Crossing the East West Divide:

New Perspectives on East-West interaction

by

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PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

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Crossing the East West Divide:

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VOLUME 1
Declaration

I hereby attest that this work, neither whole nor in part, has ever been submitted for the award of a degree to any other university.

Date: 23rd December 1999
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Abstract

This doctorate proposes a new conceptual framework for studies of Asia that relates human values, knowledge and understanding, and is developed through a pedagogical design that provides students with investigative skills to develop analytical and synthesising approaches for learning about Asia. Such pedagogy requires the intellectual development of skills to access new knowledge within and across discipline structures, and to draw upon alternate viewpoints and dialogues from Asia to develop intercultural understanding.

Consequently, the proposed conceptual framework has implications for teachers who formulate knowledge as their values determine the nature and construction of curriculum content and imagery. Teachers at the point of construction and delivery of curriculum control the central focus, inclusions, exclusions and tone by which constructed knowledge is delivered.

The various components in the portfolio are designed to support this conceptual framework. They argue for the need for research skills in order to access knowledge which reduces and/or resolves conflict and which informs educators and students about the emergence of networking in time and space across the East-West divide. The papers argue that a perception of common interests is necessary to develop coexistence and cooperation. The components of the portfolio are sequenced so they critique and evaluate tone and overlays of “otherness” in key resources and then challenge restricted definitions of Asia currently applied in Australian schools. It is argued that confining Asia to the Asia-Pacific region cannot adequately address the intellectual, religious and political attitudes and issues that evolved out of contact between Western Asia and Europe. The papers also demonstrate that a new research methodology is required that is capable of generating tolerance, connectivity and understanding, and that this entails a transdisciplinary approach to develop knowledge and understanding. The final published paper advocates a new theoretical framework to access multiple perspectives before material is filtered through value-coloured lenses, whilst the Portrait (Volume 2) provides the knowledge resource to make this possible.
Acknowledgements

I am very grateful to my husband who so unselfishly assisted and advised me, particularly on the historical and analytical Portrait. His knowledge and expertise gained through placing technology into several countries in Asia opened a new window through which to explore, construct, value and relate to Asia.

To my dedicated and inspirational supervisor Dr. Christine Halse, a special thanks for her conceptual grasp of the subject matter, contributing ideas, and meticulous refining of this doctorate.

Both these people gave me support, encouragement and assistance to complete this work at times when I wanted to abandon it.

A very special friendship has developed between Dr. Ibrahim Abu Mohammed and Nahla, his wife, as we have gained skills in crossing the religious divide between Christianity and Islam. The co-operation in shared discourses amongst their friends and colleagues provides a vision of hope for the future.

I also wish to thank the School of Lifelong Learning and Educational Change, particularly Emeritus Professor Neil Baumgart and Associate Professor Ken Linfoot for their interest.

Helen Naylor deserves a very special thank you for the loan of books from her extensive library. Some of these books are unavailable in Australia.
Overarching Statement

The Purpose of the Doctorate

The nature and the role of the study of Asia in the Australian school curriculum continues to be debated. Different perspectives have been addressed as scholars have sought to articulate the complexity of the pragmatic, philosophic, ethical and aesthetic issues involved in the study of Asia at a time of changing relations between Australia and Asia. In the course of the last decade, challenges have produced modifications in the pragmatic agenda of the Asian Studies Council of 1988 and articulated many of the philosophical problems in the study of Asia, but there has not been a concerted move to resolve these underlying problems. The anxieties and tensions related to the discourse and issues of power and control in learning about Asia are reflected in the work of writers such as Viviani (1991), FitzGerald (1992, 1997), Hamston (1996), Lo Bianco (1996), Singh (1995), Dooley and Singh (1996), Williamson-Fien (1996), Rizvi (1997) and Nozaki & Inokuchi (1996). Currently promotion of and support for the study of Asia in Australia, although not uniform across the states/territories, generally operates through the historical division between traditional discipline structures of knowledge through ‘infusion’ or insertion into the core curriculum. There has been little scholarly research to develop the knowledge and pedagogy to move students outside the limits of their own experience, through the use of imaginative curriculum design in order to manage the variety of content needed to understand and relate to Asia.

The scholarship and research within this Doctorate makes a new and different contribution to the debate about studies of Asia in schools from that addressed in the existing literature cited above. It has a philosophic and ethical agenda and demonstrates intercultural understanding can be developed through valuing cultural diversity. In the process of presenting knowledge that informs values, it makes a significant contribution to the body of knowledge about Asia.
Intercultural understanding is a multi-dimensional construct, containing elements that cross the cognitive, affective and behavioural domains (Elliott & Baumgart, 1995). The doctorate argues that knowledge has the capacity to inform values and that informed engagement and dialogue at the geographical, chronological and conceptual sites of intercultural contact leads to effective intercultural understanding. However, such engagement requires the reconceptualisation of curriculum to incorporate a global perspective so that “knowledge from Asia [is] available for recognition and consideration” (Singh, 1995, p.7).

The site of intercultural contact is an abstract place where multiple viewpoints, constructs of the nature of knowledge, values and beliefs intersect to create perceptual-cognitive lens that provides insights to new understandings. This multi-dimensional construct can incorporate geographic, cultural, historical, conceptual, ethical, spiritual and/or scholarly perspectives. It can emerge through formal and informal education, through the media or cyberspace, or through personal contact. At the site of intercultural contact, a universe of knowledge exists to be accessed and applied and this knowledge can be manipulated in many ways.

An historical and critical investigation of western and particularly Australian viewpoints, impressions, attitudes and practices in the construction of knowledge about Asia reveals a long history of reluctance in popular and scholarly research to accommodate other diverse viewpoints and dialogues. The research on which this Doctorate is based has sought to influence thinking about the generic term Asia and the many Asias that exist within it, and to learn from many voices that contribute to global thinking. The primary premise or agenda underlying the research is that values shape preferences and beliefs and that these beliefs frame the principles, levels and ways in which we are prepared to personally and intellectually engage with other cultures. If values and beliefs are informed and responsible, they can play a central role in positive attitude formation and facilitate intercultural understanding (Willinsky, 1992). This Doctorate therefore seeks to develop the knowledge, understanding, methodology and theory that will support
teachers and make it possible for deep intercultural understanding to develop in the classroom.

The desire to understand the deep seated separation of East and West originated in my own personal experiences. The Ed.D. portfolio plots a professional journey that originated in my work as a teacher, but developed into writing about teaching and designing curriculum, theorising about the nature of knowledge related to Asia and creating strategies to develop full understanding by contributing to the body of knowledge about Asia.

The research is principally an analysis and reinterpretation of material from secondary sources, including discourses from Asia. The research methodology did not involve collecting data from teachers, students or others and then proceeding to analyse results and draw conclusions based on primary data. Rather it involved a careful collection of materials, observation of classroom practices, a cumulative account of what happens in curriculum development and observation of the effect of learning about Asia through knowledge sources that are beyond students’ experiences and that challenge myth and imagination. The research traces a movement from practitioner to curriculum designer and to theoretician who seeks to improve the nature of knowledge that will enhance East-West relations. Explanatory principles have been drawn from different disciplines to identify and explain limitations on students’ learning. From my work on curriculum committees, trialling of materials and the case study in Part 3 of the portfolio, I have observed what was necessary to produce higher levels of intercultural understanding. My scholarship throughout the Doctorate sought to explain the success of such interventions in terms of my own theorising.

There is a continuous argument throughout my research for better and unbiased resources for teachers and students. So the research necessitated going beyond theorising to produce the Portrait. This Portrait seeks to inform values and attitudes and facilitate understanding and balance through the provision of a combination of world, rather than eurocentric, viewpoints. To achieve this outcome, knowledge inherent in a wide range
of western learning disciplines is combined with knowledge sourced from eastern discourses. Thus the Portrait provides teachers and students with information from different perspectives so that all relevant material can be considered before it is filtered through value-coloured lenses. It is a "knowledge" resource that provides a panoramic synthesis of key ideas and events in premodern Asia that had significant intellectual, religious and ultimately political impact on the West.

The focus of the scholarship has sought to explain the success of such interventions in terms of my own theorising and to argue for better, unbiased resources for teachers and students. I have always been interested in studies of Asia, but concerned about my lack of knowledge to cross the divide in intercultural understanding. As a practitioner in the field, first as a teacher and then through involvement in curriculum development and management, I became a scholar undertaking formal courses in the field. Finally this led me to commence this Doctorate specifically to take a particular direction in my research and to systematise many of the ideas that had been developing through my involvement in the study of Asia.

The Doctorate makes a contribution to intercultural understanding by valuing cultural diversity. It does this, firstly, by critiquing the impact and limitations of current knowledge and pedagogy and secondly, by proposing how new forms of knowledge can be accessed and engaged to inform values. The approach is positioned in the conceptual organisation of subject matter and is linked to a pedagogical design that is based on valuing processes which combine investigative skills, communication techniques and analytical approaches. New understanding is able to emerge through new ways of knowing, to appreciate cultural diversity, intercultural understanding, issues of social cohesion, interdependence, and to study changing issues of regional and global significance that are relevant to the student's future. The theories proposed offer ideas and strategies for selecting content from a range of disciplines to create a new synthesis of knowledge in a flexible framework, designed for an intention different from but not bounded by the constraints of disciplinary based curriculum and inquiry. The research therefore demonstrates that it is possible to design rigorous pedagogy to create new
knowledge through a union of subject matter, concepts and methodologies that connect many disciplines and cultural narratives, and extend the subject matter of traditional disciplines so that the boundaries of knowledge are not restricted but the integrity of disciplinary knowledge and familiar pedagogy remain intact.

The objective of this research has been to support the development of new perspectives that can contribute to dissolving the East-West divide and improve East-West understanding. Despite Said’s (1995) criticisms of western constructions of Asia as the “Other” and his call for “a new way of conceiving the separations and conflicts that have stimulated generations of hostility, war and imperial control” (p.352), there has been little work in curriculum design to map and construct a pathway through the complex issue of orientalism and the many ways the West has viewed and imaged the East. This research documents human beings communicating, reaching out and relating across the East-West division, connecting, enmeshing and networking through time and space in a process of cross-fertilisation of ideas. The arguments, research and knowledge presented in the Doctorate comprise a conscious and deliberate effort to shape educators’ and students’ knowledge and thinking about Asia, to stimulate informed and enduring values about Asia which reformulate historical interpretations and contribute to the dissolution of the conceptual and attitudinal divide between East and West.

The Doctorate seeks to demonstrate the centrality of human values involved in the study of Asia. This stance is premised on the view that knowledge of experiences located in the past trivialised Asia because the West used a mode of reasoning based on myth and imagination (Davies, 1997, pp.19-29). Such reasoning affected the perception of realities and attitudes of the present, and will continue to influence these in the future if appropriate action is not taken immediately.

It is argued that educational theory and practice can contribute to the design of a meaningful curriculum to deconstruct past myths and work towards educational outcomes involving dialogue, engagement and social cohesion with the people of Asia, in an emerging global civilisation.
Part of the research explores the psychological and knowledge processes that shaped the perceptions and attitudes which created the East-West divide, and counteracts these with an epistemology, multi-dimensional pedagogy and experiential learning approach that draws upon other cultural traditions. It further offers strategies and ideas to design a new approach to progress knowledge about Asia that enables exploring the cumulative processes by which people connected across diverse cultural divides over many millennia, through creative ideas, inventions and technologies, and through religious and philosophical conceptualisation of spirituality and ethics.

It is argued that the knowledge that informed Western attitudes about Asia have contained and continues to contain serious omissions about the history of interaction between the West with its Eastern neighbours. Wetterau (1990), for example, in The New York Public Library Book of Chronologies excludes Chinese examples of key contributions to nautical engineering.

Kemp (1976) offers great insight into the centrality and responsibility of research in formulation of evolving knowledge:

New knowledge depends on existing knowledge and is assimilated into it, thereby expanding it and, frequently modifying it. This cumulative effect of such modifications is that, however slight they may individually have been, collectively they will eventually be sufficient to change the previously existing knowledge completely.

Much modification of knowledge is necessary in a global society. How long will education continue to contribute to the global state of anxiety and tension, and fail to encode knowledge that makes possible a sense of global social cohesion? Part of the research identifies examples of western knowledge about Asia based on western perspectives that urgently require modification to incorporate multiple perspectives. These examples demonstrate the urgency needed to achieve reform in curriculum theory and practice related to theoretical, conceptual and values issues in the study of Asia.
Overview of the Research

The portfolio of research papers is chronologically ordered into six parts.

Volume 1


Volume 2

6. Book manuscript entitled Eastern Influence on Western Thinking: an Analytical and Historical Portrait. The book manuscript (referred to as the Portrait) comprises the following sections:

Introduction
portrait 1: East and South Asia --- Civilisation and Culture
portrait 2: East and South Asia --- Religion and Philosophy
portrait 3: East and South Asia --- Science and Technology
portrait 4: West and Central Asia --- Civilisation and Culture
Part I of the portfolio consists of a suite of published book reviews. Within this section, the reviews published in Baumgart and Elliott (1996) comprised the result of a commissioned evaluation of nine resources, (eight books and a package of map-based materials) released by the Asia Education Foundation (November, 1995) to promote the study of Asia across the curriculum in schools. I was invited to do this evaluation by Baumgart and Elliott because of my interest in and experience of studies of Asia in New South Wales schools. The reviews were duly completed by the writer and then edited for inclusion in a national evaluation of the Asia Education Foundation (AEF). The published report was widely disseminated and provided a basis for decisions by the Commonwealth Government on further funding for the AEF.

The evaluation of the school resources provided me with background, insights (and courage) to engage in the dialogue and debate about the nature and role of the study of Asia in Australian curriculum, to critique conceptualisations of Asia and assess their significance for the future, and to focus research on Asian contributions to world heritage.

The aim of the resources was to support the inclusion of Asian content across all key learning areas in the curriculum “to provide a basic understanding for all” (Studies of Asia: a statement for Australian Schools, p.11). The books and resources were designed for primary and junior secondary students to assist practitioners with limited knowledge about cultural diversity to develop important basic concepts and ideas related to Asia literacy. In the reviews, I expressed concern about the failure of the materials to include information about fundamental developments in science and mathematics in Asia prior to
the emergence of western scientific achievements. My later research indicated there was no adequate or accessible scholarly research covering multiple perspectives on Asia to facilitate or support the preparation of profoundly challenging educational resources for primary, secondary and tertiary students in this area. More generally western publications on the development of world heritage were characterised by omissions about Asian contributions. Rather, knowledge sources from Asia had either been excluded or omitted from much educational research of knowledge related to Asia. Limited definitions of Asia inhibited the scope for understanding the origins of historical attitudes to Asia and of the diversity within Asia. Instead *eurocentric* attitudes created a traditional focus resulting in the neglect or omission of non-European viewpoints (Morris-Suzuki, 1998).

The reviews indicated the need for educational materials and resources that provide in-depth knowledge whilst challenging attitudes and relationships between Asia and the West. Such materials require a conceptual understanding of people interacting and connecting across societies, cultures and environments, and a curriculum framework that can accommodate students' interests and future needs in relation to Asia literacy, whilst utilising active investigative research as a pedagogical approach to validating knowledge.

This Doctoral work gained direction from the insights developed during the resource evaluation. My subsequent research has sought to reform professional practice by directly supporting teachers' professional development in studies of Asia by providing a framework to enhance students' *valuing* skills through access to scholarly knowledge related to and sourced from Asia.

1.2 Two reviews published in the *Asia Education Teachers' Journal*, 1997, 25(2) pp. 57-58.

The first review was of *Access Asia: secondary teaching and learning units*, (1996) Curriculum Corporation and the University of Melbourne. The resource comprises of nineteen teaching units developed by experienced classroom teachers. The introduction to the units states that the resource provides exemplars of "how learning about Asia can
begin from familiar points in a range of learning areas and can be applied to all year levels" (p. viii). The review contributed to my personal realisation and concern that the theoretical knowledge of practitioners was inadequate and contained substantive gaps, especially in learning areas related to science and technology. This concern marked a conceptual point of transition in my growth from a practitioner to a theoretician who aimed to inform practice through an interdisciplinary investigative pedagogy in which the subject matter and methodology of perception were of primary importance.

The second review was of What is a Home: Development and Environment Issues of Asia. AusAID (Australian Agency for International Development). A primary resource by Catherine McNicol, Sandra Klapste and David Pace.

The strength of this resource is its capacity to develop observational skills and to involve students as participants in their own learning. Its weakness lies in its potential to unwittingly reinforce stereotypical images in the hands of uninformed practitioners with limited Asian knowledge and perspectives. Critiquing skills are important in using this resource. Teachers involved in the study of Asia should possess the practitioner skills to mediate the agenda of those who formulate resources and control the selection of knowledge and imagery. It is easy working from this set of photocards and set questions to serve eurocentric interests and to apply orientalist perspectives.

**Implications of the reviews for the Doctorate**

The suite of reviews described above provided future direction for the Doctorate by identifying two areas of research: firstly, the need for teachers and other practitioners to access knowledge outside the range of their experience, and secondly, the need for a pedagogy that empowers students to access scholarly knowledge that can stimulate the development of attitudes and values to dissolve the East-West divide. I took up the challenge and entered the debate. The remaining components of the doctorate endeavoured to address these two issues.
Part 2 of the portfolio


The paper's reference point was a study of the influence of Asia on global thinking and human relationships in the past, present and future as set out in the Asia Education Foundation publication Studies of Asia: a statement for Australian schools (1995) and specifically in the section “understanding contributions made by people of Asia to world heritage and traditions including those of art, science, technology, philosophy and religions and spiritual beliefs, and particular episodes in the history of Asia that have been significant in contributing to the world’s development of knowledge” (p.18).

The paper levelled criticism at three aspects of prior research. Firstly, inadequacies in defining and conceptualising Asia which continue to be debated; secondly, the failure of research to document and appreciate the diversity of Asian contributions to world heritage and the connectedness occurring across this diversity; and thirdly, the constraints placed on appreciating and understanding Asian spirituality and the origins of world religions because of the limiting perspectives presented in defining Asia.

The paper argued that future research on the study of Asia be given a strong sense of direction through a definition of Asia that operated from a worldview, and that also included the “East” as historically viewed by the West and as an artifact of European imagination that defined Asia as “the other” in order to construct its own western identity (for a similar view see Evans, 1993, p.4). It further argued that the current definition of Asia employed in Studies of Asia: a statement for Australian schools (1995), principally meets Australia's economic and political needs and aspirations for the future, a self-interest conceptualisation. Such a systems approach excluded a societal understanding of human networking and the ferment of ideas, particularly along the Silk Road, and the connectedness occurring across religions, for example Judaism, Christianity, and Islam, in their places of origin. The paper therefore challenged Australian curriculum to discard
inadequate definitions of Asia and to accept that the boundaries of Asia start at the Bosphoros, the historic “East” as viewed from the “West”, where the attitudes that formed the East-West divide originated.

