguishes between the Laws of Freedom, which are moral Laws and the Laws Nature. He identifies time as the factor common to the objects of the external and the internal senses. However, only the objects of the external senses are in space, while representations of all objects belong exclusively to the internal senses. Kant then divides moral laws into three categories: juridical laws, ethical laws, and laws which are both juridical and ethical. Ethical laws are the internal determining principles of action, morality, while juridical laws refer only to external actions and their lawfulness, legality. Freedom in juridical laws pertains to external action; freedom in relation to internal laws affects both external and internal activity of the Will that is determined by the Laws of Reason. The laws of Freedom are pure practical Laws of Reason for the free activity of the Will and

therefore they must be the inner Principles which determine activities. This argument seems to presuppose that freedom and the Laws of Freedom are different entities. When Kant's different forms of choice, are related to his distinction between law and morals, it would seem that the ethical and the juridical-ethical laws belong to the choice by pure reason category. Purely juridical laws must therefore fall into some other category, although Kant does not clearly identify which one.

The Paradigm of 115. Universal Morality

Kant points out that the Laws of Nature can be arranged in a system as the Metaphysical Science of Nature. Such a system is a prerequisite for the experiments of Natural Science. Principles which are derived from experience, by induction, are distinguished from principles which are derived from a priori principles. The laws of physics might be founded on experience, but the laws of morality must be established a priori and be comprehended as necessary. Morality is not simply a matter of empirical happiness. Morality entails universality and is, therefore, possible. Happiness is personal and diverse, without harmonizing principles. Any principle would require so many exceptions that the pursuit of happiness would be unmanageable.

The Paradigms of 116. Moral Methodology
117. Equilibrium in Reason

In differentiating moral methodology from the methodology of Natural Science, Kant deals with juridical methodology. His argument precludes empirical or knowledge-based ethics of any sort although, having dealt with happiness, he does not deal with any further ethical base contrary to his own.

> Instruction in the Laws of Morality is not drawn from observation of oneself or of our animal nature, nor from perception of the course of the world in regard to what happens, or how men act. But reason commands how we ought to act, even although no example of such action were to be found; nor does Reason give any regard to the Advantage which may accrue to us by so acting, and which Experience could alone actually show. For, although Reason allows us to seek what is for our advantage in every possible way, ... yet the authority of her precepts as Commands does not rest on such considerations. They are used

> by Reason only as Counsels, and by way of a counterpoise against seductions to an opposite course, when adjusting beforehand the equilibrium of a partial balance in the sphere of Practical Judgment, in order thereby to secure the decision of this Judgment, according to the due weight of the a priori Principles of a pure Practical Reason.(51)

In these comments, Kant recognises that there is a balancing process in the operations of Reason in his metaphysical system, and that equilibrium is a deteminant of a correct decision. By differentiating the basis of morality from experience, he poses mental states which are innate or not fashioned by experience. However, he does not deal with these assumptions. He defines metaphysics as 'any System of Knowledge a priori that consists of pure Conceptions'.(52) He draws an analogy between a Metaphysic of Nature and a Metaphysic of Morals.

> And just as in a Metaphysic of Nature there must be principles regulating the application of the universal supreme Principles of Nature to objects of Experience, so there cannot but be such principles in the Metaphysic of Morals; and we will often have to deal objectively with the particular nature of man as known only by Experience, in order to show in it the consequences of these universal Moral Principles. But this mode of dealing with these Principles in their particular applications will in no way detract from their rational purity, or throw doubt on their a priori origin. In other words, this amounts to saying that a Metaphysic of Morals cannot be founded on Anthropology as the Empirical Science of Man, but may be applied to it.(53)

Kant maintains further that not even Moral Anthropology as the Empirical Science of the Moral Nature of Man, could produce a Metaphysic of Morals. Such a study might determine the conditions favourable or unfavourable to moral laws, the means of fostering morality and other precepts or doctrines founded on experience; but Duty can only be prescribed by Pure Reason.

The Paradigms of
118. The Art of the Practicable and Possible
119. Metaphysical Creation
120. A System of Freedom

In his Metaphysic of Morals, Kant envisaged a technical system of morality.

> All that is practicable and possible, according to Natural Laws, is the special subject of the activity of Art, and its precepts and rules entirely depend on the Theory of Nature. It is only what is practicable according to Laws of Freedom that can have Principles independent of Theory, for there is no Theory in relation to what passes beyond the determinations of Nature. Philosophy therefore cannot embrace under its practical Division a technical Theory, but only a morally practical Doctrine. But if the Dexterity of the Will in acting according to Laws of Freedom, in contradistinction to Nature, were to be also called an Art, it would necessarily indicate an Art which would make a System of Freedom possible like the System of Nature. This would truly be a Divine Art, if we were in a position by means of it to realize completely what Reason prescribes to us, and to put the Idea into practice.(54)

A system of concepts is not always in the nature of theory. In the case of morality, doctrines may be systemic without forming a theory. The elements of a system may not be related necessarily like the premises of an inductive or deductive scheme. Although Kant placed his Metaphysic of Morals outside the realms of Nature and theory, he also recognised that the theoretical paradigm of the system of Nature may be used to fashion a system of freedom.

> The Deduction of the Division of a System is the proof of its completeness as well as of its continuity, so that there may be a logical transition from the general conception divided to the members of the Division, and through the whole series of the subdivisions without any break or leap in the arrangement (divisio per saltum). Such a Division is one of the most difficult conditions for the architect of a System to fulfil. There is even some doubt as to what is the highest Conception that is primarily divided into Right and Wrong (aut fas aut nefas). It is assuredly the conception of the activity of the Free-will in general. In like manner, the expounders of Ontology start from 'Something' and 'Nothing,' without perceiving that these are already members of a Division for which the highest divided conception is awanting, and which can be no other than that of 'Thing' in general.(55)

In contemporary times, theory is regarded as having many meanings or uses as a reference. A.R. Lacey identifies four as follows.

> Theory has various meanings: (i) One or more hypotheses or lawlike statements, regarded as speculative. (ii) A law about unobservables like electrons or evolution, sometimes called a theory because evidence about unobservables is felt to be inevitably inconclusive. (iii) A unified system of laws or hypotheses, with explanatory force (not merely like a railway timetable). (iv) A field of study (e.g. in philosophy: theory of knowledge, logical theory). These senses sometimes shade into each other.(56)

On these definitions, a theory is not always a system.

It is interesting to note that Kant builds a framework of concepts which are continuous and could be complete. He is concerned to establish their conformity to the primary notion of freedom, a conception of Pure Reason that is transcendant like a Platonic Idea. However, in the practical sphere of Reason, freedom has a reality which is its laws. These laws determine the activity of the Will. Each new conception of the Metaphysic of Morals is asserted by reference to the relationship which it bears to freedom.

The Paradigm of 121. The Science of Right

Kant recognises that imperatives, which belong to the physical world command conditionally. This indicates some recognition of the relativity of the physical world.(57) In further building his metaphysic of morals, he distinguishes jurisprudence from ethics in the context of Duties and choice. He identifies an overlap which further clarifies the juridical-ethical categorization of moral laws.

> To keep one's promise is not properly a Duty of Virtue, but a Duty of Right; and the performance of it can be enforced by external Compulsion. But to keep one's promise, even when no Compulsion can be applied to enforce it, is, at the same time, a virtuous action and a proof of Virtue. Jurisprudence as the Science of Right, and Ethics as the Science of Virtue, are therefore distinguished not so much by their different Duties,, as rather by the difference of the Legislation which connects the one or the other kind of motive with their Laws.
>
> Ethical Legislation is that which cannot be external, although the Duties it prescribes may be external as well as internal. Juridical

> Legislation is that which may also be external. ... In short, the peculiarity of Ethical Legislation is to enjoin the performance of certain actions merely because they are Duties, and to make the Principle of Duty itself- whatever be its source or occasion- the sole sufficing motive of the activity of the Will.(58)

There is an internal end or final purpose in Kant's Ethical Duties, which is to be achieved through the performance of ethical duties. External conditions can not force an individual to adopt a Moral Imperative, that is, a Categorical or Unconditional Imperative. Kant then asserts that there are two sorts of ethical duties: those which are direct ethical duties and those which are indirect. Reason supports one field of action directly, and other action indirectly.

The Paradigm of 122. The Categorical Imperative

The Categorical Imperative, which carries a psychological compulsion, makes it necessary for the individual to carry out its moral commands. This is moral necessity which applies to a domain of action. The requirement of action or no action, according to the dictates of the Categorical Imperative, are obligatory irrespective of the moral ends. The observance or transgression of a moral duty is accompanied by moral feelings of pleasure or pain. These are the subjective effects of the practical Laws of Reason and the objective necessity imposed by the Categorical Imperative. Moral feelings are not relevant in considering the objective validity and manner of application of moral laws in the Judgment of Reason. The Categorical Imperative not only creates a moral necessity, it also determines what is morally possible or impossible, as an activity of the Will, by reference to the basis of Freedom. The Science of Morals, which is a practical science, is a study of Categorical Imperative.

Kant defines duty as 'the designation of any Action to which anyone is bound by an obligation'. Obligations arise in various ways. Sometimes there may be a conflict of obligations. Kant maintained that such conflicts would be resolved by giving priority to the obligation which had the strongest ground. Rights, which place others under an obligation, are derived from juridical duties, but not from ethical duties. Juridical duties may also be ethical duties, but the ethical aspect of the duties does not, ipso facto, found any right. Juridical

Duties of Right are either public or private. Ethical duties are associated with ends not rights. Kant then says that a morally practical law is a proposition which contains a Categorical Imperative or Command. In contemporary times, a morally practical law is likely to be more effective and cheaper in terms of enforcement.

The Paradigms of 123. Natural Morality
124. Mechanistic Morals

Kant also distinguishes natural law and positive law in his Metaphysic of Morals. The distinction rests on the categories of juridical and ethical laws. Ethical and juridical-ethical laws found natural laws; juridical laws which are not also ethical are positive laws.

> Obligatory Laws for which an external Legislation is possible, are called generally External Laws. Those External Laws, the obligatoriness of which can be recognised by Reason a priori even without an external Legislation, are called NATURAL LAWS. Those Laws, again, which are not obligatory without actual External Legislation, are called POSITIVE LAWS. An External Legislation containing pure Natural Laws, is therefore conceivable.(59)

Reason determines the objective validity of its Categorical Imperatives by reference to an over-riding principle that all moral laws be fit as universal laws. The Will, which is the practical Reason itself, must establish its moral laws as universal laws in its process of choice. Only the act of choice in the voluntary process can be called free. This freedom is a power which determines universality. There is something of a moral mechanism in this metaphysic, Once laws are established objectively, the Categorical Imperative operates to compel action. Will selects its moral compulsions to drive its actions and restraints. The autonomy of freedom is linked to a universality which maintains freedom. Kant acknowledges that Moral Laws are not demonstrable but asserts that they are apodictic like mathematical Postulates. He questions whether moral laws cover the field of possible human action. If they did, there might be moral Rights.

> An Action which is neither commanded not forbidden, is merely allowed, because there is no Law restricting Freedom, nor any Duty in respect of it. Such an action is said to be morally indifferent. It may be asked whether there are such morally indifferent actions; and if there are, whether

> in addition to the preceptive and prohibitive Law, there is also required a Permissive Law, in order that one may be free in such relations to act, or to forbear from acting, at his pleasure ? If it were so, the moral Right in question would not, in all cases, refer to actions that are indifferent in themselves; for no special Law would be required to establish such a Right, considered according to Moral Laws.(60)

The Paradigms of

125. The Relativity of Actions
126. Human Relativity
127. Social Co-ordination

Kant recognises the relativity of actions and delineates the realms of relativity which are to be directed by reason. His Science of Right is developed within the framework of his Metaphysic of Morals. He defines the Science of Right as follows:

> The science of Right thus designates the philosophical and systematic knowledge of the Principles of Natural Right. And it is from this Science that the immutable Principles of all positive Legislation must be derived by practical Jurists and Lawgivers.(61)

Right is then defined as a matter of human relativity.

> Right, therefore, comprehends the whole of the conditions under which the voluntary actions of any one Person can be harmonized in reality with the voluntary actions of every other Person, according to a universal Law of Freedom. ...
>
> Every Action is right which in itself, or in the maxim on which it proceeds, is such that it can co-exist along with the Freedom of the Will of each and all in action, according to a universal Law.(62)

Right as a science is clearly something different from the notion of juridical rights. The Law of Right directs people to act in harmony according to universal or uniform laws. The Reason of an individual is limited by the Reason of others, but only within the context of uniform laws. Kant then defines wrong as a hindrance of Right. This requires that Right be accompanied by an implied Title or warrant to 'bring compulsion to bear on any one who may violate it in fact'. Therefore there is a universal reciprocal Compulsion which is in harmony with the Freedom of all.

The Paradigms of 128. Social Accountancy
129. Equitable Adjustments

The innate Equality of people consists in the Right to be independent of each other, except to the extent that people are bound reciprocally. bind them. Kant poses a Science of Right which aims at determining what every one shall have, with mathematical exactness. However, the notions of equity and necessity, as defences, are accommodated by his idea of Equivocal Right. Kant summarizes the realms of equity in the Dictum: the strictest Right is the greatest Wrong. He also employs the Roman maxim of necessity: necessity has no law. The idea of equivocal right is used to identify uncertainties which might otherwise invalidate the fixed Principles of Kant's 'proper doctrine of Right'.

The Paradigm of 130. Power of Innate Right

Kant adopts the three principles of the Roman jurist, Ulpian, as a basis for a categorisation of duties: live honestly (Internal duties), harm no one (External duties), and give people their dues (Connecting duties). These divisions establish the relative aspects of the practical operation of a Science of Right. To found the rational processes, Kant equates Natural Rights and Innate Rights.

> Innate Right is that Right which belongs to every one by Nature, independent of all juridical acts of experience. Acquired Right is that Right which is founded upon such juridical acts.(63)

Freedom is the only Innate Right but it encompasses various aspects which may be regarded as the bases of Acquired Right. These aspects include Kant's notions of Rights of equality, of autonomy, of presumption of innocence, and of common action. Common Action is defined in the following terms:

> And, further, there is also the innate Right of COMMON ACTION on the part of every man so that he may do towards others what does not infringe their Rights or take away anything that is theirs unless they are willing to appropriate it; such as merely to communicate thought, to narrate anything, or to promise something whether truly and honestly, or untruly and dishonestly, for it rests entirely upon these others whether they will believe or

> trust in it or not. But all these Rights or Titles are already included in the Principle of Innate Freedom, and are not really distinguished from it, even as dividing members under a higher species of Right.(64)

Kant divides Right into Natural or Private Right and Civil or Public Right. Proprietary notions of mine and thine are used by Kant to further structure Private Right.