The paper represented my movement from being primarily a teacher concerned about studies of Asia to a scholar engaged in researching the literature to debate conceptual issues about Asia and hence what should be taught in the curriculum. Whilst the paper was a theoretical discussion, it has had valuable practical and professional impact. The Asia Education Teachers’ Association now accepts the boundary defined in this paper [The Asia Education Teachers’ Journals, 1997, Vol. 25 (3), Focus: The Silk Road and 2000, Vol. 28 (1), Focus: West Asia]. In the draft writing brief to update the syllabus on Studies of Asia in 1995-96, awaiting further preparation by the New South Wales Board of Studies, the definition of Asia proposed in my paper, has been accepted.

Part 3 of the portfolio


This paper further progressed the challenge to develop an adequate conceptual framework to manage the studies of Asia in curriculum planning for the 21st century. The paper argued for a transdisciplinary approach to organise knowledge by drawing on the methodologies and focus of the long established humanities plus the knowledge and concepts made possible through the newer disciplines of political science, psychology and social psychology, sociology and anthropology as well as emergent subjects such as environmental science and media studies, in a context that utilised increasing complex technology. Such a framework must be sufficiently broad to allow students to understand and respect the fact that all societies have the right to create their own forms of modernity. It must also be capable of providing students with an adequate base to observe and immerse themselves in the culture of the indigenous people.

The purpose of this paper was to invigorate the discussion about the identity and location of studies of Asia by encouraging curriculum planners to position secondary school
studies of East-West issues in a world context that reconceptualised “what had for centuries been believed to be an unbridgeable chasm separating East from West” (Said, 1995, p. 353). The paper argued that knowledge and values interact and that the conceptual framework for studies of Asia curricula should be centred on human values which are constructed from knowledge and dialogue about world civilisation. The values which individuals hold determine the basic principles through which the brain filters guidelines to inform behaviour (Elliott & Baumgart, 1995). If values have been constructed through inadequate knowledge, experiences and memories, then interaction with people, societies, cultures, environments and technologies is inappropriately guided.

This paper further argued that promotion and support for the study of Asia currently operates through the historical division of traditional discipline structures of knowledge or infused across the curriculum: “aspects of studies of Asia should be incorporated into existing course content across the curriculum” (Studies of Asia: a statement for Australian Schools, p.10) but is generally limited to history and geography. The current organisation of subjects as discrete entities in schools limits a cross-disciplinary understanding of Asia and constrains students’ understanding. The concepts of newer disciplines are as yet untapped. For example, the focus of anthropology lies in the diversity of humankind and a fundamental assumption of its subject matter and conceptual organisation is that cross-cultural communication is possible (Evans, 1993, p.10). Without the knowledge, concepts and methodology of such a discipline, it is difficult to validate material in the culture being researched and/or observed. Similarly, the methodology and subject matter of integrated studies such as media studies are critical for involving students as active participants in “knowing” Asia. The paper therefore argued that the principles established in the Studies of Asia statement are too limited to develop multi-dimensional perceptions of Asia.

The paper therefore suggested that an understanding of what constitutes Asia requires access to multi-dimensional and cross-disciplinary knowledge, combined with concepts of the whole range of discipline structures that are integrated through transdisciplinary methodologies to access a worldview about the formation of values and attitudes and to
dissolve the East-West divide. It proposed a holistic, transdisciplinary curriculum design that used the methodologies of various disciplines and demonstrated its application with a case study of Hong Kong, and the handing over from Britain to China. The desired outcome of the case study is for students to develop intercultural understanding by connecting with an event in their own lives through an active, investigative case study which allows them to validate knowledge beyond that of media reporting.

The professional impact of this paper is already evident. Within two months of publication, it was handed out at a key seminar about the teaching of Asia in NSW conducted by the Independents Schools Association at the Power House Museum and was also cited in the NSW Board of Studies HSC Subject Evaluation, Society and Culture Evaluation Report, 1998 (pp.32, 41). Ethos, the Victorian Association of Social Studies Teachers Journal, invited republication of the case study Hong Kong: Analysis of an issue as an exemplar for teaching practice to handle key issues, particularly in the Victorian International Relations course, at upper secondary level, and the case study was published in their 1998 edition.

In summary, the impetus of my research at this point directed me to conceptualise theoretical issues in the construction of knowledge about Asia and to provide suggestions about the practical management of information flows contained in issues of our times.

Part 4 of the portfolio


The research theory I brought to this paper was designed to explore connectivity, parallels and similarities that might counter the limitations of current theoretical discourse. In terms of religion the current debate continues to focus on problems and anxieties in Judaic/Christian/Islamic relations. My motive in researching this paper was to generate in students a sense of hope by opening their horizons to potential positive images of religious relations and by demonstrating that through investigative research it is possible to develop knowledge that generates intercultural understanding. The paper's
origin was borne out of an effective classroom experience, conducted in a very multicultural school that sought to dissolve the East-West divide by researching knowledge that constructively reduced and/or resolved religious conflict. A very powerful emotional component of intelligence was involved in this issue (Goleman, 1996) and the knowledge that emerged informed values and effectively overrode the fear and anxiety that had the potential to create alienation among the students.

Predominantly Christian assumptions in the West have neglected the parallels, similarities and relationships written in the spiritual and moral philosophies of Judaism, Christianity and Islam. In this paper students were urged and guided to undertake scholarly analysis to clarify confusion and misunderstanding of the commonality and interconnectedness of the written teachings of the three religions and to realise there is more than one legitimate history of religion, but that Judaism, Christianity and Islam, all originated in Asia, and have been involved in each other's exchange of ideas and commonality of development.

My search of the literature showed that information about the cross fertilisation of ideas between religions existed but such knowledge is not readily accessible to students and their teachers. If such a knowledge base continues to be omitted from curriculum and if Islam continues to be popularly perceived as a religion of threat and myths based on difference, then students’ attitudes will be similarly constrained. It follows that normalisation of tensions and anxieties will continue and fulfil Huntington’s thesis that Sinic and Islamic civilisations are the most dangerous challengers to Western civilisation (in The Clash of Civilisations and the Remaking of World Order, 1996).

My analysis suggested that there is a powerful factor within the processing of information related to values formation that takes precedence over and selects or filters information from sources of knowledge. If this analysis is correct, the understanding might be addressed through an explicit knowledge framework that informs values. Thus, what is needed is to give students access to different sources of information and sufficient time to
engage the knowledge rather than allowing previous values or positions to select or filter what is perceived as “appropriate” knowledge.

It is interesting to note that in the editorial comment by Professor Kerry Kennedy of Canberra University in the edition of *Pacific-Asian Education*, p.5, in which this paper was published, Professor Kennedy acknowledged both the contentiousness of the debate addressed and the significance of the paper.

Margaret White explores comparative religion as a way of introducing young people to significant cross-cultural understandings. Many will disagree with her approach as it takes a certain amount of accommodation to place Christianity, Judaism and Islam alongside each other and search for commonality rather than difference. Yet there surely is a degree of commonality in the humanity that we all share and the more it is stressed, the less likely it is that there will be conflict.

**Part 5 of the portfolio**


This paper argued that understanding China required teaching practice based on a scholarly holistic, investigative methodology which incorporated knowledge from the newer disciplines and the constellation of images available through interactive media. Curriculum design needs to manage the function that clusters of images play as they fuse to form conceptions about China, so that students understand the psychological processes involved in observing and cataloging human experience at the site of cross-cultural contact and exchange. Erikson’s research (1996) demonstrates that the agenda of image formulators is a critical component of observation. They must be self-critical about the relationship they hold with those they study.

This paper hypothesised that a new, web-like transdisciplinary curriculum framework is required to value cultural diversity and to generate intercultural understanding, by using
imagery which fuses many dimensions of knowledge and perception within human consciousness.

By the time this paper was being researched, the subject matter and methodology of psychology was becoming critical for me to understand the learning processes involved in conceptual and image formation, particularly with respect to the methodology of perception. Knowledge and methodology of perception formed the basic theory of this paper to assist students to move outside the gravitational field of their own experiences. How do you create learning experiences that alter deeply entrenched images borne out of myth and imagination about the "other" and replace them with appropriate images that inform attitudes and values?

This paper further demonstrated the shift from pedagogy to underlying theory in my analysis of the study of Asia. The paper had three aims: firstly, to outline the role that image plays in learning about Asia generally and China in particular; secondly, to demonstrate that considering the agendas of those who construct and present the images is a very important consideration in observing and researching; and thirdly, to speculate on the emergence of a new transdisciplinary framework, web-like in structure, that permits intercultural learning to move to combine perspectives of both surveillance and human relationships. These concepts of surveillance and human relations warrant clarification. The term surveillance is not related to a Foucauldian concept of surveillance in a power relationship, but emerges out of the work of Erikson (1996) who draws a distinction in the stance of inquiry between surveillance, as in the work of people such as economists, and human relations, and the work of people such as myself who are engaged in the area of intercultural communication and understanding. Erikson emphasises that both are necessary.

My own personal insights and determination to know "Asia" were borne out of childhood experiences of knowing China through images constructed from myth and imagination. Myths as the source of Australia's knowledge about Asia has been validated by the overwhelming evidence in the literature (Broninowski, 1992). Behind the imagery, clearly
defined agendas can be identified. It was evident to me as I framed this paper that the process and point at which information was encoded had to be understood to make serious redressing in intercultural misunderstanding. At this point I turned to texts on the psychology of learning in an attempt to gain insight into how to move forward. The evidence suggested that the conceptual process in image formation would hold the key. It was at this point the two diagrams central to this paper evolved and I shifted from scholar to theoretician. I began to theorise on the centrality of values in the formation of image and to develop methodology for teachers and students to understand the interaction of words with visuals in image formation.

The values and agenda of those whose representations tell us authoritatively about China now become part of the new learning process. This insight has become very important in developing theory about image formation and image literacy. Evidence suggests that Australians still view China with a remarkable degree of continuity with earlier images (Harris, 1996). This paper developed a theory to guide a methodology for managing complex image formation. It identified the critical stages in image perception as observation is filtered through existing experience. A theoretical model explained the process of information processing that links meaning to imagery to store concepts and imagery in memory. This paper theorised that it is possible, through appropriate knowledge and pedagogy, to target specific stages in image formation. It is possible to interrogate the adequacy of, and manage, imagery in multimedia. Historical experience alerts us to a critical essential in experiential learning: that comprehension from observation is filtered through existing experience and existing perceptual lenses. In this paper an explanatory, diagrammatic, transdisciplinary web was developed to broaden the scope of experiential learning and to access multi-dimensional viewpoints. The theoretical model emphasised the need for balance in the development process as students combine their cognitive and imaginative skills to construct their own images to summarise knowledge, challenge their own knowledge bases and to facilitate memory about China. The research provided evidence of people in the West persisting with a mode of reasoning that precluded them from examining Asian countries in their own
terms, and predisposed them to thoughts of imperialism, profit and conversion to Christianity.

The paper concluded “in order to enhance our experience and understanding and deepen cultural links in an emerging global civilisation, there must be a focus on China and its identity, its past (with its intellectual and cultural traditions), its present (with its problems and aspirations) and its future place in the world”.

**Part 6.**

Volume 2 of the portfolio comprises a book manuscript “Eastern Influence on Western Thinking: an Analytical and Historical Portrait”.

The book manuscript (hereafter the *Portrait*) is to be published as a resource for educators, teachers and students.

**What is the Portrait?**

The *Portrait* seeks to challenge Western omissions of knowledge which have permitted attitudes to be formed through false images of past reality. A multi-dimensional construct which includes Asian viewpoints is provided in the *Portrait* to ensure that attitudes and values are informed and responsible.

The *Portrait* sets out to build a bridge across the “unbridgeable chasm” that separates East and West by constructing social networks, boundaries and global relations (Singh, 1995, p.38) using new combinations of knowledge that move in the direction of co-operative co-existence and tolerance.

Throughout the Doctoral research, it has been argued that the nature of knowledge that has informed the West in the past and upon which attitudes have been constructed has contained serious omissions about the interaction of the West with its neighbours in the East. The *Portrait* is intended to moderate the tone, assumptions and content that informed western attitudes, by providing Asian viewpoints to assist in developing informed and responsible attitudes.
The pathway of the Portrait was defined very early in the research process when a need was identified in the literature.

Somehow an appreciation of the autonomy of separate civilisations...across the past two thousand years needs to be combined with the portrait of an emerging world system, connecting greater and greater numbers of persons across civilised boundaries.

To make this a feasible enterprise, one needs a clear and distinct idea of the emergent world system as manifested first in the ancient Middle East and a second time in the modern world, and then one must reflect on how these two systems intersected with the more local civilisational and cultural landscapes they impinged upon. (McNeill, W., 1991, p.xxii).

The Portrait aims to document snapshots of a world system that connected increasing numbers of people, particularly in the ancient Middle East, Persia (now incorporating modern Iran), India and China, before the rise of the West in the fourteenth and fifteenth centuries, addresses two particular spheres of world heritage knowledge and traditions that gave communities social cohesion: firstly, science, mathematics and technology; and secondly, philosophy, and religious and spiritual beliefs.

There is a great gap in the source material available to teachers and students about Asian scientific and mathematical discoveries and technology and in recognising the oriental source of Christianity and documenting encounters with Asian spiritual thought.

The New York Public Library Book of Chronologies and The Macquarie History of Ideas are two illustrative examples of erroneous or out of date material or written with a western bias. The scholarly research of this Doctorate provides clear evidence that western scholarship has omitted or failed to recognise the significance of Asian antecedents. For example, the Book of Chronologies omits key contributions of Chinese nautical engineering to global maritime engineering knowledge and the Macquarie History of Ideas fails to adequately document the Chinese contribution to smallpox research and development. As a result, the Portrait as it now stands, has grown into a study of the influence of ideas from premodern Asian regions on the West and it is

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designed as a resource for educators, teachers and students. It is quite a large document and is composed of nine smaller portraits, an introduction and a reference list.

The intention of the Portrait is to provide much more than a chronological sequence of events. It is a panoramic synthesis of information, evidence, analysis, explanation and interpretation to encourage teachers and students to read the related references, source material listed and to challenge them to be aware of the inclusions and exclusions of Asian views and perspectives on issues, at all times.

The scope of the portraits extends beyond that utilised by others and provides knowledge, explanations and guiding references of Asian contributions to world heritage in premodern times. No one has previously documented these encounters in this manner. The method of referencing in the Portrait is designed to facilitate further investigation or research by guiding readers to relevant and more detailed literature of what the West borrowed, adopted and adapted from the East. The global world of the twenty-first century will find it difficult to formulate a relationship of respect and harmony if it continues to live with partial fact and inappropriate attitudes formed through selective amnesia and notable omissions, be they deliberate or inadvertent.

The Portrait documents the part played by the East in the formation (and transformation) of western thought prior to the modern era. It brings together material that has not been available to the West until very recent times. For instance, in portrait No. 3 East and South Asia - Science and Technology, including mathematics and astronomy, there is an account from the tenth century of an explanatory and interpretative exemplar of networking across the East-West divide relating to vaccination against smallpox and which contributed significantly to world health. This discussion emphasises that Western texts not only failed to acknowledge the Chinese origins of smallpox vaccination but to attribute it, with its extensive research and development, to Lady Montagu, the wife of the British Ambassador to Constantinople. This exemplar illustrates the flavour of the research presented in the Portrait.
Contributions of the EdD to professional growth

This Doctorate grows out of a long and intense personal and professional involvement and learning to engage with Asia. The nature of this learning is detailed below. The concept of Asia as alien, culturally trivial “yellow peril” (Bronowiski, 1992) to be feared, entered my consciousness as a child growing up during World War 2. Cartoons and propaganda shaped attitudes towards a wartime enemy and stimulated mythical images deep into the psyche of children, who, even though they did not understand, processed and stored these threatening images. Such images met the social and political needs of the time and education made no attempt to develop a more mature understanding in children.

The “revolution in thought” by the Japanese (Shoten, 1985 pp.185-198) which grew out of their “common experience of wholesale death and desolation... [to] search for an enduring peace” (p.185) did not reach the West until 1952 when the West confronted new knowledge about the power of nuclear weapons and strengthened its commitment to peace. Censorship by the Occupation Forces had “stifled the free flow to the outside world of information on the impact the A-bomb damage and suffering” (p.197). As evidence accumulated of the consequences of all-out nuclear warfare, an anti-nuclear/peace movement emerged and attracted my interests, but did not develop clear definition for another 25 years as ideological fears of communism swamped America and Australia.

This period was characterised by “heavily negative” images (Mackerras, 1989, p.185) of a threatening “red river” (Bulletin 16 June 1954,) and of advancing Asian communist armies on the northern Australian horizon (Andrews, 1985, p.151). Australians continued to adjust their attitudes to the Chinese based on those misperceptions of danger. Goleman’s work (1996) demonstrates how fear gives the emotional centres of the brain immense power to “influence the functioning of the rest of the brain-including its centres of thought” (p.12). The baggage of such “fear” education still remains within the population.
In the late 1960s when I was a mature aged student the anti-nuclear movement, travel and the moon landing provided new perspectives to know and learn about Asia. The Vietnam War instigated a watershed in Australian thinking, values and behaviour, and there was a discernible change in intellectual and artistic attitudes and practices of documenting western contact with Asia (Broniowski, pp.117-118). Its impact on education in New South Wales changed the focus of professional practice and a new generation of scholars and teachers emerged who were more sympathetic to Asia and interested in genuinely knowing and understanding Asia. Thus “acquiring a sense of interdependence” was written into the aims of the submission to the New South Wales Secondary Schools Board from Departmental Inspectors of Social Studies in 1966 for a course in Asian Social Studies, implemented in 1969. The Preamble to the Asian Social Studies Syllabus included a critical new Aim 5 “to help pupils to a realisation of the close relationship existing between Australia and her Asian neighbours and to acquire a sense of interdependence of all the world’s people”. Nevertheless Asian Studies, was never accepted as a significant mainstream subject in schools. It was deemed a “low priority” in the educational bureaucracy. At the beginning of the new millennium, with increasing pressures upon inclusions and exclusions in a crowded core curriculum, complex conceptual knowledge of Asia, sourced from both disciplinary and transdisciplinary avenues, and knowledge of perceptual processes related to intercultural understanding continue to have low priority.

During the decade of the seventies, I became actively immersed in developing knowledge and methodologies for students to learn about Asia using knowledge sourced from outside their own experiences. In 1971, the year I started teaching, my family took our first of many trips to Asia. My learning at the site of intercultural contact challenged the contemporary Australian attitudes towards Asia, and convinced me that Australian social science curriculum needed to develop new modes of thinking about Asia.