> Innate Right may also be called the 'Internal Mine and Thine'; for External Right must always be acquired.(65)
>
> ...It is therefore an assumption a priori of the practical Reason, to regard and treat every object within the range of my free exercise of Will as objectively a possible Mine or Thine.
>
> This postulate may be called 'a Permissive Law' of the practical Reason, as giving us a special title which we could not evolve out of the mere conceptions of Right generally.(66)

By means of this Postulate, practical Reason enlarges its range of activity in practice. Kant's Public Right arises from his concept of Private Right and from the psychology laid down in the Metaphysic of Morals.

> The Legislative Power, viewed in its rational Principle, can only belong to the united Will of the People. For, as all Right ought to proceed from this Power, it is necessary that its laws should be unable to do wrong to any one whatever. ... Hence it is only the united and consenting Will of all the People - in so far as Each of them determines the same thing about all, and All determine the same thing about each - that ought to have the power of enacting Law in the State.(67)

The Paradigm of 131. Order of Dependence

The original contract by which People constitute themselves as a State is based on Commonwealth. The wild, lawless freedom of each individual is given up in exchange for the freedom of an order of dependence, regulated by laws of Right. However, Kant was opposed to revolution and appalled by the French Revolution. He distinguished two classes of Citizen: the active or ruling class who had voting power, and the

passive or politically powerless class, who had no suffrage. In the passive class Kant placed employees other than state employees, children, and women. The justification for this system of citizenship is given in two ways. Firstly, people who are dependent upon and protected and commanded by others do not have 'political Self-sufficiency in themselves'.(68) They are dependent on the will of others and therefore not equal. They do not have the freedom and equality At this point, it becomes apparent that Kant has fused his metaphysical a priori with an empirical state of affairs. However he preserves the validity of his system in the second argument which gives passive citizens a right to claim that

> ... laws must not be contrary to the natural Laws that demand the Freedom of all the people and the equality that is conformable thereto; and it must therefore be made possible for them to raise themselves from this passive condition in the State, to the condition of active Citizenship.(69)

The Paradigms of 132. Money
133. Objects of Choice

Kant distinguishes the concepts of ownership and possession. He also treats specifically the notion of money in its dimensions of value or price, a means of exchange, an object of gift, a means of carrying on commerce, a mode of human intercommunication, the representation of all exchangeable things, including labour, and a measure of circulation and consumption through exchange. Money in Kant's Science of Right pertains to the Permutation and Exchange of the Mine and Thine. Kant examines three categories of external Ojects of Will in the activity of Choice as the contexts of mine and thine: corporeal things (substance), the free-will of another (causality), and the state of another (reciprocity).

The Paradigm of 134. Goal-attainment as a Duty

Kant claims that the whole final purpose and end of the Science of Right, viewed within the limits of Reason, is to achieve peace. Having this purpose is a duty itself. In arriving at this duty, Kant locates the moral dilemma in relation to dilemmas of knowledge and art.

> If one cannot prove that a thing is, he may try to prove that it is not. And if he succeeds in doing neither (as often occurs), he may still ask whether it is in his interest to accept one or other of the alternatives hypothetically from the theoretical or the practical point of view. In other words, a hypothesis may be accepted either in order to explain a certain Phenomenon (as in Astronomy to account for the retrogression and stationariness of the planets), or in order to attain a certain end, which again may be either pragmatic as belonging merely to the sphere of Art, or moral as involving a purpose which it is a duty to adopt as a maxim of action.(70)

The Paradigm of 135. Reconciliation of Categories

Kant claimed that the juridical science of philosophical jurists would be inadequate without a Science of Right.

> Apart from such internal completeness their science would not be a rational System, but only an Aggregate of accidental details. The topical arrangement of Principles as determined by the form of the System, must therefore be made complete; that is to say, there must be a proper place assigned to each conception (locus communis) as
> Apart from such internal completeness their science would not be a rational System, but only an Aggregate of accidental details. The topical arrangement of Principles as determined by the form of the System, must therefore be made complete; that is to say, there must be a proper place assigned to each conception (locus communis) as determined by the synthetic form of the Division. And it would have to be afterwards made apparent that when any other conception were put in the place of the one thus assigned, it would be contradictory to itself and out of its own place.(71)

To demonstrate his point, he examines the Roman dichotomy of real and personal rights and whether, according to Reason, they are mutually exclusive or part of a continuum which includes a real right of a personal kind, which Kant sees as impossible, and a personal right of a real kind, such as slavery, custody of children and marriage. With a Science of Right, the nature of mine and thine in personal rights of a real kind, can be devised to fit the system of Right. Whenever new

categories can be posed by reference to existing categories, reason is required to determine their place if any in the system.

The momentous scientific discovery of a new star is reflected in Kant's analogy of the juristic sky when new categories appear.

> Now we have to examine the question whether this conception - described as 'a new phenomenon in the juristic sky' - is a stella mirabilis in the sense of growing into a star of the first magnitude, unseen before but gradually vanishing again, yet perhaps destined to return, or whether it is to be regarded as merely a shooting and falling star!(72)

The Paradigms of 136. The Metaphysic of Mind
137. The Apperception of Reason

Kant's science is built up from synthetic a priori concepts which he poses as valid intuitive perceptions. His system is devised through a process of analysis of each concept, and an arrangement of its constituents. The metaphysic is not entirely static. As a practical system, it contains goals and performs tasks. It is meant to represent the actual human mental faculty as it might function most appropriately.

Kant has located science in the human mental faculties and established some of the limitations of what it is possible for the mind to know. He recognised that the mind's representation of nature is a metaphysic and that the mind itself may be represented as a metaphysic. He refers to his thought as Critical Philosophy. In his philosophy, the mind examines itself with a view to discovering what suits it best.

> ... nor can any formal metaphysic as such be popular; although their results may be made quite intelligible to the common reason, which is metaphysical without its being known to be so. In this sphere, popularity in expression is not to be thought of. We are here forced to use scholastic accuracy, even if it should have to bear the reproach of troublesomeness; because it is only by such technical language that the precipitancy of reason can be arrested, and brought to understand itself in face of its dogmatic assertions.(73)

Kant limited his metaphysic of mind to the realms of his own experience. His a priori propositions are justifiable because they are widely

acceptable. He did not pursue the metaphysic of mind as a developing tool of human intelligence, or as a stratification of consciousness. In his vindication of his philosophical style, he claimed that there can only be one Human Reason, so that there cannot be many philosophies. There is only one true system: one principle connects all the duties of virtue in one single system. He treats 'true' and 'best' as synonomous. His insistence upon one correct view and the uniformity of human nature, is medieval. However, he recognizes the historical progression of ideas.

> Accordingly, when anyone announces a system of philosophy as a production of his own, this is equivalent to saying that 'before this Philosophy there was properly no philosophy.' For should he admit that there had been another and a true philosophy, it would follow that there may be two true systems of philosophy regarding its proper objects; which is a contradiction. If, therefore, the Critical Philosophy gives itself forth as that System before which there had been properly no true philosophy at all, it does no more than has been done, will be done, and even must be done, by all who construct a Philosophy on a plan of their own.(74)

The Paradigm of 138. The Stabilization of Change

In his vindication of his philosophical style, Kant refers to the views of space maintained by Hausen and Wolf, respectively, in relation to his own idea of an intuitive perception a priori. Wolf treated space as the outward co-existence of the various objects of empirical perception. Hausen adopted a mathematical model of space which Kant describes as follows:

> The presentation, constructed, as it were, by the understanding, referred to by the acute Mathematician, meant nothing more than the (empirical) representation of a Line corresponding to a conception, in making which representation attention is to be given merely to the Rule, and abstraction is to be made from the deviations from it that inevitably occur in actual execution, as may be easily perceived in the geometrical construction of Equalities.(75)

The notion of continuums and shades of distinctions, in relation to rules, is present in legal reasoning. Abstract dimensions are added to empirical dimensions with a view to managing change. In this there is evidence of mathematical structures, the full realisation of which might

assist in the management of change through law, be the nature of change (1) cyclical, like recursion, (2) spiral, which is cumulative, (3) metamorphosic, which is irreversible, or (4) substitutive which is replacement.