In 1972, my involvement in curriculum design and development continued with my appointment first as an observer and later as a full member to the New South Wales Asian Social Studies Syllabus Committee. Despite the commitment of the committee
were practitioners. The development of a scholarly basis for teaching Asian Studies was accelerated by the establishment of the Asia Teachers’ Association (later the Asia Education Teachers’ Association) and the work of Dr. David Dufty (1975) and the Intercultural Studies program at the University of Sydney.

During the 1980s I was the Asian Studies consultant in the Metropolitan West region and with Dr. David Dufty and Lyn Scott, involved in updating the Asian Studies syllabus. Three processes (investigating, valuing and communicating) and four subject matter areas, (Asia and its Peoples, Depth Studies, Asia and Australia, and Asia-Australia-World Issues) constituted the basic structure of the revised syllabus. The Depth Studies aimed to move students outside the limits of their experience to develop an understanding of Asian societies in their own right. To this end, I co-authored *The Chinese Way* (1984) with Janet McRae. Further development of the three processes of valuing, investigating and communicating form part of this Doctoral research. Similarly, the concept of intercultural communication, introduced in the updated syllabus, has been further developed to address intercultural understanding and provided the genesis for the direction of part of the scholarly research in this Doctorate. I have been challenged through the Doctorate to theorise about intercultural understanding across the cognitive, affective and behavioural domains at the site of intercultural contact, and to systematise and offer strategies to accept cultural diversity in order to achieve intercultural understanding.

I extended my scholarly and discipline knowledge of Asian Studies by completing the first distance post graduate diploma in educational studies related to Asia offered by the Armidale College of Advanced Education during 1982-83. My work resulted in being awarded the college medal and a authored resource with Peter Young entitled *Australian's Relations With Asia* (1988).

In 1981, I became a member of the Society and Culture curriculum writing team with the brief to carry the transdisciplinary principles developed through the Asian Social Studies syllabus into the senior school.
With Professor Christine Deer (1984), I conducted classroom research to develop strategies to help learners to be actively involved in constructing knowledge for themselves according to their needs and interests. An intended outcome of this knowledge acquisition was that students reconsider values in the light of their own research. It was mandatory that the research access viewpoints alternative to those of the immediate culture of the student. This was considered a fundamental step to lead to the acceptance of cultural diversity. The research experimentation was published as “Students as Researchers” (Deer, Jarvis & White, 1987), and developed into the Personal Interest Project, a core component of the Society and Culture course.

The methodology developed out of this experimentation has special application in confronting the complexity of the study of Asia. The first HSC Society and Culture examination was conducted in 1986. I was Chairperson of the Examination Committee until my retirement. Asian Studies was never scholastically systematised and hence the Doctorate became the opportunity that allowed me to reanalyse my cumulative observations and the available literature, and cumulatively account for what happens in curriculum development to produce higher levels of intercultural understanding, in a systematic way.


With the introduction of the 3 Unit HSC component of Society and Culture, I wrote the guidelines to teach *Continuity and Change in Japan*. Ninety percent of the candidates in the first year presented in this choice. The guidelines gave very specific directions for busy practitioners, not well versed in understanding Japan, on how to and what to access in relevant key resources and the ideas presented to assist the professional development
of teachers then, have contributed to the conceptual development of the Portrait in this Doctorate. The methodology at that time was based on effective personal theorising and the scholarship of the Doctorate has searched for explanations of the success of such intervention.

In the "Consultation Progress Report for Society and Culture" (Board of Studies New South Wales, 1998) to the new syllabus update to be implemented in 2000, my work was cited on two occasions (pp. 32, 42) and its plea for a worldview and globalisation in thinking, dialogue and construction of knowledge, is evident throughout the conceptual revision. Intercultural Communication will now form part of the core of Society and Culture and the focus is specified as "how people in different social, cultural and environmental settings can better understand each other and their world". I was an inaugural member of the Society and Culture Association and I have been honoured with life membership of that association also.

In the 1990s writing and publishing on the study of Asia has been my focus. At the request of the Asian Studies Council, I prepared a discussion paper (Jan. 1990), on behalf of the Asia Education Teachers' Association (AETA), for the Asian Studies Council, Curriculum Requirements in Asian Studies for Australian Schools in Political Studies. The chapter of the paper, entitled Shaping the Future dealt with future needs to relate diplomacy to intercultural communication and understanding and was sent to all secondary schools in Australia by the Department of Employment, Education and Training. Exploring Politics in Asia: concepts, data and units of study (White & Dufly, 1992) was produced by AETA as a result of a grant by the Department of Employment, Education and Training, to rectify deficiencies documented in the discussion paper.

During this period my work in Asian Studies also involved heading a team to write Researching Your PIP for the Learning Materials Production Centre of the New South Wales Department of Education; working as the education consultant for Film Australia (1993-94) to help design and write the script for the Asia Scope (six videos) series released in 1995 as part of the Access Asia series to support Studies of Society and
Throughout my involvement with the study of Asia I have consistently argued that we need to alter the assumptions and tone with which we relate to Asia if we want to facilitate intercultural understanding and that we must urgently develop an appropriate organisational framework to manage information flows which make it possible for students to develop a sense of relationship and openness with those of different cultural background. Moreover, I have maintained that professional development for practitioners in both knowledge of Asia related-subject matter and educational theory and practice would need to be supported by scholarly research. Some of the focus of my research has addressed this issue.

Impact of the research

The preceding sections document how the substantive focus in the Doctorate grew from and relates to my personal history as a teacher and curriculum designer. The Doctorate has continued to contribute to this profile, but the research within the portfolio has already started to have a significant impact on changing Asian Studies education in Australia.

In July 1999, a Graduate Certificate in Teaching Studies of Asia to provide “both a knowledge of Asia-related subject matter and theory and a scholarly understanding of the latest research in educational theory and practice” (Halse, 1999, p.4) was implemented at the University of Western Sydney, Nepean. Some of the research in this doctorate relates to that course, as the course addresses issues relating to the conceptualisation of Asia, develops new perspectives for understanding Asia, examines contributions to world intellectual knowledge from Asia in premodern times, explores ways of utilising this knowledge in classroom practice, analyses the basis of stereotyped views of Asian
cultures and societies and provides curriculum reform theory relevant to including studies of Asia in Australian schools.

Curriculum and professional development in teaching studies of Asia have to be supported by substantive resources which explain, argue, discuss, analyse and evaluate complex information related to or are sourced from Asian cultures. The Portrait specifically provides that resource by filling in some of the substantive gaps that exist in knowledge and reflects my continued professional growth and theoretical contribution.

In discussing each component of the Portfolio, some of the refereed papers presented in the Portfolio have already played a role in shaping the landscape of scholars' and teachers' understanding of Asia. Reference has already been made to the impact of my research on the field. In addition, Issues in Defining Asia: Implications from an analysis of the contributions of Asian cultures to world heritage was published in AETA, the Asia Education Teachers' Association Journal in August, 1997. I was awarded a scholarship by AARE (the Australian Association for Research in Education) in 1997 to present the paper Creating Responsible Educational Images of Judaic/Christian/Islamic Relations at its biennial conference in Brisbane (during December 1997). I was also invited to present the same paper at the ASIAS Conference (Australasian Society for Inner Asian Studies) in July 1998. In October 1998 I was funded by the University of Western Sydney Nepean to attend and present the paper Improving image literacy about China: a study of processes shaping Australian perceptions at the Asian Studies Association of Australia (ASAA) biennial conference.

Conclusion

The Doctorate has addressed complex skills formation to facilitate informed attitude and values formation. As well it has identified significant gaps in both knowledge and pedagogy and proceeded to make a contribution to theory and practice in the study of Asia not previously addressed.
The Doctorate identifies and describes the problems associated with the study of Asia, addresses the need and offers solutions to develop alternate practices to cope with the quantity and complexity of knowledge to be accessed in the study of Asia and connects the research contained within the Doctorate with reforming the practice. The movement from practitioner to scholar to theoretician is discernible in the Doctorate and reflects my intellectual, scholarly, personal and professional development and my concern with the question of why educate about Asia? The expression of this concern has grown from that of a teacher concerned with classroom practice to a scholar researching and writing about teaching, and focusing on critical understanding about image formation and its power in concept and values formation. The theoretical models advanced in the Doctorate have been created to enhance learning, in the hope of making possible a non-violent future through the valuing of cultural diversity.

The Doctorate argues that there is a need for a new curriculum paradigm to manage information beyond Australian economic and security interests and is founded in issues of international social cohesion and interdependence.

As part of the approach to the future, teachers must grapple with the problems of why teach, what to teach and how to teach about Asia in ways that place Australia within a framework of a global civilisation. Teachers and students must understand and acknowledge that Asia has been misread and trivialised in the West, realise the significance of Asia in its own right, understand that education has a responsibility to alter the assumptions and tone with which we relate to Asia, and to encode in memory a perception of the contribution to world heritage of Asian civilisations and societies in premodern times and their contribution to the cross fertilisation of ideas that made possible the emergence of the West as we now know it. This must be emphasised as part of the approach to the future. There is real danger for the future if we continuously encounter Asia in a framework that engenders disputes.

In the process of this research, I too have developed new critical understandings of Asia and a realisation that why, what and how I sought to know about Asia are important in
this field of scholarship. While valuing cultural diversity in order to develop intercultural understanding is a deeply internalised personal philosophical position, the practical outcome of this research has been to document the knowledge and methodology and resources needed to support classroom teachers in connecting knowledge and process. People of the future now have access to the knowledge that can create new values and develop and prevent a clash of civilisations. Such values are more legitimate than those formed out of myth or energised by nationalism, economic dominance and ideologies that make the clash of civilisations self-fulfilling.

Reference List


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A suite of published book reviews

1.1 Nine Reviews in a national evaluation


1.2 Two reviews in the *Asia Education Teacher's journal*. 
Promoting the Study of Asia
Across the Curriculum:
an Evaluation of the First Three Years
of the Asia Education Foundation

Neil Baumgart and Alison Elliott
Faculty of Education
University of Western Sydney, Nepean
1993. The writers were all experienced authors with specialised knowledge of Asia. However, the task of coordination provided a formidable one and the original intention of having books published in a steady flow over time did not eventuate. Titles of materials as well as topics and format were modified in the light of feedback from advisers, teachers, critics and editors and the number of authors finally used was only about two thirds of the number originally targeted.

Chapter 2 provided information on the launch in October 1995 of the first eight books, a package of map-based materials, and a set of six videotape programs in the Access Asia series. Table 2.1 listed these publications, their authors and their prices and Table 2.2 lists the titles to follow in 1996.

4.5 Evaluation of the Materials

The evaluative comments above relate to the process rather than the product. This section provides an evaluation of the materials published although it must be stressed that the comments here are based on the opinions of experts rather than information on the actual use of the materials with students. The latter was not feasible given the late publication date relative to the preparation of this report.

The evaluative comments which follow on the published materials are based on criteria inferred from Studies of Asia: A statement for Australian schools covering questions of why teach about Asia, what to teach, and how should it be taught. Within the Statement, the section on rationale provides criteria for the “why” question; the section on goals for Studies of Asia provides criteria for the “what” question; and the sections on curriculum principles and curriculum design allow inferences about “how” criteria.

Materials for Secondary Students: Years 7-10

Three books are currently available - Asia 2000, Same difference, and Visions - as well as resource material in the kit 60-170 East and the six video programs entitled Asia scope. Three more titles will follow in 1996. In total, this set of materials covers most curriculum areas, the exceptions being the areas of mathematical and scientific achievements. (It is assumed that the yet-to-be published Made in Asia will give adequate coverage to recent technological developments in Asian countries). Given the desire to provide students with an understanding of “contributions made by the peoples of Asia to the world” (AEF, 1995a, p. 18), and given the contributions made by Indian and Chinese mathematicians and the fundamental and notable contributions to the development of world knowledge and civilisation made through Chinese

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1 Although evaluative comments were provided by several “experts” on teaching about Asia, we wish to acknowledge in particular the detailed comments provided by Ms Margaret White and used extensively in this section of the report.
scientific advances, a further book in this area is warranted. The Interim Evaluation Report (Baumgart and Elliott, 1995) also noted that teachers found the curriculum areas of science and mathematics the most difficult in which to introduce material on Asian countries. If Studies of Asia are to be included across the curriculum, this is a further reason to consider additional resources related to science and mathematics. Hence it is recommended that, in future materials development, AEF give priority to a publication for secondary students based on fundamental developments in science and mathematics in Asian countries.

Do the materials for secondary students meet the curriculum principle of providing “a balance between in-depth and sustained studies of selected countries and other studies which provide a more comprehensive contextual understanding of selected themes, topics and issues (AEF, 1995a, p.10)? The content and activities in the materials produced to date offer excellent motivation for students at the lowest level of understanding as described in the Statement (namely, “A basic understanding for all”). The materials have well designed questions to elicit positive attitudinal responses. However, the material is limited in its depth of coverage and there is a danger that this could lead to unwarranted generalisations about Asian countries as a group.

The Statement refers to two more advanced levels of knowledge, skills and attitudes, namely,

- meeting special needs and interests; and
- developing specialists in Asian studies.

To move to these more challenging levels, it will be necessary to have support materials that provide an informed, conceptually organised structure and appropriate learning processes. Of course, it would be unrealistic to expect this of the AEF publications at this stage of their development. Also, it needs to be remembered that the present set of resource materials were developed for students at the lower secondary level. However, looking to the future, the evaluation recommends that the AEF plan for additional support materials to be developed over the next five years that provide more in-depth knowledge and greater challenge within a well-defined conceptual structure to cater for secondary students, including those in Years 11 and 12, who will move to special interest and more advanced work in Asian studies. These resource materials on cultural studies should accompany parallel studies in the language of the society.

Naturally, planning for more advanced cultural studies in conjunction with work on language development should be carried out collaboratively with NALSAS. It is also recognised that different states and territories have fairly rigid prescriptions for curriculum at Years 11 and 12, reflecting matriculation and certification requirements. As a consequence, the opportunities to market materials developed nationally may be limited. However, if the studies of Asia
publications at a more advanced level are developed as curriculum support materials, they should command a sizeable market. Most importantly, there will be an increasing need for such materials as specialist knowledge of Asia is perceived in future to be a highly desirable employment-related competency.

Although the later stages of student development in studies of Asia require the availability of quality support materials, this alone is not sufficient. What is urgently needed as well is professional development of teachers. If the study of Asia is to move beyond the development of basic understanding for students, and to incorporate an understanding of Asian nations, the diversity of cultures and values within their societies, the contribution of those societies to world thinking, and the changing nature of relationships with Australia, teachers need professional development at a sophisticated level. The progress made in the initial professional development of teachers across Australia is impressive. The independent evaluation of the NPDP workshops suggests that teachers have perceived their knowledge of teaching about Asia, their support networks and their confidence have increased markedly as a consequence of undertaking the program. In the present context, however, it is recommended that the AEF also plan further programs in professional development for teachers who will have responsibility for curriculum development and delivery of more advanced studies of Asia.

Asia 2000

Asia 2000 is a book of dynamic events and images focusing on the changing patterns of places, people and events in Asia. At the same time, it links the past with the present and the future and thus dispels the myth that strong cultural traditions are associated with a non-modern approach or an inherently conservative perspective (Halse and Baumgart, 1995, p.15). My not being bound within a discipline context, the book is able to explore new initiatives and developments in interconnecting ways within in a broad social and cultural environments. Students are encouraged to develop their own techniques for planning and organising their ideas. Generally, the book does provide a balance between in-depth and comprehensive understanding and is characterised by interesting student activities. The students are made central to the process of learning about Asia, developing positive attitudes to the people of Asia, and thinking about their futures as both Australians and global citizens.

The in-depth subject matter is presented with authority and empathy using inquiry and issue-resolution strategies. The bibliography at the end of each chapter is a useful resource for teachers and an incentive to locate additional material in the school library.

Questions were raised with the Evaluation Team about the photograph on the front cover. The message of the book is certainly about change and a variety of
possible futures. The photograph of the Singapore skyline with its tower blocks, modern lighting and heritage buildings tends to portray a Westernising imagery. This could reinforce a tendency among Australians to think that we can become part of the Asian landscape of the future without having to change ourselves. Hence it has been suggested that a diverse collage showing a process of enormous change would be more appropriate.

Same difference

This booklet is a very good resource to introduce Asia into the English classroom although it could also be used in some other areas of the curriculum. It is at the level of “a good understanding for all”. The authors use an approach which generates interest by raising issues in human relationships centred on teenage experiences. The excerpts should provide excellent motivation for discussion of key issues on topics such as racism, stereotypes, inaccurate images held, cultural diversity, and intercultural understanding. The writing blends cognitive and affective elements and encourages students to analyse critically their own views and values.

The publication is limited in the amount of in-depth knowledge provided of Asian societies. If debates are based on limited knowledge without access to further information, there is a danger that, contrary to the expectations of the book, stereotypes could in fact be reinforced. The issue is one frequently debated: to what extent is the development of attitudes based on a sound knowledge base? Or conversely, if a sound knowledge and understanding of another culture is developed, will this necessarily lead to positive attitudes to intercultural understanding? How is the blend of knowledge base and values clarification best achieved in a classroom? In arguing for a sufficiently extensive knowledge base, Fung (1995, p.7) states the case as follows.

Teaching about Asia takes more than making a trip to Asia with students, reading a few books on Asia and getting to know the Asians in our community. It is a challenge. It is a commitment of high order. And it requires professionalism to produce the desired results. Being professional means that the teacher knows very well what he/she is teaching about.

The book includes a delightful story of “Sophie and Tuan”. Students are then given a list of activities (p. 61-63). Questions 1 to 14 explore comprehension and the ability to express ideas, and encourage students to write about topics such as cultural diversity and racism. Under the sub-heading “Taking it further”, question 15 then poses a very difficult research task for students. To tackle the question in any comprehensive way would require a knowledge and some understanding of historical research, political power plays, the French colonial era, strategic alliances, cold war superpower standoffs, the internal struggle for nationalism and independence, manipulations to appease the American public over the use of ground troops, and the increased role of the B52 bombers. Now no doubt the intention is that students would respond in an intellectually
unsophisticated manner. But could this result in reinforcing inappropriate bases for making judgments? Might not the students have been given some guidelines, or more focus questions to sequence their investigation, or even a list for recommended reading? As exemplary material, questions which extend students to this degree and require understanding of a high order probably should provide a framework or structured guidelines for what is required. Not to do so is to run the risk of producing oversimplified or inappropriate conclusions, via superficial opinions unless the students are guided by a teacher with an in-depth knowledge of the context and appropriate research strategies.

A question more closely related to the story but still demanding higher levels of thought and investigation might be:

What factors drew Tuan’s family to Australia? Are these factors still relevant today?

Visions

This book should be a valuable reference resource for teachers as well as students. It provides an insight into “high” cultural ideas from Asian countries and demonstrates the contribution of art and performance from these countries to the development of creativity and to world heritage. The author draws on a specialist knowledge of the area and, in doing so, produces a book appropriate for all three levels described in the Statement: basic understanding, specialist needs and interests, and specialised study on Asia.

The book very effectively develops a thesis that Asian art and performance are an important part of world civilisation without having to state such a case overtly. The colour plates are very attractive and should draw students to the subject matter. The only qualification on the use of the book might be that the experience and background knowledge of the teachers could limit how it is used in a classroom.

60-170 East and Asia scope

The kit labelled 60-170 East assists students in defining Asia and in seeking out physical, historic, demographic and cultural features that might link countries in the region. The material is structured in such a way that it provides a resource for teachers and students. It allows students to work independently and challenges them to carry out investigative tasks. By providing thematic information as an overview, it allows users to develop a framework for their studies of Asia.

The overview is global but lacks depth. To some extent, this is supplemented by the material in the six Asia Scope videos which do provide in-depth knowledge.
within a conceptual framework. A teacher with a good knowledge and understanding of Asian countries and experience in using resource materials in effective ways will find these materials very helpful. The materials should also be useful for teachers undergoing professional development or teacher training related to studies of Asia in developing their own overviews and gaining confidence in teaching about Asian countries and peoples.

Materials for Primary Students: Years 4-6

Rather different criteria will apply to the evaluation of resource materials for younger children. In addition, teachers in primary schools have greater opportunity to follow themes across the curriculum than their colleagues in the timetable-dominated secondary schools. As a consequence, rather different use can be made of resource materials which do not need to be as closely allied to key learning areas as is most often the case at the secondary level.

Resource materials on Asia for students in upper primary schools might be expected to

- use children's experience as a starting point to construct new knowledge and understanding;
- encourage children to explore meaning and develop understanding by providing opportunities for such exploration;
- introduce students to the diversity of values and lifestyles in Asian societies; and
- present similarities and differences in cultures and nations with knowledge, respect and empathy.

Images

The excellent quality of the illustrations on the front cover provide a guide to the quality of the images throughout the 42 pages. The book uses human experience as its starting point and conveys the idea that the arts in all societies provide effective ways to represent ideas, express values, convey emotions or religious beliefs, preserve important occasions or traditions and celebrate achievement. There is sufficient concrete material to be appropriate to the cognitive development of readers and sufficient performance to encourage action learning. In a more subtle way, students are also introduced to ideas of change and the tension between tradition and modernity.

The quality of the photographs in this book (as in the secondary book on Visions) is excellent but does serve to contrast with the standard of presentation in the social science focus books which lack lustre colour presentation.
Many flowers

This collection of folk stories has scope for many curriculum applications. The folk stories are drawn from various Asian nations, and reveal both similarities and differences in cultural characteristics. Hence any story has a value in its own right, but in combination, students have the opportunity to examine universal beliefs and values and recurring themes in human endeavour. The title is derived from a Korean poem of the same name. It was pointed out that the title and the illustrated cover may be ambiguous, in that they relate to the poem, but not to the rest of the book - the folklore. However, most users would probably interpret the "many flowers" as diversity and beauty in the stories which follow.

The stories are superbly illustrated. There are common threads which run through them - animals in forests, princes and princesses, and tales of simple folk. In the words of our reviewer, "the stories often 'smell of the good earth and water' that are the same in all lands". Students should enjoy exploring cross-cultural similarities and differences inferred from the tales and the common human values evident in the lives of people of different nations.

Our home

This book also provides many opportunities for teachers to follow a theme approach in looking at Asian cultures. Using the universal concept of the home as a place of belonging and of safety, this book explores the unique characteristics of homes in different countries and environments. It thus provides an opportunity for students to increase their knowledge and understanding of Asian countries and to begin to develop an elementary vocabulary in different languages. The link between language and cultural studies evident in this book and the subtle way in which it is achieved for primary students are to be highly commended.

School's out!

The introduction to other languages here is quite explicit but well done. The author uses his skills in interactive learning techniques to explore the diversity of experiences and values in Asian societies. As a consequence, the book promotes cultural sensitivity and understanding in primary students. Teachers should find the material invaluable in introducing Asia into the classroom in a way which students should find interesting and motivating. In some cases, the introduction to fundamental beliefs and values from other cultures should challenge students to extend their horizons well beyond their own neighbourhood, even where that Australian neighbourhood might be a multicultural one. For this reason, our reviewer questioned the use of an Australian picture on the front cover, albeit of
a multicultural neighbourhood, in preference to pictures from diverse international societies in Asia. While intercultural understanding has direct application within a society and is imperative in an Australian context, it is a pity not to maximise the international impact of these materials designed to push students' horizons beyond national boundaries.

To market

By considering local markets, national markets and international trade, the authors have taken on a difficult task for a primary school audience. They have done it well. Trade related concepts are introduced and students are given elementary experiences in becoming familiar with international communication when some of the content is written in the language of the focus country - Thai and Japanese. Mathematics applications are also included when students are required to interpret trade statistics and predict trends.

The book is highly motivating and yet introduces a significant number of key concepts on trade and Australian-Asian relationships. Asian countries are also portrayed on a world stage in keeping with the goals of the Statement on studies of Asia.

Overview of the published materials

The resource material overall is excellent. It should afford teachers many opportunities to infuse the study of Asia across the curriculum. At both primary and secondary levels, the books already published and those promised for 1996 give adequate scope to develop students' cultural sensitivity and appreciation of cultural diversity, and to create positive images of Asian countries in a world context to counteract ethnocentric attitudes. However, the material does not stand alone. It needs to be used within structured formats if concepts, knowledge and attitudes are to develop within a systematic framework. Studies of Asia involve more than the inclusion of new content. They must also address approaches to teaching and learning if the goals listed in the Statement are to be realised. In this respect, the further training of teachers becomes a vital ingredient. To assist the process, it is important that the AEF not only market the materials effectively, but also they include use of the published materials within professional development programs for teachers. Hence it is recommended that the use of AEF publications be included explicitly in professional development programs in ways that encourage teachers to use them effectively in addressing the goals of studies of Asia.

As noted earlier, the current stable of publications is less adequate in catering for more advanced studies at the secondary level (meeting special needs and interests; developing specialists in Asian studies). Some of the books do extend well beyond the level of basic understanding but additional support materials will be needed for this purpose, as recommended above.
Erratum

In the last issue 25(2), May 1997, Book Review on pages 57 and 58 was written by Peg White, but Peg White did not write Access Asia: Secondary teaching and Learning units as indicated in the journal. Our apologies to the Curriculum Corporation who prepare and publish the Access Asia units.
BOOK REVIEW

ACCESS ASIA SECONDARY TEACHING AND LEARNING UNITS

PEG WIBE
PUBLISHER CURRICULA CORPORATION 1996
PRICE $24.95

ACCESS ASIA is the latest publication from the Access Asia series. Its intention is to provide practical starting points for teachers who wish to include the studies of Asia in their curriculum, using commonly taught topics as a base.

Teachers will welcome these starter units presented in this attractively packaged publication. The book is organized into two parts—teacher units and student sheets. This flexible approach allows teachers to adopt, modify, and/or extend the units to meet the needs of the students.

The aims of the units are clearly stated:
- To import discipline knowledge that is current, accurate, and balanced
- To reflect the emphases across the curriculum cited in Studies of Asia: A statement for Australian schools
- To contain clearly stated rationale, objectives, expected outcomes, descriptions of learning sequences and evaluation activities
- To be based around accessible resources
- To be underpinned by sound principles of teaching and learning and allow for flexible delivery options
- To acknowledge current curriculum practice and documents
- To be replicable in a wide variety of school and classroom situations

These are more than aims. They direct the teacher on ways to achieve products, outcomes and results. Each unit guides teachers on level, country focus, duration, learning areas, key outcomes and provides suggestions on how to facilitate activities, with suggested teacher reference for further research.

Permission is granted by the publisher to teachers to make copies of student sheets for the activities required in each unit.

The nineteen units encourage the development of knowledge, reflection on values and attitudes and provide suggestions for imaginative classroom strategies and activities to consolidate learning. Attractive visuals and imaginative strategies support the units in order to design interesting and enjoyable tasks to develop knowledge and competencies; consolidation is reinforced through student involvement in learning activities.

The effective presentation of these units of work will reflect teacher background on Asia and the individual teacher's personal approach. It is difficult to transmit the personality and enthusiasm of the teacher to inspire students to extend their horizons regarding Asia in printed units of this nature. This in itself harbours potential difficulties for classroom implementation.

However, given that these units are exemplars to support key learning areas within the curriculum, in the Society and Environment section it is a pity the only Hong Kong reference is on Housing Options, at a time of momentous changes that are occurring with the return of Hong Kong to Chinese sovereignty during 1997.

The most problematic unit is The Bridges of Thailand. It states it is designed to introduce a student perspective into Mathematics and Science using students' knowledge of the structure, function and construction of bridges. The attempt to introduce an Asian perspective is very superficial. Nothing is achieved to deal with reducing students' stereotypes about scientific origins and mathematical development within Asia. A significant opportunity to modify commonly held views is lost. Perceptions of Western superiority in scientific and mathematical thinking are not challenged. In fact the choice of the Bridge over the River Kwai and the Friendship Bridge between Laos and Thailand (which was funded by AusAID in the 1990s) leaves students with an assumption that there is something "structurally deficient" in Asian scientific and mathematical thinking that has prevented such developments from taking place.

Questions need to be far more wide- ranging than those listed here to challenge many current assumptions about Western scientific pre-eminence, to improve understanding. The adequacy of the narrative ought also to be questioned. No narrative is provided about the reality that bridge building has a long history outside the Anglo-European world. The level of questioning ought to be at a higher order, to place Asia on a more equal basis with the West. A time frame should be included to span world history before 1600 to the present day, to modify the emphasis. Students are to be encouraged to be less ethnocentric then questioning must reflect on the contribution of others to world thinking on bridges in order to develop a global perspective and understanding. An example of a discussion on how to approach building and how people in Asian cultures who helped lay the foundations of bridge building and their contribution to world scientific and mathematical knowledge, as well as providing a springboard for challenging students to reflect on the level of scientific knowledge in China at the time.

In this way there is a clearer relationship between activities and outcomes, in order to demonstrate and appreciate the importance of Asia in the history of science.

By giving more attention to the Asian contribution to world knowledge that made it possible for modern science and mathematics to emerge it is possible to emphasize the complexity of relationships of East and West in this matter. As it stands unless the unit is taught by someone with a profound knowledge of Asian science and mathematics it may reinforce currently held prejudices about the uniqueness and pre-eminence of the West, because of what it excludes, thereby perpetuating and reinforcing persistent stereotypes.

One of the key outcomes in the unit on Seismographs is to develop an awareness and appreciation of the importance of Asia in the history of science. The consolidating information and activities are not sufficient to achieve this outcome. Science and Civilization in China, Vol III, Cambridge University Press, 1970 by Dr. Joseph Needham helps out. (pp 626-34). The Chinese invented a method of detecting an early-warning system of seismic disturbance, at a great distance, nearly sixteen centuries in advance of the West. Emphasizing the difference between a seismograph and a seismoscope is not helpful in identifying the importance and pre-eminence of the Chinese invention. The fact that the West invented a seismograph which records the event on graph paper is not of enormous importance. The important fact is that this was not done for sixteen centuries after the Chinese invention. Chang Hong, who was a brilliant mathematician, astronomer and geographer, created the ingenious machine that is regarded as the ancestor of all seismographs in 182 AD. The first modern seismograph of any kind was designed by D. D. de la Ruelle in 1730. The instruments we use today only began to develop in 1848.

A fourth part to Activity 2 in this unit ought to be included to deal with the time lags in these inventions in the East and West. This would generate discussion of scientific knowledge in Asia. This discussion should aim to develop respect for the level of scientific knowledge in

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Asia In ancient and medieval times. Part of learning is to be critically aware of the assumptions upon which the West has based its thinking of the East in the West and the way lines are drawn between 'us' and 'them'. Discussion ought to provide a conduit to introduce ideas to enable students to realise that Asia was far superior in thinking in these realms until the late 18th century in the modern era.

Generally, given the fact that these units in Secondary Teaching and Learning Units have been chosen as 'starters' to demonstrate how learning about Asia can begin from familiar points in a range of learning areas, they are very useful and will be much appreciated by teachers. To that extent the aims are achieved. My concern lies in the fact that in a couple of key examples the narrative, strategies and activities do not take the students for enough in their thinking to achieve the stated outcomes and to challenge widely held stereotypes about Asia. The material misses a valuable opportunity to address important thinking skills and to develop a genuine understanding of Asia. Whilst the knowledge is focused on discipline areas, reflection on values is also part of discipline experiences; students ought to be encouraged to develop a critical awareness of ethnocentricity and cultural bias in Western accounts of science and mathematics.
ISSUES IN DEFINING ASIA: Implications from an analysis of the contributions of Asian cultures to World Heritage

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ABSTRACT

This paper’s reference point is a study of the influence of Asia on global thinking and human relationships, past, present and future as set out in Studies of Asia: a statement for Australian Schools and specifically the section that deals with ‘understanding contributions made by people of Asia to the world [including] the contributions of the cultures of Asia to world heritage and traditions including those of art, science, technology, philosophy and religions and spiritual beliefs, and particular episodes in the history of Asia that have been significant in contributing to the world’s development and knowledge’.

The focus is on a context embedded in a recognisably human and social environment addressing the complexity of ideas. This immediately highlights some of the challenges for Australian curricula focusing on Asia. Because it is not possible to separate cultural, social, economic, political, scientific and technological dimensions and spiritual ideas, if Australian students are to improve their knowledge, understanding and relationships with Asia, curricula need to take all these perspectives into account.

The methodology is based on content analysis of literature and atlases, both historical and geographical, to develop a comprehensive chronology to meaningfully relate time periods in a range of Asian countries in both the ‘near’ and ‘far’ east. From this material implications are drawn for the evolution of new, independent thinking on the storage, transmission, application and preservation of ideas in an Asian context. In this way, a rather different definition of Asia is formulated.

In recent years, Australia has been challenged to discard outdated, inappropriate and incorrect images of Asia, formulated more than a century ago. But in meeting this challenge, Australian people need to be careful that they do not replace the older images with newly reconstructed but equally inappropriate ones.

There is a danger of creating new, stereotyped powerful imagery of Asia born out of Australia’s immediate economic and political needs to build a new Australian identity in the Asia-Pacific region and its desire to place Asia to the near-north, in the region where Australia wants to belong in the future, without reference to what constitutes diverse Asia internationally. This imagery, combined with constraints of a blinkered vision existing in western literature on the cultures, social development and history of Asia, could provide an inappropriate cue for selecting material for school curricula.

My research is based on historical, cultural and other analyses which broaden that vision and help to enrich available resources for teachers. Teaching about Asia so that Asian countries are not presented as a unified set, with stereotypical lifestyles and world views must be carried out in a manner that allows students to develop appropriate knowledge, understanding and sensitivity across cultures. Students need to explore, to recognise and accept as natural, the enormous diversity of the region as social and cultural backgrounds shape definition. In a
framework of global thinking, students’ perceptions need to recognise the diversity of identities in Asian civilisations and their contributions to world heritage, through time and space. Australians’ perceptions must not be limited by economic needs and a narrow economic rationalist focus.

With the accelerating flow of interaction between Australia and Asia, in terms of cultural and technological exchange, trade and international relations, Australian educators need to ensure that students perceive Asia in a context of change over three millennia with interactions and exchanges with other nations over that period. Students need to have an image of Asia that is capable of developing a sense of the shifting centres of great civilisations which have created vast cultural diversity, but at the same time they need to appreciate that these cultures have been linked through cooperative ventures as well as conquests through both time and space.

In setting out to research and collect resources for teachers on the contributions of Asian countries and peoples to world heritage and to the modern world, the writer was struck by the lack of recognition in western literature of these contributions. Chronologies just do not have entries. Western cultures are credited with the major contributions to grounds of knowledge (epistemology) and values (axiology) as well as to economic and social ‘development’ by default. Systematic research reveals there is abundant, but somewhat hidden evidence that Asian cultures were central to the development of world culture in terms of knowledge and values, across all domains. Teachers must bring a critical frame of mind to the learning task to recognise and counterbalance this deficiency by allowing students to explore this missing evidence.

The current school curriculum support materials (e.g., the Access Asia series produced by the Asia Education Foundation) has a new imagery of Asia which tends to overlook the seminal contributions to global thinking and world heritage within Asia. There is little focus on channels through which knowledge was transmitted, how international relations were conducted, and how technological and cultural exchanges occurred between East and West in ancient and medieval times.

There are three points about eliminating blinkered vision that are addressed in this paper:

1. definitions of what constitutes “Asia” can be limited: the examples presented illustrate the differences and the restricted perspectives;

2. appreciating the diversity of Asian contributions to world heritage and the connectedness occurring across this diversity, which has developed over a long period of time; and

3. constraints placed on appreciating and understanding Asian spirituality because of limiting perspectives on the Asian origins of world religions.

Later research will investigate the Asian contribution in a number of key fields - religion and philosophy; mathematics, science and technology; and civilisation and culture. From such research, implications will be drawn for intercultural understanding in teachers and their students.

Restrictive Definitions of Asia

Taking up the first point, several factors have contributed to a limited perspective on what defines “Asia”. The illustration on the front cover of the document Studies of Asia: A statement for Australian schools (Asia Education Foundation, 1995), portrays a limited regional geographic perspective of Asia. It is a perspective which meets our Australian needs and aspirations for the future, economically and politically. It corresponds to common curriculum definitions of
monsoon Asia which is a familiar concept for Australians. It does not require any great mental shifts in thinking. Because it lacks a wholeness - a balance that allows Australians to view Asia as it was viewed for three millennia by the West (especially Greece). Such a perspective dismisses parts of Asia that enable the development of a sense of connectedness of the past to the present to evolve. The great contribution of Islamic culture and civilisation to global thinking spanning over half a millennium is marginalised. Key literature fails to acknowledge that Arabs predominated in science, mathematics, chemistry, astronomy and medicine for centuries, and in a number of areas Arabic culture was more developed than Christian culture (Gaardner, 1995) over a period much longer than that since white settlement in Australia. The restrictive definition thus limits the broadening vision which Australian educators should be encouraging about global belonging.