The Paradigm of 139. The Nature of History

Toward the close of the eighteenth century, the German Historical School was founded. Its leading proponents were Hugo, Savigny and Puchta, who built on the works of the French authors, Cujas, Bodin and Montesquieu and the Italian professor of law at Naples, Vico. The historical method was taken up in England by Henry Maine who developed the science of anthropology.(76) The Historical School sought to establish the origins of law empirically, rather than through a discovery of presuppositions of a reasonable system of law. This approach soon undermined the social contract theory, since the original negotiation of the contract could not be shown. However, the social contract was posed as an implied contract rather than an expressly negotiated contract.

The Paradigm of 140. Natural Change

Erasmus Darwin (1731-1802), the British naturalist posed a common descent of all life and a struggle for existence. The French zoologist, Jean Baptiste Lamarck (1744-1829), accounted for the changes in species by a naturalistic mechanism in the use and disuse of organs. He suggested that learning, which is based on needs and necessity, determines the use and disuse of organs. The ecological and behavioural aspects of a species are critical in its development from stage to stage.

The Paradigms of 141. A Crystalline Matrix
142. Alternative Use

The German philosopher, Johann Gottfried Herder (1744-1803) posed a matrix paradigm as the macroform of the physical universe. He explained the formation of the solar system, the earth and life forms by a process of crystallization. In sequence, life forms emerged firstly as vegetation, then animals, and finally human beings. Each crystallization is a focal point through which the nature of the matrix is realised. The diversity of human beings results in different

exploitations of the environmental resources, which in turn produces different kinds of civilizations.

The Paradigms of
143. Utilitarianism
144. The Felicific Calculus

Jeremy Bentham (1748-1832), the English jurist, attempted to establish a science of morality in connection with law, in a utilitarian framework. He proposed a felicific calculus as a method for the quantitative comparison of the amounts of pain and pleasure that would result from a selected course of action. The dimensions of pleasure and pain were described in terms of intensity, duration, certainty, extent, propinquity, purity and fecundity. He proposed equations of intensity and duration which rested on a doubtful analogy of spatial measurement. Laws should seek to achieve the greatest good or happiness for the greatest number.

The Paradigms of
145. Morphology
146. Themes
147. Logic and Time
148. Natural Mind

In Germany, Johann Wolfgang von Goethe (1749-1832) maintained the Platonic mysticism of forms by devising the term morphology as the study of the essence of forms in biology. He supported the search for understanding rather than for purpose. Other German philosophers at this time were concerned with the importance of patterns in history. Johann Christoph Friedrich Schiller (1759-1805) suggested that large-scale rhythms or themes could be found in the historical process to explain present languages, institutions, law and behaviour. Johann Gottlieb Fichte (1762-1814), a student of Kant, attempted to relate logical sequence and temporal sequence. He identified three phases in the logical sequence of the ideas of successive ages: thesis, antithesis and synthesis. R.G. Collingwood explains the process envisaged by Fichte as follows:

> The concept is first embodied in a pure or abstract form; then it generates its own opposite and realises itself in the shape of an antithesis between itself and this opposite; then the antithesis is overcome by the negation of the opposite.(77)

> The antagonism between mind and nature can be and must be overcome, and its overcoming is the rise of a new kind of rational freedom, the freedom of art, where mind and nature are reunited, mind recognising in nature its own counterpart and related to it not by way of obedience but by way of sympathy and love.(78)

The Paradigm of 149. Systems in Law

Some of the works of Fichte were published prior to Kant's works which expressed similar ideas. He was concerned with systems in law and saw the idea of systems as incorporating rationales. His major works were Grundlage des Naturrechts (1796) and Nachgelassene Werke, System der Rechtslehre (1804).

The Paradigm of 150. Survival of the Fittest

The British economist and demographer, Thomas Robert Malthus (1766-1834), from his study of populations, in their competitive struggle for life, saw the survival of the fittest as a determining principle.

The Paradigms of 151. Reason in History
152. The Logical Development of Consciousness
153. The System of Social Relations

Georg Wilhelm Friedrich Hegel (1770-1831), the German philosopher, sought to discover in history, reason to support the view that freedom is the consciousness of freedom. Consciousness develops by a logical thought process which passes through successive necessary stages. He examined the system of social relations as moral reason. Major works of Hegel were Ueber die Wissenschaftlichen Behandlungsarten des Naturrechts (1802-3) and Grundlinien der Philosophie des Rechts, oder Naturrecht und Staatswissenschaft im Grundrisse (1821).

In the nineteenth century, the technology of the industrial revolution consolidated the social dominance of modern urban life. Not only was there a freedom and tolerance of thought but there was also a compact settlement of people with diverse views. The interaction of different ideas produced new varieties of complex thought. The potential for difference in human personalities became apparent. Not only did philosophers have to discover what and how a person might know

something, but the dimensions of individual differences had to be considered. Only within the scope of human understanding could ethics or law be effective.

The Paradigms of 154. Levels of Thought
155. The Living Law

Another German philosopher, Friedrich Wilhelm Joseph von Schelling (1775-1854) posed the idea of levels of understanding. He suggested that any existence is knowable and opposites can be reconciled when viewed from a higher order where mind knows itself. Schelling considered the organic paradigm of the state with systematic objectivity in his Abhandlung uber das Naturrecht. A German jurist, Frederich Carl von Savigny (1778-1861) took a view contrary to that of individual reason as the basis of law and, through historical reflection, demonstrated the deterministic development of societies under the influence of factors which applied to the society as a whole. His earliest publication, in 1803, was Das Recht des Besitzes, followed by studies in Roman law, and thereafter his work culminated in his great system, System des Heutigen Romischen Rechts published in 1840. In his work he suggested that a system of law was characterized by the spirit of the society which produced it.

The Paradigm of 156. The Unconscious

Arthur Schopenhauer (1788-1860), also a German philosopher explored the limitations of human will. He suggested that there was an unconscious will. His major work, Die beiden Grundprobleme der Ethik, was published in 1841.

The Paradigm of 157. Systemic Holism

Karl Christian Friedrich Krause (1781-1832), also of Germany founded the organic and positive school of Natural Right. He used the concept of panentheism, meaning, everything exists in god, to achieve systemic holism. His methods of analysis, synthesis and the use of organic paradigms achieved a synthesis of the real, the ideal and the historic.

The Paradigms of 158. A System of Rights
159. Positive Law

In 1829, Andrew Amos took the first chair of law in the newly formed University of London. At this time, the scientific views of law which had been promoted by Bentham, were popular.

A disciple of Bentham, John Austin (1790-1859), studied law in Germany and realised that English law lacked the jurisprudential structure which had been developed in Roman law. He set about to give English law a similar framework. He began with an analysis of the principle concepts of English law. His most influential work was contained in The Province of Jurisprudence Determined, or Philosophy of Positive Law (1832). To Austin, jurisprudence meant the analysis of concepts of law. Right became the method of specifying positive law. Law was regarded as the collection of laws. A system of Right was seen as a system of rights. Right was atomized with no substantive macroparadigm. Authority was not questioned in terms of a moral rationale. As long as the system of rights was coherent and inherently consistent, their values were left to political rather than philosophical correction. Parliament still dominated English law and the role of the legal profession was confined by positive boundaries. Rights were positive law; they could be acted upon and they were the basis of legal remedies. They were presumed to be justifiable. At least they were logicaly justifiable within the scope of legal theory. Austin fashioned the straight-jacket for legal argument. No one has attempted to find a Kantian system in English law and many might suspect that it has none. There seems to be a fear that Kantian superstructures would remove the theoretical flexibility which is the freedom of English law. However, if there are no principles to direct the application of rules, and their evaluation, there is scope for judicial bias. Austin has been described by Sheldon Amos as the founder of the Science of Law.(79) This indicates a very narrow view of the science of law.

The Paradigm of 160. Utilitarian Science

By the nineteenth century, the Royal Society had fallen under the control of non-scientists and was too conservative to be a forum for innovations which might meet the new needs of society. Charles Babbage (1792-1871) lead a group of young British scientists who were concerned to restore the Baconian view of science as a source of benefit to human society. In 1831, this group formed the British Association for the Advancement of Science. The meetings of the Association became the

battleground for many of the major scientific controversies which arose during the remainder of the century, including the conflict of science and religion as a result of Darwinian evolution. The Association promoted scientific investigation of a utilitarian nature; it became a middle class forum for the advancement of society.

Early in the nineteenth century, jurists in England recognised that when modern methods of science were applied to the study of the natural law on which positive law was founded, account must be taken of the fact that positive law might not always be consistent with natural justice. The Historical School removed the myth of the social contract, and the nineteenth century legal scientists removed the sanction of natural justice from the legal system. A clear distinction was established between law from morality. Following the work of Lepage in France, Science du Droit, published in 1819, James Reddie's book, Inquiries Elementary and Historical in the Science of Law, was published in 1840.(80) Lepage expanded the notion of law to include matters of personal conscience. Reddie distinguished the science of law from the science of ethics, and restored the boundaries of positive law as the subject of legal science, to be examined by reference to natural law. He set out categories of laws: physical, moral, divine, and human or positive law. His book examines the history of the development of law as a science, in relation to the law of nature and positive law. Some of the classical Greek and Roman contributions are reviewed, and then the more recent juristic works from the sixteenth century are considered. The recent contemporary schools, the German historical school established by Hugo and Savigny, and the analytical school founded by Bentham were seen by Reddie as pursuing different lines of devlopment without appropriate interaction. He suggested that morality should be clearly distinguished from law which was founded on the law of nature, and that the law of nature upon which positive law is founded, should be investigated by modern scientific methods, particularly the Baconian methods of observation and induction.

> The chief, if not the sole objects of coercive law are obviously the external actions of men, in their reciprocal influences upon each other, with reference to their persons, or personal attributes, and with reference to the external substances and events, which exist, or occur, on the face of this earth, and which are necessary for, or subservient to, the subsistence, or supply of the animal wants, of the individual, and the continuation or propagation of the

> species, or are generally conducive to the welfare and happiness of mankind. Now, there can be no doubt, that in the nature of things, certain descriptions of these actions are just or generally expedient, and therefore ought to be commanded and enforced, and other descriptions or classes of actions are unjust or generally hurtful, and therefore ought to be prohibited and prevented by human power. And there thus exist, independently of human power, or institution, certain laws of nature, according to which these actions ought to be enforced, or prevented.(81)

Reddie suggests where this law of nature is to be found.

> In the constitution of man, corporeal and mental, in the conformation, and successive changes in events of the material world, in which he commences and terminates his mortal life, and with which he is, for a time, so intimately connected, in the events of the lives of individuals, and in the advancement or decline of men united in communities, all as made known to us by experience, by observation of the present state of matters, and by the records of former generations, and past ages, we distinctly perceive the existence and operation of certain laws, fixing limits which men cannot transgress with impunity, and indicating the courses of action, which the individual, or the community, may, for the general good, be compelled to pursue or observe, by the application of the physical force, which the Creator of mankind has placed at their disposal.(82)

The Paradigms of 161. Discovery and Justification
162. A River System of Knowledge

During the nineteenth century, scientific methodology was refined, and scientists began to look for metaphysical structures in scientific knowledge other than the pyramid structures of classical reasoning. John Herschel (1792-1871), son of the great astronomer, William Herschel, drew a distinction between reasoning in the context of discovery and reasoning in the context of justification. His book, A Preliminary Discourse on the Study of Natural Philosophy, was published in 1830. He studied at Cambridge University. Another Cambridge scholar, who subsequently became a professor, William Whewell (1794-1866), examined the process of discovery and found that it had a pattern like the tributaries of a river system. Facts were collated first, and concepts clarified. On this basis, inductive reasoning is applied and a conceptual pattern is formulated. Finally, the conceptual pattern is refined through the integration of facts and concepts in the inducted pattern. Each stage is a level of the tributary confluence.

Whewell used interpretative categories to guide his historical studies. In the river paradigm, Whewell placed specific facts in the watershed streams, feeding into laws at the next level of streams, and finally theories in the outlet to the sea.(83) John Losee represents Whewell's river system in the framework of an inverted pyramid.(84)

The Paradigms of
163. The Analytical Engine
164. Programming

In 1833, four years after George Stephenson's Rocket steam locomotive won the Liverpool and Manchester Railway prize, Charles Babbage (1792-1872) designed a steam-driven, analytical engine as a mechanical computing machine for the calculation of mathematical tables. The design distinguished between instructions and calculations, and founded the paradigm of memory and central procesing unit which is fundamental to modern computers. Babbage was assisted by Lady Augusta Ada Lovelace (1815-1852), daughter of the English poet, Lord Byron. She was a mathematician and proposed the use of binary rather than decimal arithmetic in the design of the machine. Her many contributions to the concepts of programming the engine make her the first computer programmer. The design contained the major components required by a computer, the input device, stored programs, a central processing unit, and an output device. The attempt to build the machine lasted for twenty years but mechanical skills were not sufficiently developed and the task was not completed.

The Paradigms of
165. Uniformitarianism
166. The Evolution of Ideas

Charles Lyell (1797-1875), a British geologist, described in his Principles of Geology, a doctrine of uniformitarianism, claiming that natural laws apply uniformly throughout time. Lyell was a friend of Charles Darwin.

The French philosopher, Auguste Comte (1798-1857), suggested that there should be a social science founded on a stable framework of concepts. He posed an intellectual evolution in human history from religious and fictitious ideas, through metaphysical or abstract ideas, to scientific or positive ideas. Comte coined the term sociology. He suggested that

there were two aspects of social physics, namely, social statics and social dynamics.(85)

The Paradigm of 167. Limitations and Potential

John Stuart Mill (1806-1873), the British philosopher, was a utilitarian who sought to rationalise the goal of pleasure with the means to attain it. The quandary for Mill was whether human limitations and human potential amounted to the same thing. He saw that the physical and social inequalities of people might make it difficult to produce both equal and more pleasure.

The Paradigms of 168. Natural Selection
169. Relative Niches
170. Evolutionary Relativity
171. Co-adaptation

Charles Darwin (1809-1882) and Alfred Russell Wallace (1823-1913), British naturalists conceived the idea of natural selection which they published simultaneously in collaboration. This was followed soon after by an extensive study by Darwin, The Origin of Species, in which he set forth the evidence and arguments of his research to justify a synthesis of evolutionary ideas. In his work Darwin portrays the process of natural selection as the functioning of pressures in an ecology of niches, each occupied by a different species. Pressure on one group would select out an adaptation which would then create pressure on another niche and so on. The process of nature was similar to the breeding of domestic animals through the intervention of human controls. The idea of natural selection retained some of the Aristotelian paradigms of final causes and the teleology of Nature. Darwin used the idea as a metaphor to refer to the aggregate action and product of many natural laws or sequences of events. Natural selection is the resollution of being from time to time, according to natural laws. The term identifies the ongoing process of this resolution. It translates becoming into being through a series of defineable situations. The relative pressures of niches, which produces a struggle for survival and survival of the fittest, might be understood as natural accounting, natural balancing, or evolutionary relativity. The paradigm is reminiscent of Descartes' cosmos of vortices. Darwin also observed social insects, the bees and ants, whose evolution was a matter of

co-adaptation in that individuals co-operated or complemented each other in the tasks necessary for their survival. Their adaptation is two dimensional: they adapt to each other as well as to external requirements for their survival.