St. Augustine (354-430AD) directed that it was enough for the Christian to believe that the only cause of all created things ... whether heavenly or earthly... is the goodness of the Creator, the one true God (Goldstein, 1980, pp56-57)

thus, dismissing existing catalogued knowledge of the ancient sciences and essentially closing down objective thinking about nature in Europe for over a thousand years. Scientific observation only re-emerged when there was a fundamental change in the cultural framework. Western perspectives often do not recognise that the vitality and richness of Islamic culture and civilisation drew together global knowledge from both Greece and Asia during this period, thus preserving this heritage as a basis for modern western civilisation.

The importance of Asia to world heritage is therefore far greater than that shown by a study of the economic region where Australia belongs. Wider boundaries are necessary to recognise and accommodate the changing and cumulative developments in Asia over thousands of years. From a world perspective, Asia is important in its own right and hence as Australian education seeks to internationalise, it needs to provide for the younger generation an awareness of the debts owed to non-western civilisations of the past in contributing to the level of intellectual thought used in the West today.

Centrally located Persia became a focus where large migrations and flows of people took place and where great change-making forces were generated. Increasingly complex inter-regional trade developed linking Chinese, Indians, Medes, Parthians, Babylonians, Lydians, Greeks, Jews and Arabs to form the base for future world civilisation. According to Roberts (1995, p.45),

It is in the Near East that the stimulating effect of different cultures upon one another first became obvious.

It is in the recognition and appreciation of this type of stimulating effect that the basis of intercultural understanding emerges.

According to Studies of Asia (Asia Education Foundation, 1995, p.9),

the word 'Asia' is part of the vernacular, printed in atlases and impressed on our minds through popular usage. Yet it remains a contested concept and term even with the region itself. The task for Australian educators is to encourage students to comprehend the diversity and complexity of the countries and environments of the region generally called 'Asia'. This will require students to investigate and come to understand why the term 'Asia' is used, and how and why geopolitical and cultural boundaries of 'Asia' are described and debated.

This 'Statement' goes on to suggest that schools may opt to choose countries of what could be termed West Asia. The argument here is that to neglect the contribution to world heritage of these areas will give the younger generation a restricted international outlook. The vagueness of the definition, when combined with the powerful associated imagery on the front cover of the 'Statement' encourages inappropriate parameters for curriculum design and teacher training.
When a search for the definition of the boundaries of Asia is carried out in international literature, a wider framework emerges. National Geographic maps, international atlases, encyclopaedias, illustrated dictionaries, standard international references on Asia and ERIC (Educational Research Information Centre) suggest a more inclusive boundary as indicated in Figure 1. Australia's pressing political and economic need to be part of the Asian community is in danger of distorting its definition of Asia.

Whilst the curriculum in Australian schools must recognize the necessity for economic and political links in order for the nation to survive and be prosperous, it also needs to allow the development of a sense of emerging global thinking through time so that the wisdom and cultural heritage of Asia can be appreciated as part of the development of inter-cultural understanding.

![Figure 1: A more inclusive perspective of Asia than that provided by "Studies of Asia: A Statement for Australian Schools".](image)

Issues of Diversity and Stimulation Across Cultures

A second point was the need to appreciate the diversity of Asian contributions to world heritage and the connectedness occurring across this diversity, which has developed over a long period of time. This point is illustrated using four examples. They provide perspectives not readily inferred from western literature but important and interesting ones to give to students.

The first example relates to the stimulating effect different cultures played in improving technology and organisation (Silverberg, 1969).
About 200BC there was great rivalry between the two great libraries at Alexandria in Egypt and Pergamum in Asia Minor. At that time, Pergamum ordered papyrus from Egypt to extend its library. The Egyptians refused to sell the papyrus. With supplies cut off, the scribes at Pergamum were ordered by the King, Eumenes II to write on animal skins, a technique which had been used before 3000BC, but which had been superseded by papyrus. The scribes, using specially prepared skins of sheep, calves and goats, invented an improved writing material which the Romans called charta pergamina or ‘paper of Pergamum’ (Silverberg, 1969, p.76). Under this name it was widely used in Europe. The French called it ‘parchemin’ and in English it became ‘parchment’. So scribes at Pergamum not only had a superior and more readily available material for extending their library, but also developed an export business to the West, which lasted until paper came into general use in the sixteenth century. The finest grade of parchment, made from the skins of newborn calves and lambs, was known as vellum. Although papyrus was still used in the Near East for many years, parchment and especially vellum was preferred by the Europeans for manuscripts well into the Middle Ages.

In areas in Western Asia in what is now known as Iran, the libraries copied onto parchment the knowledge of Ancient Greece, which was later translated into Arabic during the period of great Islamic culture. Over time, many of the Greek manuscripts disappeared, burned in the fire at the main library at Alexandria in 47BC, when hundreds of thousands of papyrus scrolls were burned. Others were lost in the Middle Ages as St Augustine’s edict permeated thinking. However, the Arabic translations of Greek knowledge were preserved in Asia in libraries such as Pergamum to emerge many centuries later. Scholars were able to translate them into Latin and provide much of the basic knowledge that made the Renaissance possible. How seriously would global thinking have been slowed if this knowledge had been lost?

The second example illustrates how seminal knowledge was transmitted across diverse Asian cultures, and finally transmitted to the West or vice versa.

![Trade routes linking East, South and West Asia](image)

**Figure 2:** Trade routes linking East, South and West Asia

By the Tang dynasty (618-907AD), China was linked to other parts of the known world by a network of well developed overland trade routes (see Figure 2). Chang'an, the great Tang capital (near present Xi'an) was the largest city in the world at that time and was visited by thousands of traders from many parts of Asia. Centrally located Persia provided an ideal thoroughfare. Over these routes appeared complex mathematical thinking, modern style numerals and the concept of zero. China and India at that time were too remote for their advancements in thinking to be felt directly across the huge distances which had to be crossed to reach Western countries. As maritime technology developed, goods were increasingly carried up the Persian Gulf as Persia became the first great seapower of Asia.
Advancements in learning were made throughout Asia, there was constant communication between Eastern Asia, Southern Asia and Western Asia. Islamic culture absorbed the thinking coming from East Asia and South Asia, progressed it by making significant refinements, and systematically transmitted it to Western countries as they reached a receptive stage. Without this Islamic world, knowledge of some of the greatest Greek works and the fundamental evolution of knowledge in China, India and Mesopotamia would not have been so readily accessible.

A third example stems from a contribution to fundamental mathematics, namely the fundamental principle of mathematical numeration, 'place value'. In present day numeration, the figure 1 can mean one; moved left one position, it means 10; if moved two positions it means 100 and so on. In other words the place of a numeral determines its value. The principle of 'place value' was first used in Mesopotamia by the second millenium (Needham, 1970). Unfortunately the Sumerians based their 'numerical system on the figure sixty' (Wetterau, 1990, p.411), which made it very cumbersome to use. The Chinese who began a little later based their system on ten. They used simple counting boards on which they had nine digits (Needham, 1970). To get the figure ten, they moved the bar on the counting board to a new position and hence developed the decimal (ten place) system before 1000BC. When they moved the bar over to get the figure 10 they left a vacant space where we now would put a zero.

It was not until about 800 AD that a symbol was used for zero. According to Needham (1970) this probably occurred in the border areas of China and India and quickly spread to both countries. Thus the complete decimal system was ready for the Arabs to develop when the Islamic world became important. Needham says that the difference between the Babylonian and Chinese system was such that the idea of 'place value' was probably not passed on from Babylon to China. On the other hand he concedes that there is strong evidence of the transmission of techniques and inventions from Mesopotamia to China in very ancient times and even though the Chinese did not implement the Babylonian system of numeration, the 'idea' of place value may have been passed on.

The idea of place value in numeration is only one of the many examples of human knowledge that developed and improved by being passed around the great Asian triangle of East, South, and West Asia. Needham (1970,p68) lists 14 major mathematical processes which he says "radiated from China southwards and westwards" to India and West Asia between 250BC and 1250AD.

In the Sui (581-618) and T'ang (618-906) dynasties there was an influx of knowledge into China about Indian mathematics and astronomy (Needham, 1970, p.148).

In 1275 Euclid's geometry reached China via Arabia. In 1270 trigonometry reached China, also from Arabia. So it is evident that over many centuries interaction was occurring among the regions of East, South and West Asia.

As a result of the conquests of all West Asia by Alexander the Great (356-324BC) and his establishment of some 25 centres of Greek learning in what became the Hellenistic world of Western Asia (Roberts, 1995) the mathematical and philosophical works of Ancient Greece were preserved ready to be taken over by Islamic civilisation. When this Islamic civilisation expanded from Baghdad right across to Italy and Spain in the 9th to 12th centuries and set up Islamic centres of learning in Cordoba in Spain and in Sicily, the knowledge developed in Ancient Greece, and refined through interactions among Western, Eastern and Southern Asia became available to fire the European Renaissance from which emerged modern Western civilisation.

A final example is drawn from East Asia and demonstrates the linkage of cultures through stimulating, cooperative ventures. This collaborative emphasis is important so that students realise that cultural interchange in the past was not necessarily based on clashes and tensions.
Korea was involved in the early cross-cultural exchange of knowledge. Ki-balk Lee (1984, p.170) describes:

The great concern from the early years of Koryo for the establishment of libraries (which) led not only to the acquisition and preservation of books but to their duplication as well. Tens of thousands of rare books were kept as treasured possessions in Koryo, so that on occasion even the Sung government sent to Koryo to secure works unavailable in China.

Appreciating Asian Religions

The third point was that there are constraints placed on appreciating the diversity of Asian religions with limiting definitions about Asia.

There is a lack of recognition of the full contribution of Asian cultures to world heritage in social and spiritual development because the roots of all major world religions are to be found in Asia. It is very important for teachers to have a fundamental understanding of Asian philosophies and religions through pre-service teacher training.

Based on the concept of monotheism, Roberts (1995, p.195) claimed:

The destinies of much of the world today are swayed by Judaic, Christian and Islamic civilisations whose common roots lay in the religious tradition of a tiny, not very easily identifiable Semitic people who somehow arrived at a unique religious vision.

The Hebrew people (later to be called Jews) claimed their moral code was independent of human authority. It is in this framework that the links between Judaism, Christianity and Islam need to be understood.

In western literature generally, Islam is not connected to Judaism and Christianity. From the fuzzy boundary between legend and recorded history around 1800BC, the legendary patriarch Abraham emerged in Sumer. When Abraham’s wife could not bear him children, he had a son by Hagar his slave. This first son was named Ishmael, but Sarah was also to bear a child who, according to the Old Testament (Genesis 21, 12-13), was claimed to be Abraham’s promised son called Isaac. Hagar and Abraham’s eldest son was banished. Through Sarah’s line, the Israelites became a nation (the Children of Israel) called Jews and centred themselves around Palestine (Lockyer, 1986, pp518-519). Through this line, Christianity would emerge. From Ishmael’s lineage of the Ishmaelites, the Islamic Arab nation emerged. From early Christian times the Ishmaelites appear in the Jewish tradition as enemies together with the Romans and as rivals for the possession of the land of Israel (Mansfield, 1980,p. 14)

The emerging spiritual ideas, social practices and developing ethical standards evolved over many centuries into Judaic-Christian and Islamic civilisations and quarrels continue today over legitimate rights to existence of the State of Israel and the rights of occupation of the sacred city of Jerusalem.

Palestine has always been a centre of violent struggles because it is strategically located on the crossing of the great, ancient, but aggressive empires of Egypt, the Hittites, Assyria and Babylon. Preoccupation with military and commercial interests has thrown settled people and wanderers together. In their search for spiritual development, the Jews gave their allegiance to ‘Yahweh’ or a just and merciful God (Roberts, 1995, p.105). To them God have His laws through Moses. As the conquests of the Roman emperors brought to an end the Jewish rule in Palestine, a new form of spiritual inspiration developed, as Jewish prophets predicted in the coming of a Redeemer to free Israel of the domination of alien and ruthless rulers. This Redeemer was called Jesus whose teachings were based on love. In the emergence of Christianity and the development of the early Christian church, two streams emerged between
James and Paul. One of the converts to Christianity, Paul sought to keep Christianity as an independent religion, not an extension of Jewish faith. He encouraged Jews to live abroad and to forsake the Law of Moses (Baigent & Leigh, 1992, p.269). The centre of Christianity was removed first to Constantinople and then to Rome. The mainstream of the new movement during the next three centuries gradually became institutionalised around Paul and his teachings, becoming in the process a so-called western religion, as it was recorded in Greek. Out of archeological discoveries and the findings of the Dead Sea Scrolls in the 20th century, new evidence is emerging of the existence of James and the emerging early Christian church linked to a national resistance movement against Roman oppression, at Qumran on the shores of the Dead Sea (Baigent & Leigh, 1992, p.18). For some reason, the Judaic branch of the church was obliterated around 75AD and ultimately, based on Paul’s interpretation, Christianity survived and grew in the West. But the roots of both Judaism and Christianity are in Asia in what is now called Israel.

Out of Mecca, in Arabia in the sixth century the social and spiritual development of the warlike Arab descendants of Ishmael generated the last great movement of the Semitic barbarians - a religion based on reconciliation with Allah, the sole God (Roberts, 1995, p.157). It was called Islam meaning ‘Submission’ and every Muslem must submit to the discipline and laws laid down in the Koran. Among these, four of the old Mosaic commandments were expressed in a different language - Arabic - and an important additional law was added on, abstinence from intoxicating liquors, a great problem among Arabs at the time (Radford, 1970, p.99). Like Judaism, Islam is both a religion and a cultural identity which cannot be separated. It is a culture with a religious foundation and Islamic Law plays a central role; Mohammed regarded his religion as a fulfilment of Christianity and Judaism, recognising most of the Bible as an earlier revelation of Allah. Abraham was regarded as the first Muslim and Moses, David and Jesus as great prophets, referring to Jews and Christians as The People of the Book (the Bible) (Herod, 1976, p. 64) the Koran is regarded as the final revelation of God and Islamic Law plays a central role.

The resultant civilisation and culture became enormously important in developing global knowledge in mathematics, science and technology, medicine and community cohesion. The richness of the culture is generally not acknowledged in western literature nor in western media presentations of Arab-Israeli conflict today and certainly not in our curriculum. The three religions are generally presented in western literature and in its media as being disconnected. Islam is placed in Asia but the roots of Judaism and Christianity are not recognised as coming from there.

Knowledge of world spiritual development and tradition is avoided in schools yet the basis of intercultural understanding lies in students being able to understand the ideas that control the actions of other people. There are important implications in terms of knowledge, curriculum perspectives and teacher training. Asian philosophies and religions need to be a dimension in teacher training.

Conclusion

Knowledge about Asia has been presented in a disconnected fashion in the past, often based on teachers’ holiday experience and interest, reading a few books about Asia and inviting Asian resource people into the classroom. This has combined with inadequate curriculum frameworks and inappropriate teacher training in the studies of Asia. Knowing Asia very well is a challenge and very demanding. In the 21st century, with appropriate curriculum design and well-trained teachers with a strong background in Asian studies we can teach for connectedness and integration, to learn about Asia in a framework of a world civilisation.

We have a Western-Judaic-Christian connection, we also have an Asian-Pacific connection but people are still reluctant to make the move to recognise the Western Asia-Islamic-Christian-
Judaic connection. This interaction of cultures contributes to a rich source of complex ideas about social development and spirituality; about mathematical thinking; about storage, transmission and retrieval of knowledge or episodes in thinking that have been significant in contributing to world human development and knowledge. Even now we run the risk of not making this global connection because a blinkered vision is operating which does not recognise the Asians.

What this paper has endeavoured to demonstrate in this overview is that teachers will bring a limited perspective to their task of teaching about Asia if they only use a limited geographical definition of Asia to establish a framework for studies of Asia. From such a narrow perspective, it will be impossible to allow Australian students to explore and experience the stimulating effect of different cultures on one another over thousands of years. It is essential that the profound changes in the orientation and economic restructuring occurring in both Asia and Australia are given appropriate focus, encouraging students to develop a vision of the future in both their personal and national life as we seek to reconstruct our Australian national identity. Education must look beyond a motive of economic and political self interest to a sense of internationalism, incorporating a concern for the survival of humanity.

As this paper began with statements about imagery, it concludes in like vein with metaphors. Visualise Asia as a bubbling cauldron of ideas, for thousands of years. Questions were addressed and answers catalogued. Many of these answers ultimately had universal application. The Greek world made significant contributions that became ingredients in the 'brew'. Drops of this knowledge spilled into the West. Finally, when Islam conquered Southern Europe as far as Spain, a major serving of this brew went with the culture. It was presented to the West as the basic ingredient upon which modern civilisation would develop. It would be very restrictive to ignore the cauldron effect or the great contribution of Islam. The implications for curriculum and teacher training are critical.

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Asia and the West: Curriculum Content and Processes that go Beyond the Separation of Peoples and Cultures

Margaret White

Introduction

The collection of papers on studies of Asia in the Point and Counterpoint section of Curriculum Perspectives, 16(3) (1996) articulate the complexity of the issues and the variety of content that needs to be explored to address adequately this important curriculum area. Williamson-Fien (1996) admits that in the ‘plethora of publications from academics, bureaucrats and educators’ explaining what studies of Asia mean and how they should be taught, ‘the extent to which they have charted a geography of the possible is open to question’ (p.67). She progresses the dialogue by suggesting that studies of Asia should be both ‘interdisciplinary and antidisciplinary’ (p.70). Hanston (1996) confirms the tensions between theory, rhetoric and practice in studies of Asia by pointing out that ‘discipline based curriculum centred on discrete subjects...is far removed from the comprehensive, integrated curriculum needed in primary schools’ (pp.59-60). She urges a strong ‘gazing out’ from Australia to Asia (p.59). Lo Bianco (1996) argues that ‘Asia is made foreign’ if it is presented as unconnected to Australia and urges that curriculum space be given to issues involving Australia’s evolving identity in the current repositioning of plural Australia in the Asian region (p.55). Notions of Australian identity are already ‘multiple and contradictory’, and exert a force on both Asian and Australian people, according to Nozaki and Inokuchi (1996, p.74). Yet, warm Dooley and Singh (1996), the classroom practice of focusing on ethnic origins as a strategy for generating knowledge has the potential to label and divide the community and cultural groups within it (p.67).