The Paradigm of 172. Sets

George Boole (1815-1864) applied mathematical methods to logic. He contained non-quantifiable entities in sets and applied the algebra of sets to logical propositions.

The Paradigm of 173. Specialised Legal Science

In the nineteenth century, law texts in the modern tradition appeared. The earliest were by authors such as Fearne, Hargrave, Butler, Williams, Parke and Manning. These were followed by major practical works such as those of Woodfall, Archbold, Chitty and Byles. The introduction of academic law schools produced an even higher standard of reasoned and orderly presentation of the law. Two examples are the monumental works of Pollock and Anson, respectively.

It was not until 1822 that an official, albeit incomplete compilation of statutes down to 1713, Statutes of the Realm, was published. By the nineteenth century the sovereignty of parliament gave its laws the characteristic of supreme commands which the courts were required to enforce no matter how unreasonable their application might appear.

The Paradigm of 174. Pleading of Alternative Facts

In the nineteenth century, the requirements of pleading were simplified to remove the alternatives of special pleading to cover legal issues. Only facts were to be pleaded in the alternative. Issues of law could be raised at the hearing by reference to the facts stated. The distinction between law and facts was initially drawn in the process of confining the role of the jury in the resolution of the conflict. Once law and facts were distinguished, legal argument developed on the basis of the relationship between alternative rules of law and alternative findings of fact that might be available in a case. This raised complex relative dimensions of pleading. It also provided a model of human

thinking for science which, like Apollonian physics, would produce uncertainties about any single theory of the cosmos.

The difficulties of this framework of pleading became apparent in appeals. More judicial choices were raised. Where more than one judge sat to hear a case, there was often more than one view expressed. Where dissenting judgments were delivered, it was obvious that the views of those who were highly conversant with the legal system could spread across a relative spectrum of the case, maintaining contrary and sometimes opposing positions. The law might be given an absolute structure insofar as it is developed at any given time. However, as new conflicts emerge, growths and shifts of constant structure might occur within the relative dimensions of possible law.

In the Introduction to Potter's Outlines of English Legal History, a popular view of contemporary English Law is expressed.

> The English law is practical, not theoretical, pragmatic, not dogmatic; it is built up day by day by the courts in deciding disputes between living people and with full knowledge of the effect the decision of the court will have on their destinies. The legislature, the Parliament at Westminster, must deal with wholly new situations not covered by the older judge-made rules, but parliament can only enact abstract propositions of law; it is for the courts to translate them into reality.(86)

The difficulties in English legal methodology are also summarized.

> Between the numerous statutes of a Parliament there is little connection but date, but the courts have always worked to develop a coherent system whose principles would correspond with the justice of the case and yet achieve some consistency and predictability, a system which was capable and worthy of study.(87)

The Paradigm of 175. A Synthesis of Paradigms

The theoretical framework of Bacon was worked into the categories, principles and fictions which had emerged from customary law and formulary procedure as the common law. New reasons were given for old rules. The jumble of paradigms was hidden by a scientific mystique and a

romantic view of justice. The Enlightenment had provided new reasoning for science, but it removed from legal science its foundation stone of natural law. The legal system had to function by reason and legislative equity. There was a growing casuistry in case reporting and legal texts, and an increasing complexity and volume of legal theory. The legislature retained feudal notions of authority, uniformity and hierarchy. It did not respond to the progression of scientific methodology, and did not provide an alternative to natural justice. In Potter's Historical Introduction to English Law, the English legal system is introduced in romantic terms:

> But the principles of English law are rooted in an old soil, and have something of the timelessness of the English countryside. For a thousand years our law has pursued an ordered path, linking the past and present, though sometimes the steps have been slow and even faltering.(88)

Following this introduction, other paradigms are introduced.

> So great a lawyer as Sir Edward Coke conceived of English law as the perfection of reason. That all its rules are ideal cannot be pretended. Yet it provides a body of ideas and techniques which are the envy of other lands, and its practical enforcement is everywhere the subject of praise. The new statutory law cuts across the traditional body of English law in many fields, where the law is the tool of social policy. Yet in the sphere of private law with which we are most concerned, the foundation of English law is still the judge-made rule. Peculiar in method, and sometimes of almost barbarous logic, or casuistry, the judges have hammered out a system designed to meet their day and hour. It is not strange that the passing of years has left anomalies, inconsistencies and archaisms, but many apparent oddities have their reasons and the cautious lawyer clings to the evils that he knows rather than flee to those he knows not.(89)

Freedom was romanticized and so was democracy. Neither had yet been subjected to the realities of individual differences. They were unifying notions that provided a reason to tolerate and compromise. Science had not yet provided the means for achieving the advantages which these ideals promised, namely, optimum freedom and optimum satisfaction of personal needs and wants for each individual in a relative world.

The Paradigm of 176. Entropy

In 1865, Rudolf Clausius (1822-1888) coined the term entropy to describe the form of energy which is not available to sustain motion. Both energy and entropy are functions of the state or organization of things; they are defined by reference to the initial and final configurations of a system. Energy is the force that exists in motion, whereas, entropy is the counter-force in the motion. Entropy restores the equilibrium. The measure of entropy in a system is a measure of disorder or randomness of a system; an increase in a system's entropy represents a decrease in the organization of the system. In a closed system, the natural processes of the system increase entropy, ultimately causing a breakdown of the system. This is known as the second law of Thermodynamics. Entropy can be used to explain some phenomenon where causation can not otherwise be found.

The Paradigms of 177. Lines of Force
178 Energy of the Field
179. Elasticity

In the course of investigating electricity and magnetism, James Clerk Maxwell (1831-79) conceived the paradigm of a field of energy containing lines or waves of force. He considered these ideas in relation to the elasticity exhibited by physical entities, and suggested that energy had two different forms of polarization, electric and magnetic. These paradigms are used in Chapter Seven to develop a model of legal knowledge; a conceptual field is given lines of reasoning which are elastic and polarized.

The Paradigm of 180. Moral Empiricism

Henry Sidgwick (1838-1900), a leading English utilitarian, in The Methods of Ethics, first published in 1874, systematically examined common sense morality and revealed that it was founded on a hedonistic utilitarianism.

The Paradigms of 181. Reform
182. The Supremacy of Equity

During Lord Eldon's Chancellorship (1801-27), the complex procedures of the court and the delays in dealing with matters produced a chronic backlog of cases. The Court of Chancery not only ceased to be effective in providing equity, it also aggravated inequities. Potter's Outlines of English Legal History describes these times.

> ... but when Lord Eldon (1801-27) reached the Woolsack equity ceased to expand, and after his long tenure of office may be said to have formed a system of rules almost as hidebound by precedent as the common law.(90)

A series of reforms followed, culminating in the Judicature Act 1873 which unified the jurisdictions of common law and equity and created the Supreme Court of Judicature to exercise the amalgamated jurisdiction. It was expressly provided in the Judicature Act that in the event of a conflict between rules of equity and rules of common law, equity should prevail.(91) The Act took effect in 1875 and was followed by the Appellate Jurisdiction Act 1876. The House of Lords remained the highest court of appeal but the legislation introduced a requirement which ensured that peers who sat to exercise this jurisdiction would be qualified lawyers. This instigated a convention that the statutory qourum of Lords of Appeal in Ordinary sit without other members of the House. The legal system was then virtually freed from the control of feudal power.