The intention of this paper is to extend the discussion about the identity of studies of Asia by encouraging curriculum planners to position secondary school studies of East-West issues in a world context that reconceptualises ‘what had for centuries been believed to be an unbridgeable chasm separating East from West’ (Said, 1995, p.353). The paper proposes that the conceptual framework for studies of Asia should be centred on human values which are constructed from appropriate knowledge and dialogue about the current, evolving world civilisation. The values which individuals hold determine the basic principles through which the brain filters guidelines to inform behaviour, because knowledge and values interact. If values have been constructed through inadequate knowledge, experiences and memories, then interaction with people, societies, cultures, environments and technologies is inappropriately guided. These complex interactions develop in a time framework of the past, present and future. It is possible to deconstruct past realities of experience and replace this experience with an appropriately reconstructed framework built from informed knowledge and understandings of reality. A conceptual framework which addresses these complexities would make it possible for students to rethink and reformulate historical experiences that were formerly grounded in notions of ‘a geographical separation of people and cultures,’ (Said, 1995, p.353). Within such a reconceptualisation of studies of Asia, a transdisciplinary approach using the investigative methods and analytical approaches embedded in discipline-related experiences is an inescapable and realistic way to handle the interactions between all the...
elements, that is, the centrality of values, global perspectives and a time dimension of past, present and future. By way of demonstrating the potential of such a framework for designing studies of Asia curricula, the paper concludes with a ‘model’ unit of work that illustrates the above principles.

Issues in Designing Studies of Asia Curricula for Schools

The Hanson phenomenon highlights the urgency, magnitude and importance of studies of Asia in Australian schools, and the need to emphasise balance, insight and the complexity of the connectedness of Australia and Asia. Hence, the core element of the curriculum must be to address human values and to enrich the knowledge and experience of students in order to inform their perceptions. Values shape attitudes, and attitudes affect the way people observe and understand the world. Studies of Asia will help students to make informed decisions based on a recognition of an interdependent world. These decisions will constantly involve a choice of often competing values.

Four goals for studies of Asia are outlined by Singh (1995, pp.17-18):

• to transmit the skills and knowledge necessary to prepare students for doing some of the many different kinds of productive work likely to be required of Australians working throughout Asia;

• to transmit the extra-functional knowledge, attitudes and norms necessary for a fulfilling relationship with other Asian peoples;

• to construct the character of Australia’s cultural diversity through a process of interpretation, analysis and continuing development;

• to develop the social consciousness of Australian students through analysing and understanding the forces influencing their own, and their society’s, thoughts and actions.

Two other goals should also be added:

• to appreciate and understand the complexity of Asian civilisations in a framework of a world civilisation by investigating and analysing their rich and diverse heritages, both cultural and scientific, and recognising their contribution to Australia’s evolving cultural identity;

• to ensure that space and time is allocated in the curriculum to evolve a concept of a world civilisation in which we all make diverse cultural contributions.

By this means, a ‘worldliness’ can be recovered (Singh, p.20) and knowledge integrated to appreciate cultural diversity.

A utilitarian rationale for studies of Asia in Australia tended to be the dominant thinking around 1990. A National Strategy for the Study of Asia in Australia (Asian Studies Council, 1988) and the Garnaut Report (1989) focused on our economic needs and political obligations, and was expressed in the language of Australian national survival, prosperity, security and self-interest. Academic literature stressed the need for intellectual and philosophical foundations in the studies of Asia curricula (Viviani, 1992, p.69).

The debate about studies of Asia is now shifting from why to what should be taught, how it should be taught and very importantly who controls it (Singh, 1995). These complex issues embrace the question of whose values (Asian/Australian/Asian-Australian/Australian-Asian), and the meaning of being Asian and/or Australian as we renegotiate divisive boundaries in reshaping our cultural identity and relationship with Asia. Students have to deal with this reality and need to be active participants in the learning process. Similarly, those involved in current theorising and rhetoric about studies of Asia must address the question of how curricula can be constructed within a framework that is practical and familiar to curriculum designers and teachers.

The evolving picture of the key issues in designing studies of Asia curricula are that:

• promoting intercultural understanding should be the guiding principle;

• there are Asian and Australian interests to be negotiated;

• the interests of Australians of Asian descent also need to be negotiated;

• studies of Asia is based on a broad interpretation of social education;

• the current organisation of subjects as discrete entities in schools limits a comprehensive disciplinary and cross-disciplinary understanding of Asia, and must be changed.

The last two points form the central focus of this paper.

Designing Our Way Forward or ‘Mapping the Geography of the Possible’ in Social Education

What kind of curriculum will enable teachers to teach and learners to learn?

If studies of Asia is to achieve intercultural understanding, then a curricular approach that teaches for ‘wholeness and balance’ is required. This necessitates integration of knowledge. Beare and Slaughter (1993) argue that ‘the primary purpose’ in developing a forward-looking approach to education is to help people especially young
people, to build a genuine but qualified optimism about their ability to determine their own life prospects' (p.127). They suggest that informed optimism (which is attitudinal) grows from possessing at least three kinds of knowledge: 'an adequate understanding about one's own society and the world; an awareness of one's own vocation or sense of purpose; and knowing about skills of self-mastery and how to put them into practice' (p.127). These kinds of knowledge are multi-functional and interactive, and must be integrated across the cognitive and affective domains to develop principles and attitudes that provide guidelines for action and behaviour. As research indicates, such processes are particularly relevant to the development of intercultural understanding. Elliott and Baumgart (1995), for instance, demonstrate that intercultural understanding is a complex multi-dimensional construct containing cognitive, affective and behavioural elements. Similarly, Watson and Martin (1996) found 'that attitudes are primarily composed of cognitive and affective dimensions and that these jointly operate to inform each other and to predict behaviour' (p.43).

The Centrality of Values

A well internalised value system is the key to what students can learn, according to Kwak (1996b), who further develops thinking about the interactive nature of knowledge and values (p.9). According to Kwak, if we are serious about studies of Asia in education, then the curricula of schools must be transformed quickly to address human values as a core element in the learning process. Similarly, new modes of thinking and new ways of knowing that connect across the cognitive and affective domains urgently need to be developed to foster intercultural understanding and appropriate student behaviour.

Whilst dramatic and permanent structural shifts have occurred in Australia’s recent international relations, the accompanying attitudinal changes are limited by inappropriate popular perceptions. The ethical values framework is only beginning to emerge as interaction in the international arena becomes more complex and generates concern about humanity, principles, spirituality and beliefs.

Kwak (1996a) reinforces such priorities by arguing that the ‘egocentrism and shortsightedness which tended to accompany the industrial paradigm’ will fade, and be replaced by a paradigm ‘in which education emphasises wholeness, balance and clear insight’ (p.1). The linguistics and concepts of human experience (that is, humanity, values, ethics, principles, spirituality and beliefs, reciprocity and creativity) will form part of that dialogue. Space within the curriculum has to be allocated to address basic human values for happiness, the spirituality of harmony that flows through all religions, and the values of caring and respect. Curriculum design needs to provide ‘common ground’ for shared values and beliefs in encountering ‘unprecedented changing forces in our cultures and environments’ (Kwak, 1996b, p.3). We must design our way forward to access increased understanding of cultural values and knowledge. Information about Asia will be required to provide the content that enables students to develop an openness to other cultures and a sense of connection to the region. Much of this will be sourced from Asia through developing networks, and might question current assumptions about Western contributions to world heritage. Learning from as well as about Asia is part of the process (White, 1990). Technology is a useful tool for accessing a wider range of information but it will not develop values. Rather, values will determine the information that students will access.

Starting to Cross the Divide of Culture in the Secondary School

Studies of Asia curriculum: A new conceptual and organisation framework

A new conceptual framework of studies of Asia, based upon a rationale of human values, knowledge and understanding, is required. It must aim to discard past attitudes composed out of racist assumptions, and eliminate curricula that construct new cultural inequities (Rizvi, 1996). Rather, its construction should centre on ‘dynamic regional studies’ which focus on diverse international understandings of what constitutes Asia, as well as the Asia born out of Australia’s connections and relations, and Asia’s own sense of Asia, as a basis for development, growth, interconnectedness and the evolution of intercultural understanding in the future. This construction develops a comprehensive holistic understanding of Asia which would acknowledge the existence of Asia in Australia and ensure Asia’s existence in its own right with its great contribution to human thinking. The four regions of South-East, South, North-East and West/Central Asia within a global context should be recognised as specific Asias within Asia. Regional/thematic studies which focus on dynamic and important contemporary issues would form the focus for investigation so that students become informed of the way the past affects the present. As well, Asia’s place in global futures and Asia/Pacific
relations must be allocated space and time in the curriculum so that students are able to perceive the connections and methods by which the present influences the future. In this way studies of Asia will have a positive effect on the future quality of life of the people who experience it and on their capacity to understand problems of relationships between diverse cultures.

The organisation of the curriculum design must ensure students have guidelines for a systematic, general framework to access complex knowledge necessary for multi-functional constructs. Conceptually-based curriculum provides the design for negotiating content, strategies and skills with such a complex framework. Regional/thematic approaches could be intersected by systematic analysis which investigates historical, cultural, intercultural, social, economic, political, technological, ethical and environmental dimensions, using discipline-based methodologies, followed by curriculum integration for wholeness and balance. Teachers will be central to providing the development input because they must assess what students know and build on that base to plan their strategies. If the teachers do not have the background to deal with such issues, detailed support documents and intensive in-service training will be critical priorities in the implementation of in-depth studies of Asia.

Classroom strategies: Content

Part of the complex process of crossing the cultural divide will be to place greater focus on Asia and its contribution to world civilisation. In terms of studies of Asia, this will involve knowing Asia, understanding a past relationship with Asia upon which Western prosperity was built, and the 'clashes of culture' between East and West that have marked the evolution of world civilisation. The future of studies of Asia curriculum involves knowledge of the past that emanated from Asia and was fundamental to world development, but that the West ignored, and the development of knowledge that leads to empathy and understanding of the interconnectedness between groups, and appreciation of alternative interpretations of knowledge.

Classroom strategies: Process

It will be important to give priority to the development of inquiry approaches that lead students to investigate and reflect on issues, in order to ensure their attitude formation is informed. This will require teachers to acquire techniques for framing appropriate questions that motivate students to explore relevant knowledge and develop the openness necessary for culturally sensitive attitudes and behaviour. This framework encompasses cognition, affect and action. Students should also be provided with skills of critical literacy for interrogating stereotypes about Asia (for example, how images of 'Asia' are constructed in texts) to become competent and mature in selecting and critiquing information.

The disciplinary versus transdisciplinary debate

The principles for the national strategy for the Studies of Asia: A statement for Australian Schools (Asia Education Foundation, 1995) adopted an infusion approach that positioned studies of Asia into existing subjects across the curriculum. This action raised questions about whether the restricted constructs of subject disciplines can produce the three kinds of knowledge identified by Beare and Slaughter (1993) and the multi-dimensional constructs that Elliott and Baumgart (1995), Singh (1995), and Watson and Martin (1996) have identified as necessary for intercultural understanding.

The debate in the context of studies of Asia and the New South Wales Board of Studies

Studies of Asia has been a Year 7-10 subject in New South Wales for 30 years and part of the curriculum for Years 11-12 Society and Culture. From the inception of these courses, the focus has been transdisciplinary, although there have been differences about whether it was located in history or social sciences departments within schools, and built around the study of regions, cultures, countries, themes or issues. Over the years, a well-defined philosophical and methodological base has developed. This interactive combination clearly articulated the relationship between and development of attitudes and behaviour in intercultural understanding.

Even leading studies of Asia figures like Stephen FitzGerald changed his view. Efforts were made to eliminate this transdisciplinary focus in keeping with the National Strategy of the Asian Studies Council. FitzGerald, the former chairman of the Asian Studies Council and a significant and influential force in education, developed an underlying utilitarian focus for the national strategy to develop studies of Asia. When he addressed the New South Wales Board of Studies in 1992, he strongly argued that studies of Asia should be located in existing subject disciplines. Later, through a series of papers from 1993 to 1996, FitzGerald moved to a position that placed values as a core element in developing intercultural understanding. By late 1994, he was emphasising understanding 'race and culture',
urging us ‘to set our minds to thinking about what it will mean...for us in the future’ and suggesting a transdisciplinary Futures Curriculum to develop long-term visions and scenarios (1994, p.3). By 1995 he asked ‘could we accept some Asian modification in our thinking and behaviour, to take into account Asian values and beliefs and ethical codes’ (1995, p.171). The desired outcomes far exceeded the capacity of the subject disciplines to deliver the integrated approach he identified. They were only possible through new and very systematic transdisciplinary modes of inquiry, capable of informing attitudes and influencing behaviour.

Conservative educationists continue to support FitzGerald’s 1992 stand, even though his own views have altered. For instance, the President of the New South Wales Board of Studies, Sam Weller (1996), claimed that:

Subjects are and have always been powerful organisers for fields of knowledge and ideas...They have provided a relatively straightforward, logical and convenient way of making sense of our world and while every individual 'constructs' his or her own world...public knowledge [is] embodied in our cultural traditions. This public knowledge continues to reside firmly in our subjects, not in key competencies, generic skills or other faddish constructs. (p.3)

However, the public knowledge about Asia embedded in our cultural traditions is recognised as stereotyped, racist, and framed on assumptions of the superiority of Western values. To counteract this, we have to reject some of the conceptual models and forms of curricular organisation that have outlived their usefulness. If the disciplinary boundaries prevent or limit the solution to the problems presented in teaching and learning about Asia, then new modes of thinking must be organised which address the complex issue of integrated values across the disciplines.

While teacher training and the organisation of schools and curricula continue to reinforce disciplinary approaches, the social and technological issues relevant to teaching about Asia and Asian-Australian relations necessitate an integrated approach over a range of disciplines to address the past, present and future. Current structures limit rigorous cross-disciplinary integration and understanding. It is difficult to integrate knowledge across disciplinary divides. Some of the key disciplines do not exist within schools. Knowledge and an understanding of the evolution of the value systems of others, which is central to studies of Asia, necessitate rigorous, instruction and investigation. Such a process can be most effectively conducted within a transdisciplinary framework to develop multi-skilled students with higher order, integrated thinking skills, with a well developed personal values system, and the ability to use their learning across cultural boundaries with creativity and flexibility.

Transdisciplinary curriculum design using the methodologies of the disciplines

Such a conceptual framework needs to address the reality that it is not possible to separate social, environmental, economic, political, technological and national security issues, and national identity. Consequently, learning needs to be located in the conceptual issues of our time. A transdisciplinary curriculum is the optimal means of developing the 'multi-dimensional, multi-vocal account’ (Singh, 1995, p.7) of Asia required to foster an Asia-literate, multi-cultural Australia within a dynamic Asian region. Education’s role is to develop an appropriate approach to accept that ‘cultures and civilisations are so interrelated and interdependent it is impossible to characterise their diversity through simple description of their individuality’ (Said, 1993, p.349). This cannot be achieved if only half the relevant knowledge is accessed because the structure of disciplinary study in schools may exclude the newer disciplines of environmental science, information science, political science, psychology, sociology, anthropology and ethics.

Creating new knowledge for wholeness and balance

It is possible to access the ‘universe of knowledge’ necessary for studies of Asia, in which a sense of the relationship between the past, the present and the future and the changing nature of the world is to be developed. The structure for dealing with the emergent issues of society and contact with other world civilisations must be capable of requiring students to suspend judgment until they are adequately informed of the culture or issue under investigation. To study Asia effectively, subject matter and skills have to be combined creatively to understand the interactions between all these elements (White, 1996, p.7). This is possible if a transdisciplinary approach is used because it systematically draws on the investigative and analytical approaches of a combination of disciplines rather than a single method of inquiry within social education. Such an approach provides a solution to the problem of a crowded curriculum unable to ‘fit’ the newer social
sciences, necessary for multi-dimensional constructs.

Issues, accentuated by political, social and technological change, flow across the existing boundaries of the disciplines. Whilst it is conceded that a transdisciplinary inquiry has limitations, it is a developmental force in twenty-first century education that offers a realistic alternative to the limitations of subject disciplines, and provides integrated knowledge which aims at wholeness. Transdisciplinary inquiry merges ideas from parent disciplines, which provide a relatively straightforward, logical and analytical way of making sense of our world, to form a new, specialised subject that does not split the existing fields of knowledge and ideas into a number of narrower areas. Yet discipline integrity can be safeguarded. By using the methodologies of the various disciplines systematically to ask appropriate questions to distinguish the methodology of specific disciplines, integration can be undertaken in ways which do not destroy subject ideas, rigour and integrity. Comprehensive experiences help students understand the relationships involved as they construct their complex global environment. It is not possible to achieve the intended goals of studies of Asia through a disciplinary approach because the full range of discrete disciplines is not available in the school. In the available disciplines, knowledge is compartmentalised. Consequently, matters peripheral to each discipline but central to studies of Asia, (for example, respect for cultural diversity) are ignored or oversimplified in the subject disciplines available at the secondary level.

Classroom processes: Teaching

Teachers should be trained to support students on ways to construct their own knowledge, introducing ideas from Asian as well as Australian perceptions. It is important to immerse students completely in the transformative process, involving them as active learners, training them to ask questions which provide them with motivation and opportunities to systematically intersect and manipulate the enormous amounts of knowledge available about Asia, and to question, to collaboratively explore, and to reflect on what they have learned. The critical role of teachers will be to develop students who are active rather than passive learners, to train them to acquire the systematic tools to investigate themes and issues, and to ensure that students develop questioning techniques and skills of self-mastery. Classroom strategies and practices designed by the teacher to enable the learners to interact with the issue will be central to the process and, when students develop the necessary competencies, the teacher's role will become that of a facilitator and mentor.

Classroom processes: Learning

In facing the educational challenges of integrating into a global environment in the twenty-first century, the media, particularly electronic media, will play a very significant role in providing information and images. Often the information will lack the scholarly research, motivated by interest and curiosity, that is desirable for resource material. Sometimes the information may be presented with the intention to cultivate fear or hostility. Students have to be provided with skills that make them proficient and alert to weaknesses in non-scholarly interpretations, and to reflect on ways that technology mediates information and images. Therefore students must learn to critically analyse how reality is constructed through the personal value systems of the writer. Preliminary skills necessary to carry out investigative research to deconstruct press and electronic media coverage must be acquired. This can be very positive, giving the student the opportunity to hear the voices of the people of Asia as an integral part of the studies of Asia. Issues must be analysed for balanced presentation of knowledge and the points of view of all parties concerned. A variety of resources will need to be accessed. The content must be developed through rigorous analysis and research.

The populist Australian view does not readily accommodate the need or urgency to develop a new and more outward looking sense of our location. Therefore a mode of 'unlearning' of the current mindset and the introduction of a mindset that accepts studies of Asia is a priority. Part of the initial learning should involve tasks whereby students come to understand the necessity for Australia to take new directions in the conduct of foreign policy and to present a more sophisticated international image. Students must understand why Australia wants to develop favourable responses from Asia in the expression of its identity. Guidance and opportunities to construct and communicate very meaningful knowledge about Asia and Australia/Asia relations is a challenge that must be taken up if the multi-functional goals of studies of Asia are to be achieved.

An Illustrative Process of Dynamic Research Which Demonstrates a Transdisciplinary, Values-Based Approach

The following illustrative process model is based on a very significant recent historical event, which necessitates ongoing analysis, assessment and evaluation for the twenty-first century.
An Illustrative Process of Dynamic Investigative Research

Analysis, assessment and evaluation of media reporting in development of accurate image formation

Learning Outcomes for Students
- Appreciating cultural diversity
- Developing intercultural understanding
- Understanding the impact of significant political events

Activity 1: Using a Critical Literacy Approach
- Analysing a headline: The following four headlines indicate movement over time of the event and enable students to reflect on the period in a perceptual framework of past, present and future. They can add a fifth to bring the narrative right up to date. Identification of nationality of the reporters in each case could produce animated discussion.
  - Hong Kong: Waiting for the dragon as the last jewel of Britain’s colonial era is handed back
  - The dragon has cast off its bonds of colonial rule
  - Hong Kong currency meltdown
  - Hong Kong dragon roars again
- Questioning the language through group discussion: What does the dragon mean to China and countries other than China?
- Self-reflecting for teachers: Is this imagery appropriate for a task based on media analysis?
- What emotion does ‘colonial’ stir in China and in the West? Is this appropriate language? Can you suggest better headlines?
- What effect is created by the various writers’ use of nouns, adjectives, verbs?
- Is the language and imagery ethical and balanced?
- In groups, discuss the meaning of the statement, ‘China is now physically free of foreign domination’. Is this a legitimate statement? Why?

Activity 2: Sources for Investigating a Balanced Perspective
In order to research and analyse the media coverage of a very significant event or issue, such as the return of Hong Kong to China, and then to assess the subsequent developments, it is necessary to access texts, TV, newspapers, periodicals, pictures, and the Internet. The overriding questions that should guide students are: Is the reporter’s construction of the event framed in a perception of interest and curiosity or fear and hostility? How can we be sure media coverage provides a balance of points of view?

Activity 3: Training Students to Interrogate Media Resources
Some key questions that students may have to address in analysing resources are:
- How is Asia constructed? Is the framework ‘us’ and ‘them’? How is that communicated?
- How are you being positioned in this resource?
- Are other interpretations of the event possible?
- Are the interests of the East or West being served?
- Could you present the material from another point of view?
- How are the visuals used to play on the reader’s/viewer’s emotions?
- What emotions does the author play upon?
- Is there wholeness and balance that adequately explains how the past has influenced the present situation and the present is shaping the future?
The model provides the framework for a unit of work to demonstrate the scope for designing studies of Asia curricula that is both values-based and transdisciplinary as new issues and events loom on the horizon. For inexperienced and lower ability children such a study might be presented as a ‘current affairs’ alertness raising exercise. For those students with some ability in investigative research, it provides opportunities to become actively involved in the structured methodology of the subject disciplines, and to systematically use structured questioning to integrate for wholeness. The unit could be an individual assignment or group activity in the class.

The task

The task is to be involved in a delivery system of knowledge and understanding which is based on analysis and assessment of how the media handles both a significant world event and the subsequently unfolding scenario. A tape is to be prepared. Here we will use as an illustrative process a mock broadcast of the background to the event, the ‘handing-over’ ceremony of Hong Kong to China, the continuing assessment of the impact on Hong Kong society, the financial crisis in which Hong Kong took centre stage, and the currently unfolding situation one year after the event. After the mock broadcast, the class will need to be debriefed by discussion of the role of specialist broadcasters in Asia, and why media presenters should be knowledgeable and present balanced viewpoints in carrying out their tasks. Discussion should be directed to describing, analysing, predicting and evaluating the obligations and responsibilities of news reporters to viewers, readers or listeners, to present the many voices that have legitimate views. This may entail addressing questions such as: Did the news coverage adequately present the psychological, cultural and historical significance of the event in terms of a world framework? Did it recognise the interests of China, the British, the people of Hong Kong and other people with interests and connections in Hong Kong? Was the global significance of the event given appropriate emphasis? Have the motives of the United States been analysed as they have sought to be involved in opinion formation? What has been Australia’s stance? One year after the event does self-interest continue to frame perceptions? Has the event and subsequent developments moved Australian educational horizons to accumulate knowledge and understanding about China, Hong Kong and Taiwan, in particular, and Asia generally? Has students’ sense of cultural distance been reduced through involvement in the mock broadcast? Through the process of investigative research to complete this task, are students being made aware of the role and responsibility of specialist broadcasters to develop knowledge and understanding in the framework of a global issue and global shocks.

An appropriate follow-up activity would be a student discussion of future implications for Australia and Australia’s national identity. The underlying purpose of the exercise is to involve students in research and valid opinion formation and to develop students’ awareness of the need to suspend judgment of issues until they are comprehensively informed. For this reason, each investigative activity or task must present the point of views of all parties involved.

Guidelines for teachers to ensure students design appropriate investigative questions

Give examples of descriptive, explanatory, analytical and predictive questions, for example: Why does...? What factors explain...? How adequate is...? What might...?

Explain that media coverage must take into account Chinese and Hong Kong values, beliefs, ethical codes, political and economic interests as well as British and Western concerns. Has the media presented an adequate and objective coverage of the events/issues involved and subsequent developments? This entails exploring issues related to the following headings:

- Historical:
  What happened in the past? Why did it happen? What were the consequences? Was there a history before the colonial era? In terms of civilisation and identity has Hong Kong been a part of China or Britain? Was there a consciousness of moral issues regarding human relations and social conscience as gunboat diplomacy was applied in the nineteenth century? What have been the developments in the very immediate past? Have they influenced China’s relations with the West? How?

- Geographical:
  Why is Hong Kong’s location so important to both East and West? How have geographical boundaries changed in the past year? Why is Hong Kong termed a Special Administrative Region of China? In what ways have ecological issues been perceived in the changeover and in subsequent developments?

- Political:
  What were the political issues/tensions that were central in the changeover? Have political tensions eased in the past year? What political tensions are surfacing for the future? How has
the changeover affected the foreign policies of China, the Western nations generally and Australia in particular? Were some of the events that occurred in the year after changeover unforeseen by both sides? What evidence is there that the US is changing its foreign policy stance and negotiations in dealing with China? Why do you think this is occurring? Is the Western viewpoint that China has a harsh, unresponsive political system a valid viewpoint?

- Economic:
  What were the concerns about investment, trade and information flows at the time of the handover? What important issues concerning production, consumption, trade and wealth surrounded this event? From financial events that started in late 1997 can you evaluate the importance of the Hong Kong stockmarket to world financial and economic stability? Is Hong Kong a critical financial market to the world? Is Hong Kong the free market gateway to China? How important is the Chinese market to other world economies? In the global market who leads, who follows?

- Sociological:
  In what ways do the people of Hong Kong have a sense of kinship and identity with the people of China? How was Hong Kong society operating prior to the handover? Was there immediate evidence of change in social institutions as a consequence of this event? A year later, what evidence of change is apparent, particularly in financial, legal, economic and cultural institutions?

- Anthropological:
  What were the cultural issues surrounding this changeover? Should we be recognising that other great civilisations do exist? Is China a great civilisation? Can you foresee evidence of its power in the twenty-first century?

- Psychological:
  How did people perceive this moment in time? Were the perceptions of the West, China and Hong Kong different? What moods and expectations are evident in current patterns of behaviour? Is there evidence of changing beliefs and values? In hindsight, did Western image makers facilitate a climate for positive international relations for the future, in their presentations? Were the images presented accurate? Why does the world focus on what happens on the Hong Kong stockmarket? Is there ambivalence of fear, respect, jealousy, and economic pragmatism in our perceptions?

- Ethical:
  Prior to handover was there an assumption that there should be a convergence of values towards a Western norm? Was there any recognition of a legitimate ‘Asian’ world view to be presented? Was there an understanding of the conflict in values for the participants in this very complex issue? Did we have sufficient understanding of this complex historical event? Is there any evidence that, in the search for meaning in this complex handover event, a moral and ethical framework has been included, or has meaning been perceived in a framework of self-interest. A year later is there any evidence of change in Western perceptions of the rights of China in this issue and of China’s place in the international community? Has the changeover and resultant interaction with China brought new understandings in human relations across cultures?

- Technological:
  Does Hong Kong operate at a high level of technology? What has happened under the Chinese administration to control the technology and the flow of information? Were concerns justified? Is there any evidence that there will be problems in the future? Why?

- Change:
  How was the prospect of change addressed prior to the event? Was an emotional atmosphere created that stimulated anxiety; did the language employ fear and apprehension? Was such an approach valid? What evidence is currently available that suggests fears about change were ill-founded or correct? Is it fair to assess the current climate as one of constructive engagement?

- Future:
  Are global maps changing? How have global interactions already been restructured? What outcomes are already evident? Is there informed and accurate understanding of the current situation? Is China becoming more decisive in international affairs as a result of the acquisition of Hong Kong? Have international relations reached a stage where China is too big to ignore and too powerful to ignore? Is the West likely to have a huge agenda with China in the not too distant future? Will this new vision of reality involve a profound change in thoughts, perceptions and values?

- Australia-Asia relations:
  How have they been affected? What are the implications for future scenarios? What drives
our perceptions of the Hong Kong issue—uninformed opinion, personal self-interest, national interest or nurturing of multidimensional relationships within our region? Is there any evidence of greater effort to develop good neighbour relations? What evidence has been documented in the past year that what happens in Hong Kong can determine what happens here in Australia?

The next stage of the activity would involve students collaborating to investigate and present their version of what such a broadcast should contain. They could make a tape of it and discuss and reflect on the issues. The processes involved in the learning experience include learning through sensation, perception and conceptualisation, creating and retaining knowledge, communicating and reflecting on their understandings.

After the task is completed, the class could set up a mock radio broadcast and present a fair, balanced analysis and assessment of the handover issue, subsequent developments, an evaluation of the situation one year after the event and a prediction of the future based on current evidence. Reporters could be assigned to present the coverage from the viewpoint of both sides, which could be taped. The class could proceed to analyse balance in media reporting and students could discuss what they have learned about such an historic event, its meaning for the future and the issues in news reporting about events in Asia, particularly those issues related to valid image formation.

Conclusion

With the approach of the new millennium, a period of great challenge and change for education is evident. We have to redefine and reshape our relationships in an interdependent world integrating with Asia as the Asia-Pacific century draws near. We have to accept that the economic, cultural, political, and technological influence of Asia and the non-Western world is becoming more decisive in international affairs. In terms of Australia's needs and interests, we can no longer be indifferent about operating in and with Asia. In the engagement of new and informed sets of human relationships, a vast amount of information needs to be accessed. Human values become central, acting as guiding principles for students to select and process information that emphasises wholeness, balance and insight. Being involved in processes of investigative research provides students with the opportunity to translate information into knowledge that facilitates informed attitude formation and the development of the multi-dimensional constructs necessary for intercultural understanding. Through school curriculum initiatives, appropriate methodologies have to be devised which reflect maturity in thinking about education and Asia in particular. New modes of thinking have to evolve if we want to be involved in the massive transformations taking place in the Asian region. The rigidity of boundaries that separate and compartmentalise knowledge into discipline structures has the potential to fracture in the same way that the conceptually rigid boundaries between 'us' and 'other' become fragmented. The East/West dichotomy needs to become more fluid to achieve a world that appreciates cultural diversity and promotes intercultural understanding.

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PART 4

Creating Responsible Educational Images of Judaic/Christian/Islamic Relations

A dimension of educational research should be addressing reform of our selective constructs of knowledge based on predominantly Christian assumptions in the West that have neglected the parallels, similarities and relationships written in the spiritual and moral philosophies of Judaism, Christianity and Islam. Part of that research needs to address the long term belief that the Qur'an and its teachings are hostile to the Judaic/Christian ethic. Students should be required to undertake scholarly analysis of the Bible and Qur'an as primary texts in order to clarify their confusion and misunderstanding of the commonality and interconnectedness of these important written teachings. This research can be tested against a model which suggests both commonalities and alternative interpretations, and develops a knowledge base for sharing ideas about human relations, social conscience and moral autonomy considered in the cultural and historical context, today and in the future. In the process students should come to realise there is more than one legitimate history of religion, and that Judaism, Christianity and Islam have been involved in each other's exchange of ideas and commonality of development.

Introduction

Educating to improve opportunities for a non-violent future must surely be a desired outcome of education, as well as developing students' sense of hope by opening their horizons to positive images of the future (Hutchinson, 1996). Hope can be generated by developing interaction and balance between cognitive and creative skills in order to perceive a sense of relationships with other human beings and to develop a sense of purpose. New modes of thinking and new ways of knowing that connect across the cognitive and affective domains are needed to foster understanding at the site of intercultural contact. This begins to develop, according to Willinsky (1992), when students perceive alternative interpretations of historical events. Erikson (1996, p. 10) has identified two forms of qualitative research surveillance and relationship at the site of cross-cultural contact. The shift to relationship involves moving from being a 'so-called participant observer to becoming an especially observant participant...paying close attention not only to one's point of view as an observer, but to one's relations with others (who one is studying and working with) and to one's relations with oneself' (p. 7). Identifying the
researcher's agenda is part of the investigative methodology for developing intercultural understanding. Intercultural understanding is a complex multi-dimensional construct containing cognitive, affective and behavioural elements (Elliott & Baumgart, 1995) and can therefore be developed through experiential learning which actively involves exchanging ideas with those of other cultural backgrounds.

A wide variety of views must be collected to provide a composite image of Judaic/Christian/Islamic relations. Some of these views must be based on connectivity, parallels and similarities, not merely a survey report of research into debate, problems and possibilities. Access to a composite of research styles counteracts the limitations of each.

This paper grew out of the needs of a senior secondary class taught by the author, to develop skills in content analysis and undertake a personal interest research that aimed to develop students' relationships by reflecting on alternative interpretations of historical events. The class profile was ideal for learning activities that aimed to develop social creativity, emancipation and 'new values and aims, new forms of co-operation and action' (Pieterse, 1992, p. 13). The particular make-up of the class provided a climate for social creativity. Of the seventeen students, nine were Islamic, eight were Judaic-Christian and all became involved in exploring ways in which their religions were similar and implicated in each other's development. The Islamic community presented the library and the author with an English copy of the Qur'an to carry out the task but the exploration, although mature and effective in developing intercultural understanding, suffered from lack of appropriate resource material. Years later, by developing personal relationships across the religious divide, in-depth research was conducted that resulted in a conceptual model against which students could test their own research and a resource to guide teachers' understanding of cross-cultural interaction.

The current paper grows out of the process outlined above and has two purposes. Firstly, to demonstrate the relationship and commonality of factual material across the three religious faiths of Judaism, Christianity and Islam as embodied in the seminal texts of each: the Torah, the Bible and the Qur'an. Secondly, to suggest that investigative methodology should provide a component that allows students to develop intercultural understanding by developing a sense of relationship and openness to other cultural perspectives, by accepting the cultural diversity of ideas, and by tracing the cross cultural exchange of those ideas. Wang Gungwu (1997, p. 50) argues that the world is ultimately human making up a diverse whole with a sense of interlocking and interdependent regions—a complex integration which makes possible a one-world system. Building on this notion classroom practice requires 'new cultural understandings and counterpoints [to] take shape' (Pieterse, p. 12).

Curriculum is the means for galvanising student thinking about intercultural understanding. That curriculum should provide space for the conceptual development of connectedness, parallels and engagement in the past, present and future across the belief systems. Such an approach recognises the contribution of the connected spiritual and moral philosophies of Judaism, Christianity and Islam to the universal values of justice, and that in each religion compassion and love are keys to moral and spiritual vision and to harmony and community. Already within the religious community tentative exploratory meetings between the Jewish, Christian and Islamic faiths in Australia document movement towards dialogue to understand ways the faiths are implicated in each other's development (Neighbours, 1996, p. 97).

Much of the cross fertilisation, similarity, connectedness and parallel ideas are not known or understood in popular Western perceptions. Therefore, writers like Huntington (1996) perceive
the twenty-first century in terms of clash of civilisations when the West (grounded in Catholic and Protestant Christianity) will be challenged by Islamic (and Sino) civilisations—thereby perpetuating the perception of Islam as a ‘threat’ to Europe (Sezisaburo, 1997, p. 44). An alternative interpretation positions Islamic civilisation in an evolutionary framework as one of several civilisations ‘in a cosmopolitan array of cultures’ (Craig, Graham, Kagan, Orment & Turner, 1994, p. 36). This defines the beginning of a global civilisation of diverse cultural contributions which fuse into universal ideas.

If schools are serious about developing intercultural understanding, educational horizons for developing knowledge and understanding must shift to develop skills, values, knowledge and teaching practice that allow exploratory, collaborative learning to access other perspectives and interpretations of historical events. Movement to a truly global spirit must involve exposure to other cultural and religious traditions that challenge the intellect and the senses. A start must be made to ‘fill the space between the bashing of other religions or cultures and deeply conservative self-praise’ (Said 1993, p. 397) with analysis and discussion. In accepting that school curriculum has a responsibility to make this possible, a framework for the study of Judaism, Christianity and Islam offers new instances of relationships, parallels and connectedness.

Part 1: Analysis of Factual Commonalities in the Torah, Bible and Qur’an

The Geographical Setting

As Morris-Suzuki (1998, p. 5) states:

Of all the European inventions which have transformed the modern global world view, one of the most successful must surely be Asia. Originally a name by which Phoenicians distinguished the lands to their east (Adu—the land of the rising sun) from those to the west (Ereb—the land of the setting sun), ‘Asia’ came to be incorporated into the three-fold Greek division of the world, whose other parts were Europe and Libya. The Aegean formed the boundary.

By the nineteenth century, most Asians began to accept their Asian identity from this image. It was from this Asia near the Levant, during the Bronze Age that the original Semitic ‘Phoenician’ or Levantine alphabet (Bernal, 1990, p. 1) was created which would make it possible for the linguistics and concepts to record the development of monotheism, the belief in a single spiritual reality—a unique God who is the creator of the universe. Hebrew and Arabic are both Semitic languages and the abstract religious ideas about ethical responsibility were documented in both languages. It is extraordinary that the Hebrew creation of monotheism withstood both the hellenism and polytheism of the Greek world at a time when there was a remarkable degree of interaction between East and West. The placing of ethical responsibility on both the individual and the community was further developed through Christianity and finally through Islam. The strong implication of each in the other’s development is further observed by Said (1995, p. 74) who argued:

[Islam] lay uneasily close to Christianity, geographically and culturally. It drew on the Judeo-Hellenic traditions. It borrowed creatively from Christianity...Nor was this all. The Islamic lands sit adjacent to and even on top of the Biblical lands; moreover the heart of Islamic domain has always been the region closest to Europe, what has been called the Near Orient or Near East.
The Historical Setting

The Roman destruction of the Hebrew Temple in Jerusalem in 70 A.D. brought the Jewish state to an end. Islam, centred in Arabia, entered an already existing West/East rivalry in the early seventh century. Asia Minor became the frontier where the cultural worlds of Christianity and Islam met, intersected and overlapped. Religious tension dominated the West's efforts to control the East as Islam entered an existing West/East rivalry by replacing the old boundary between Persia and Rome.