The reforms of the nineteenth century simplified proceedings and allowed for speedier and cheaper litigation. A common form of writ containing a simple statement of the action was introduced. The facts to sustain an action, but not the law, were required in pleadings. The law continued to be developed by reference to the actions. Potter's Historical Introduction to English Law describes the effect of the changes.

> Reform, therefore, was urgent, and in the common law it took place during the years 1832-73 by the abolition of forms of action, alike in the writs commencing the proceedings, the process attendant thereupon, and in the forms of pleading. Now we reached a time when less depended upon the skill of the legal adviser and more upon the legal rights of the party, but it should not be forgotten that the old forms of action have left their mark on the substantive law of the land, since the principles of liability and permissable defences were settled under the old dispensation and are still law.(92)

And further:

> By thus disentangling the substantial issues from the technical rules of procedure and pleading, the substantive law can be expressed in terms of its relation to the facts of life. It becomes easier to state a general principle of universal application.(93)

Conclusion

Precedent in law, and prediction through science, are the hallmarks of human intelligence in modern English civilization. They developed simultaneously from the time of the Renaissance. During the period of development of legal theory, there was a burgeoning of science. Legal theory created a fabric for customary law and natural justice. As science entered an era of specialization from the time of the Enlightenment, so the legal system embarked upon an era of casuistry. Legal theory provided the fabric for the doctrine of precedent, and an independence of positive law from natural law. Justice was sought in the consistency of theoretical extension. Positive law was modelled on the Newtonian axiomatic method. Whereas the theoretical period produced a considerable amount of coherence in law and science, the era of specialization separated the law from other fields of science. By the time of the Judicature Acts, when the doctrine of precedent had been perfected, the legal system was severed from the law of nature.

In the twentieth century, casuistry has produced an information problem in the legal system, much the same as was suffered in the Roman legal system. At the same time, the specialised sciences have produced information technologies which could solve the information problem. The information technologies have the potential to enhance the administration of the law. It is now possible to design intelligent computer programs which could provide fast, cheap, specific and readily accessible legal services to the public. In the design of these systems, law might be made more intelligent. This requires a more intelligent jurisprudence. The adaptation of jurisprudence to computer technologies requires an extensive knowledge of the many dimensions of legal intelligence and how it was developed in relation to science.

It is the positive law which must be automated. However, although the law is modelled on the monotonic reasoning of the axiomatic method, the

simulation of judicial reasoning must accommodate the non-monotonic aspects of a change or modification in the law which judges sometimes employ. Although the rhetoric of natural justice is no longer used in judicial reasoning, nevertheless judges sometimes have recourse to an unlabelled extraneous source of justice. Furthermore, this extraneous source is 'shifty', and there is an element of subjective selection in the reasoning process. In order to simulate this non-monotonic reasoning, principles by which judges are guided, that are outside of the existing system of positive law must be found and brought into the system of simulation. Discarded rules must also be retained for future reference. A facility for legal entropy may accommodate the discarded rules, as part of the non-monotonic system.

Thus, a major consideration in the development of artificial legal intelligence is the refurbishment of the relationship between positive law, natural law, and custom. An appropriate form of natural law may provide a resource to manage non-monotonic automation. Another resource might be the democratic views on what the law should be, determined politically or by empirical investigation. These democratic views may provide the social reasoning that custom used to provide in the legal system. In Chapter Six an appropriate form of natural law is posed, based on Darwinian survival principles. Like the Darwinian principles, these laws are not hierarchical. Potentially, they could be in conflict in a given situation. It may be that human conflict represents a conflict in the principles of survival. Each party might seek to give priority to a different survival principle, or each party claims to rely on the same survival principle which can accommodate only one party in the circumstances. For instance, in the case of embezzlement, the employee seeks to optimize the conditions of life, while the employer seeks a co-operative arrangement; in a custody dispute, each parent seeks to undertake nurturing of the young. It may be that there is scope for compromise so that each party may realise optimum survival conditions. In seeking a solution to the automation of non-monotonic legal reasoning, the ultimate nature of human conflict may be discovered and dealt with at a scientific level. Judicial reasoning may be a matter of balancing conflicts in natural law in the course of resolving a particular manifestation of their conflict in a given human dispute. Recourse might be had to informed democratic views on which survival principle should take priority in a conflict. Specially informed juries

might be convened, through computer links, where a non-monotonic decision is to be taken.

The potential conflict in survival laws, depending upon the course of events, raises the requirement to balance the conflict in particular situations. The balancing in a given situation restores order in a new form. In this sense, the judicial process is a creative process. It may be that the Aristotelian notion of equity, as a necessary attendant of the approximation of principles, is one view of the inherent competition of and within principles. The balancing of conflicting survival principles may be a form of equitable equality. The judicial process which achieves this may be a creative equity.

The paradigms of human intelligence which were developed in the course of fashioning legal precedent as a system of law, built on the work of earlier scholars. Following the Judicature Acts, human intelligence entered an era of specialization in itself. It has now acquired the ability to produce a technological intelligence to aid itself. However, there remains the problem of how to simulate itself. The history of intelligent paradigms is a history of chaos and creativity. It seems that chaos is essential to creative intelligence - thus far at least. In order to manage the judicial task scientifically, with computer aids, the chaos and creations of human intelligence must be systematized to suit a computer environment. Within a system of artificial intelligence, there must be provision for chaos from which the creative process can draw. The solution suggested in Chapter Six is that the provision for discarded pinciples, a provision for metaphysical entropy or chaos, be a resource for future creative activity.

The history of the English legal system may be viewed as a history of chaos and creativity. Both the chaos and the creativity are cyclical and interwoven. The chaos of early customs was systematized by the common law and the medieval forms of writs. The medieval formulary system expanded into chaos. Legal theory replaced the chaos of forms. As legal theory expanded, it produced the chaos of casuistry. Now codification offers a solution to the chaos of casuistry. This pattern is similar to the pattern in the development of the Roman legal system. However, this time around, scientists borrowed from the learning in law and developed a science and technology more advanced than the achievements of the Alexandrian and Mohammedan scholars. Science offers

computer technology as a means of codification. This ordering could achieve the contemporary social goals of human welfare which are shared by both the sciences and the legal system.

The chaos of casuistry must be tailored to suit the evolution of judicial creativity in the common law. The nature of the systematization which is effected will determine the scope for legal choice. It may be that the requirements for human survival will limit choice. There might even be a fluctuation in the scope of legal choice from time to time, depending on the degree of conflict and the management of the judicial task of balancing the principles of survival in instances of conflict.

The notion of natural law as a determinant of positive law, is an ancient paradigm of judicial creativity. Although the meaning of natural law has changed through the ages, the endurance of the notion might indicate that it is a paradigm with considerable potential for stability and certainty. The Roman Catholic Church brought into the English legal system the Roman notion of natural law, which may have been familiar to the British during the Roman occupation of Britain. Natural law was introduced into English law during the early stages of formulation of the common law, after the scholastic jurists of Bologna had rediscovered Roman jurisprudence. The Romans had adopted this concept from Greek philosophy and used it, linguistically, to develop a vast system of human law. It was easy to reconcile the Christian religion and the Greek idea of natural law: God was the author of all laws of nature and therefore they were inherently just. Natural law encompassed all the laws of the human environment as well as human laws including human-made laws. Human-made laws were made by the agents of God. If any human-made law conflicted with any natural law, then it was wrong and unenforceable. This theory engaged jurists during the development of the common law, in an endless search for consistency in rules. The pursuit of consistency led to the development of legal theory.

Following the Tudor age, the theoretical period began with the influence of Francis Bacon. Civil war and revolution displaced the monarchy as the controlling power in law-making. After the Revolution of 1688, the monarchy became a figurehead, the crown, and only the notional source of power in the legal system. The claims of parliament that it was the

only law-making authority forced the judiciary to rely on theoretical necessity as a means of settling new conflicts for which parliament had not provided. Parliamentarians construed natural law as the basis of their law-making authority. In the period between the Revolution of 1688 and the Judicature Act of 1873, the English legal system suffered uncertainties and restrictions as a result of the dominance of the legislature and of science. To meet these challenges, a positivist legal science was developed. The natural law of god was pruned to the common law of the judiciary. Theory was expanded in the maze of case law, in which morality and natural law was lost. Parliament took over the task of providing equity under the banner of the welfare state.

The raison d'etre of science was that it permitted predictions. The use of precedents made theoretical development and predictions possible; the theory was mapped through cases. Where the law was certain, its applications to any behaviour could be predicted. Where there was a large measure of conformity to the law, the behaviour of society could be predicted. If there was non-conformity, there was an opportunity to compel compliance. The legal system acted as a control to determine and stabilize, by its creativity, the chaos or natural functioning of society.

Predictions about the balancing of conflicting survival principles are established through precedents. In systematizing casuistry to accommodate non-monotonic legal reasoning, it might be possible to discover the judicial heuristics of sensitive handling of minor variations in the law, and of the fine tuning that avoids chronic imbalancing of survival principles that would produce widespread discontent. These judicial heuristics may be related to informed personal legal choice of members of society which will avoid conflict. The personal legal choice of people is a form of balancing too. Without a certain amount of informed personal legal choice which avoids conflict, the judicial task may be too great. Individual autonomy in the balancing of natural law is a tenet of ancient stoicism. It also fits the Kantian paradigm of rational freedom. With increasing casuistry from the eighteenth century, legal theory has grown in volume and complexity, beyond the memory and mental capacities of any person. Computer aids may now be the only viable means of ensuring an adequate level of informed personal legal choice.

When the history of English law is set in the context of scientific developments, it can be seen that the English legal system, like the Roman system, is characterised by an interaction with science, and it is likely to continue in this way. Its present challenge lies in an interaction with computer technology. In order to meet this challenge, the systemic structures of human intelligence must be collated and reviewed. Science is a search for structures and controls. The science of human intelligence must be practised by a scientific intelligence. If the legal system is to be adapted to the age of computer technology, the limitations that were imposed during the positivist period must be considered and evaluated within the context of the broad range of intelligent paradigms. Some framework must be found to link the law to its user, and, through the system of law, to provide the user with the benefits of the collective intelligence of science and law.

Footnotes

(1) The Common Law Tradition: Deciding Appeals, Little Brown, Boston, U.S.A., 1960, pages 75-92.

(2) Op. cit. page 14.

(3) Op. cit. page 133.

(4) Op. cit. page 90.

(5) Op. cit. page 27.

(6) Exposition of the Kinges Prerogative (1567), preface.

(7) Op. cit. page 100.

(8) 3 Co. Rep. f. 7a, at f. 8a.

(9) Op. cit. page lxvii.

(10) Ibid. page lxxiii.

(11) Op. cit. page 339.

(12) 1 W.& T. 617.

(13) Op. cit. page 5.

(14) Ibid. page 6.

(15) Op. cit. page 254.

(16) Op. cit. page 44.

(17) Op. cit. page 40.

(18) Op. cit. page 116.

(19) Bennet v Hundred of Hartford, Style 233.

(20) Op. cit. page 101.

(21) Op. cit. page 555.

(22) Ibid. page 557.

(23) Ibid. page 587.

(24) Leviathan, originally published in 1651, edited by C.B. Macpherson, Penguin Books Ltd., Harmondsworth, England, 1981 reissue, page 186.

(25) Op. cit. page 565.

(26) Ibid. page 566.

(27) Ibid. page 576.

(28) Ibid. page 569.

(29) 4 Anne, chap.3, s.4.

(30) Edition by J.H. Thomas and J.F. Fraser.

(31) Op. cit. page 106.

(32) Ibid. page 112.

(33) (1833), 1 Cl. & Fin. 527, at p. 546.

(34) A.M.S. Press, New York, U.S.A., 1976, page xii. Reprint of 1761 Edinburgh Edition.

(35) Op. cit. page 42.

(36) R v Sutton, 4 M. & S. 532.

(37) The Administration of Justice Act 1933 abolished the grand jury for all practical purposes.

(38) James v Price, Lofft 221.

(39) Op. cit. page 19.

(40) Transactions of the American Philosophical Society Vol.66, Part 6, pages 11 ff.

(41) Ibid page 14.

(42) Kant's contribution to the development of the theory of evolution is discussed in Edward Clodd, The Pioneers of Evolution, Watts and Co., London, England, 1909, pages 45, 76 and 85.

(43) Translator's preface to Kant's Science of Right, Edinburgh, Scotland, 1887, page xiv.

(44) Ibid p xxi-xxii.

(45) Ibid. page 12.

(46) Ibid.

(47) Ibid.

(48) Ibid. pages 12-13.

(49) Ibid. page 13.

(50) Ibid. pages 13ff.

(51) Ibid. page 17.

(52) Ibid. page 18.

(53) Ibid.

(54) Ibid. page 19.

(55) Ibid. page 24.

(56) A Dictionary of Philosophy, Routledge and Kegan Paul Ltd., London, England, 1976, page 110.

(57) Op. cit. page 29.

(58) Ibid. page 22-23.

(59) Ibid. page 33.

(60) Ibid. page 31.

(61) Ibid. page 43.

(62) Ibid. page 45.

(63) Ibid. page 55.

(64) Ibid. page 56.

(65) Ibid. page 55.

(66) Ibid. page 63.

(67) Ibid. page 166.

(68) Ibid. page 168.

(69) Ibid. page 168-9.

(70) Ibid. page 229.

(71) Ibid. page 236.

(72) Ibid. page 237.

(73) Ibid. page 261-2.

(74) Ibid. page 263.

(75) Ibid. page 264.

(76) The Historical School was incorporated in the legal science movement. See W. Hastie, Outlines of the Science of Jurisprudence, T & T Clark, Edinburgh, Scotland, 1887.

(77) The Idea of History, Oxford University Press, London, England, 1946, page 106.

(78) Ibid. page 108.

(79) The Science of Law, Henry S. King & Co., London, England, 1874, page 4.

(80) Longman, Orme Brown Green and Longmans, London, England. Reddie discusses the work of Lepage at page 37. See also Sheldon Amos, The Science of Jurisprudence, Longmans Green and Co., London, England, 1872, and R. Floyd Clarke, The Science of Law and Lawmaking, McMillan Co, London, 1898.

(81) Ibid. pages 82-3.

(82) Ibid. page 83.

(83) History of the Inductive Sciences, Vol.1, D. Appleton, New York, U.S.A., 1859, page 47.

(84) Op. cit. page 126.

(85) See L.A. Coser, Masters of Sociological Thought, Harcourt Brace Jovanovich Inc., New York, U.S.A., second edition, 1977, pages 3ff.

(86) Op. cit. page 1.

(87) Ibid. page 2.

(88) Op. cit. page 3.

(89) Ibid. page 4.

(90) Op. cit. page 253.

(91) section 25(11).

(92) Op.cit page 137.

(93) Ibid. page 345.