It is appropriate for education to acknowledge the historical and contemporary role that Arabia and Islam played in shifting the power dynamics in world affairs, but it is also necessary to clearly distinguish between religious differences and their political expression. Through the Arabian cities and bazaars, cultural contact was established across the Euro-Asian landmass, resulting in a fusion of ideas in religion, human relations, science, mathematics and technology that stimulated new thinking and broadened people's horizons. An array of Islamic beliefs and values, customs, moral attitudes and practices were drawn into the ideas mingling at the geographic crossroads.

Over time Islamic religion and culture modified Western values and knowledge and made significant contributions to human thought but it stimulated hostility and suspicion. The West perceived that the stability of the Near East was threatened and Islam's contribution to Western knowledge has been inadequately recognised or documented. The impact of the rich contribution of Islamic religious thought to the world's intellectual tradition continues to be submerged by the development of a very hostile and strong Islamic fundamentalist expression of anti-Westernism while in popular Western perceptions the complexity and ethics of Islamic religion have been associated with political terrorism. These misunderstandings must be corrected.

A Model Exploratory Task to Understand the Holy Books

It is essential for students carrying out this model investigative task of analysing the content of the Holy books of Judaism, Christianity and Islam to have access to the Torah or Pentateuch (i.e. the first five books of Moses), the Bible and the Qur'an (in English). Torah means to 'teach' or 'instruct' through Law (Himmelstein, 1990, p. 9). In Judaism the study of the Law is believed to be a foretaste of the immortal life (Finkelstein, 1993, p. 272). The law and practices in the Torah provide a standard of righteousness to eliminate bad values and safeguard the fundamental human rights of freedom, equality and justice. According to the Torah, Judaism is a way of life, based on the Covenant that God made with His 'chosen people', the nation of Israel. The later books of the Old Testament record the development of ideas about social justice, social conscience, and the institutions to support the Law. The five books are the paramount authority in the Jewish faith. Throughout the writings there is the sub-narrative of the coming of a Messiah, empowered by God's spirit, who will deliver His people and establish His kingdom in future times (Dan. 9:25-26). Christians categorise the Jewish Bible as the Old Testament, looking back to the 'old' covenant.

The message of Christianity challenges Gentiles (foreigners) as well as Hebrews to adopt a reinterpreted thinking about the old covenant. In the description of the three years of Jesus' ministry, the Bible documents a shift in emphasis from the use of legalism to spirituality and ethics as the means of controlling human behaviour. According to the Bible, Christians receive direct guidance from God on spiritual development which includes the mind, heart and will of people. All are involved in a relationship with God. The New Testament marked a major
division in the Bible because it involved a new covenant with His people that put the Law in the hearts and minds of the people through learning to love. This was a significant shift from the relationship between God and His people in the old covenant where God's Laws were recorded on tablets of stone (Jer.31:31-34), to be obeyed. God's relationship with His people had moved from commander (Jeovah) to forgiving father, and the individual person could now ask God for forgiveness of his/her sins in the emerging focus on the human spirit.

In the reinterpretation of the message of God's covenant of righteousness through Islam, the Word was revealed to Muhammad and recorded in the Qur'an in Arabic. The Qur'an is regarded by Muslims as the final revelation from God (Allah) of his oneness and unity. Each chapter of the Qur'an is called a Surah. Each verse is called an Ayat, meaning a sign. The opening chapter, the Fatiha, forms the essence of the Holy Book. There is no God but Him, eternal, the source of all mercy, complete and perfect. God's message, revealed to Muhammad, is considered to have universal application and to meet the spiritual and religious needs of all humanity because God was expressing His will for all.

Parallels in Narrative and Plot across the Three Faiths

The written Torah was completed about 540BCE. God spoke through the prophets and was seen to act through the Exodus from Egypt. The New Testament was recorded after Jesus' death, around 100CE by those who responded to his teachings and the events of his life. Although these have been subject to interpretation by various custodians, there is consensus that God now spoke and acted decisively through the life, death and resurrection of Jesus Christ (Elia, 1987, p. 348). The Qur'an was dictated by the prophet Muhammad as soon as it was revealed and no variations have ever been allowed. Islam presented a complete way of life, creating a supreme loyalty to Allah and His prophet, and a code of conduct for organizing the whole fabric of human life for all people. The earliest script was available around 640CE, seven years after the prophet Muhammad's death.

Judaism, Christianity and Islam all originated in the Biblical lands of Western Asia—or the Near East, according to one's location. They emerged at moments of crisis in their communities, when there was an urgent need to address specific human predicaments, and are all based on the concept of a unique God, who is creator of the universe.

All books accept Abraham in their narratives as he set the tone for the concept of a monotheistic God. For Judaism and Christianity, Genesis was the basis of the common story of creation and the lineage of the characters involved was narrated as the beginning of the story of God and Man, in the revelations of the books of Moses. The New Testament continued the narrative based on the acceptance of Isaac as the son of Abraham. Islam questioned Judaic and Christian interpretations of creation and lineage and argued there was a contradiction in Genesis, chapters 21-22 which identified Isaac as the son of Abraham, and ignored Ishmael, his first born son, who is the central character to the story of Islam.

The narratives unfolded in the Torah and the Qur'an from the survival of a people who were delivered out of slavery in Egypt and later Babylon. Their experiences documented the Hebrew vision for basic human rights to freedom, equality and justice. The common story line of all three books was that Abraham set out from what is now called Iraq around 1800BCE to settle in what is now known as Palestine, but famine forced the people to move to Egypt, where they were enslaved but eventually led to freedom by Moses. God introduced the concept of his Covenant laws to Abraham (Gen. 26:5) who was the role model of faith and obedience. Abraham
became the forefather of the three faiths of Judaism, Christianity and Islam, as God revealed to him 'All people on earth will be blessed through you', (Gen.12:3) because 'He was true in Faith' (Sura ii:67).

The Judaic Viewpoint

The Torah offered its followers a system of values that were revealed by God to Moses. These values combined ideas, beliefs and rituals into a comprehensive set of instructions for setting up social organisations and institutions to create a community. For a Hebrew, obeying the Torah was to follow God's guidance. In Judaism, the emphasis on God, Yahweh or Jehovah (Gen. 12:8) was as the creator and sustainer of the universe. The Hebrews were 'the first people to arrive at an abstract notion of God and to forbid his representation by images' (Roberts, 1995, p. 104). From the beginning there was an interrelationship between God with the natural world and the environment (Gen. 1:1). The Hebrew people believed that God gave the Law as a standard of righteousness to His 'chosen people', who would make His name known throughout the earth (Deut. 7:6,7). Thus the nation of Israel was believed to be set apart. United under Moses, who was considered the perfect law giver, the Hebrew people accepted the Ten Commandments (Exod. 2:1-7) which codified the laws of God which had presumably been obeyed by Abraham in a more primitive form (Gen. 26:5). By regulating behaviour towards their fellows in their daily living, the Jews accepted their covenant as a legal relationship with Yavveh whom they recognised as their supreme authority in moral obligations (Roberts, 1995, p. 106-107).

The Torah detailed how God, through Moses, dealt with an unruly people whose behaviour centred on self-interest, and guided them to a sense of personal responsibility (Lev.25:27). Through Genesis, the organising concepts of the narrative are identifiable: the creator of the universe, the complexities of human relations, laws and principles regulating human social behaviour and morality. It is a narrative about moral excellence, appropriate behaviour, caring for each other, goodness, empathy and suffering as an oppressed minority, social justice (Deut 1:17), a high code of sexual morality that sanctified the family and marriage (Deut 22:13-21; Deut 24:1-4), surrogacy (Gen.16, 1-16, Gen. 30:1-8), inheritance (Deut 21:15-17; Numbers 26:52-53), counterposed against hate and murder (Gen.4:1-15), corrupt moral practices and sibling jealousy (Gen.4:2). Theft, exploitation, sin, guilt, shame, domestic violence, rape and seduction, incest, bestiality and the consequences of worshipping idols were labelled as lawless and a transgression of God's will and guidance. Diet was strictly regulated. The primary command was 'Love the Lord your God with all your heart and with all your soul and with all your strength' (Deut.6:5). Moral obligations and concerns for neighbours were spelt out in the ninth and tenth commandments, which directed followers to love neighbours.

The Christian Viewpoint

Jesus was believed to be the Messiah that the Jews had expected. A sequel was written to the Judaic message in which there were two additions to God's revelations to His people: the given Law and a particular type of human response, as explained by Jesus in the New Covenant (Luke 22:20).

Jesus' humane ideas gave guidance about ways of reaching God. His teachings were based on the integration of a sense of holiness, love, purpose and determination to resolve the contradictions that frequently developed in the interplay of heart and mind. From these interconnected elements emerged complex values and spirituality. These formed the essence of Jesus' teachings and provided basic guidelines for ethical behaviour within individuals. His
inspired new commandment was to give life to the Ten Commandments:

Love the Lord your God with all your heart and with all your soul and with all your mind. This is the first and greatest commandment. The second is like it: Love your neighbour as yourself.' (Matt.22: 37-39)

Love was to be the overriding value in human relations as evidenced in the first two commandments. This love developed in thoughts and feelings and was expressed in action and behaviour. It is summarised in 1 Cor. 13:

...Love is patient, love is kind, it does not envy, it does not boast, it is not proud, it is not rude, it is not self-seeking. It is not easily angered...It always protects, always trusts, always hopes, always perseveres...And now these three remain, faith, hope and love. But the greatest of these is love.

Love was placed ahead of faith in situations of contradiction. People were directed to love their enemy and pray for those who persecuted (Matt.5:44). This value of love is central to development of intercultural understanding today.

Jesus claimed His teachings were not unique but an expanded interpretation and clarification of the original Laws of Moses. The law as interpreted by the Pharisees had become so legalistic it had lost sight of the values that defined what was 'proper' and 'improper' in human conduct and relations. Jesus shifted the focus of the Law and clarified meaning in the Sermon on the Mount (Matt. Chpts 5-7). Values that sought God differentiated between good and evil and searched for moral motives that rose above self interest. Happiness could be found through living the Ten Commandments. Honesty was expressed in both word and deed. Persistence was required in developing thoughts and feelings which formed positive values and these were expressed in actions and behaviour. Religious leaders and teachers of Judaism perceived Jesus' teachings as a departure from the orthodox path of teaching and regarded his activities as revolutionary. He was charged with blasphemy, and sedition, and crucified.

The Islamic Viewpoint

The Prophet Muhammad developed what Muslims believe is God's eternal religion for all men of God. At that time, the main component of the Arabian code of ethics was tribal honour (Ellade, 1987, p. 303). This honour specified bravery, correct behaviour to women, hospitality (in which drinking and gambling were common), honoring one's promises and pacts and vengeance. The Judaic/Christian ideas were known (Sura 6:91-22) but Islam questioned the authenticity of their interpretation.

In Mecca, Muhammad gathered around him a small group of poor devotees, denounced the polytheistic faith of his fellow tribesmen in Mecca, and began to preach a new revelation in a series of inspired religious utterances. The persecuted Muhammad and his small group of Muslim converts emigrated to Medina in 622CE. His teachings became the base for a distinctively new and much energised life for the embryo community. From this centre, a vast, dynamic Islamic civilisation was created.

Muhammad always regarded himself as a messenger of God, not a ruler or in any way divine. Nevertheless, he became the conscious lawgiver, a judge and initiator of social reforms. Islam was established as an institution. Its laws and its social institutions provided the mechanisms for social control, social principles, civic obedience, ethics and the development of Islamic egalitarianism. Rules were laid down to embrace all areas of religious and social behaviour. Muslims
were required to respond to God's presence with humble gratitude, expressed in regular worship five times a day, alms-giving and self-purification. To a Muslim, prayer is a formal communication with God. It is not, however, the only way of communicating with God. There is also the concept of Zikr or the remembrance of God whereby Muslims are constantly praising God and seeking His forgiveness. This does not involve formal prayer. Prayer, praise and seeking forgiveness govern the life of the individual and the life of the community.

Islamic principles were laid down in the Qur'an. The Hadith contained the traditions and the Sunnah contained the practical interpretations from the Prophet. The Qur'an and the Sunnah translate into the legal theory of the Shari'ah or Law (Said, 1997). Together religion and law cover morals, ethics, law and manners, and individual responsibility for all actions (even if drunk). Responsibility is an important element and deterrents must promote public safety (Hooker, 1997). The Shari'ah brings together the equitable principles of individual morality and collective conduct (Mawdudi, 1997, p. 10). In commentary 50, instructions on right conduct include duties of almsgiving and charity, fasting and pilgrimage and prohibition on drinking wine or gambling. Practical rules among believers are set down for marriage, divorce and widowhood, and settlement of disputes. Foods that were lawful and unlawful for consumption were itemised in ii:219. In the commentary to ii:177, faith, kindness, prayer, charity, probity and patience under suffering are interconnected and cannot be viewed separately.

Five basic practices are required of every Muslim and six elements of faith. Only one God exists (ii:255) and it is the duty of every human being to obey the will of God, and believe in the oneness of Allah as a powerful, almighty and infinitely merciful God (ii:136-137), revealed through his Prophet or Apostle, Muhammad (iii:144). The Qur'an returns to the semi-otic idea of unity of God, arguing it is impossible for God to beger a son. However, Muslim faith is not complete without believing in Jesus as a Prophet (Abu, 1997). Deedat (1994 p. 30) writes of Muhammad as the chronological successor to Jesus Christ, who was chosen by God, in fulfillment of earlier prophecies of his predecessors and adds a fourth facet, 'by bringing the guidance of God to perfection'. Islam's function was to protect, consummate and transcend revelations by earlier prophets (xxx:40). The Qur'an rejected Christian theology based on the divinity of Jesus but accepted Jesus' teachings and spirituality into the law of the Shari'ah as examples of good conduct in living. The source of unity between the religions is the revelations from God for all humankind (xii:13).

Following Ayat (verse iii:110) there is a note (434, p. 151):

The logical conclusion to the evolution of religious history is a non-sectarian, non-racial, non-doctrinal, universal religion, which Islam claims to be. For Islam is just submission to the Will of God. This implies Faith, doing right, being an example to others, to eliminate wrong, and having the power to see that wrong and injustice are defeated. Islam therefore lives, not for itself, but for mankind. The People of the Book, if only they had faith, would be Muslims for they have been prepared for Islam.

Islam, in believing that God exists for all mankind, disagreed with the Judaic interpretation of His existence through a 'chosen people' or the Christian interpretation of His existence through the Christian Trinity.
Perceptions Today

Misunderstanding divides the three faiths today. The Judaic view that the system of laws given to the children of Israel appointed them as a 'chosen people' to care for the world is a source of current hostility, and the Paulian view of Christianity adopted by the Western world continues to create tension and misunderstanding. Muslims felt that the early Christians among whom Jesus lived and preached experienced the great humanity of Jesus but that this feature was lost as his teachings spread to the West.

People outside Islamic belief tend to equate the Shari'ah with the Jewish concept of the law. However, Dr. Abu (1997), cultural advisor to the NSW Islamic Council, says the function of the law and spiritual/ethical foundations of Islam operate to create a balanced life and to prevent chaos. Belief is strengthened by Law, which is higher than human law.

Emerging Concepts of Social Conscience and Individual Responsibility

The evolution of key universal ethical ideas in civic, social and personal responsibility can be traced in each book through the belief of direct personal accounting to God for individual moral acts. Gradually there emerged a view that within the human personality an accountability to Law is strengthened by a personal sense of God's revelations of what is 'proper' and 'improper'. The human being responds ethically through intellectual reasoning, supported by positive emotions of love and caring and determination which guides one through the contradictions of mind and emotions. As the people of the various faiths struggled to express their sense of God through behaviour, different cultural revelations and traditions emerged based on the teachings of their key messengers.

The three religions did not interpret God in exactly the same way. A continuing process occurred over four millennia to develop and strengthen ideas about moral autonomy, human relations and social conscience, in the light of specific cultural and social needs.

The progression, cumulation and systematisation of the early narratives took many centuries to clarify and record into a coherent script which had the status of law. This law conceptualised and recorded for future generations basic human values for living together in a community. As the increasing complexity of life forced people to search for new levels of thinking to solve emerging problems, different cultures have contributed strategies to explain and elaborate on values in the minds of the people. Islam finally spelt out the oneness of God for all mankind 'because God cares for all the worlds He has created' (Sura 2:2).

It was the revelations to Muhammad that moved into the narrative of religious development the possibility of a world religious system based on the concept of monotheism. Students should reflect on and discuss difference and similarity between 'to make His name known throughout the earth' (Deut.7:6, 7, Ps.105:43), a tenet of Judaism, 'God cares for His people' (Luke 8:14), a tenet of Christianity, and 'caring for all the worlds He has created', a tenet of Islam (Sura 1:2). Was there a fundamentally different definition of God or was it a reflection of the global experience at that time?

There should be a growing realisation in education that there is enough in common between these three faiths to enable scholarship to document the ethical ideas and encourage students to explore the connections. A statement of 'one God' that expresses diverse cultural understandings of spirituality enables students to build bridges of understanding based on monotheism as part of the movement towards global tolerance.
Historical Connections Between the Holy Books

All three religions presented an abstract and universal vision of God. Each faith created a vision of God (Armstrong, 1995, p. 4-5) to express its sense of the spiritual. There is a flexibility in the idea of God but a common moral principle was developed across all the faiths in which human actions extend beyond self-interest. Many different authors and editors contributed to the construction of Judaic and Christian scriptures but it was the political perceptions of officials of the early church that determined which scripts were authoritative and which were judged unworthy (Lockyer, 1986, p. 73).

In atlases such as Pritchard (1989), Palestine is shown as always having been a strategic crossing between cultures, particularly the civilisations of Egypt, the Hittites, Assyria and Babylon. As a result, it was coveted as a prize by Rome. Judaism and Christianity were born there in times of hardship and persecution. Throughout the early development of Judaism the cultural framework of the community was very fragile. The small group of people led by Moses were not strongly tied by kinship or tradition, and disharmony constantly threatened to disintegrate the group. Freedom was considered to be the key source of cohesion in a community but God’s law had to be followed. This was the basic principle from which all others flowed.

Christianity is a religion located within historical events. Jesus was born during the rule of Caesar Augustus in a time of persecution by the harsh Roman administration of conquest. The early Christian community in which Jesus lived and preached was located in an obscure corner of the Roman province of Asia. Around 51 CE Paul took the emerging faith from Asia to Europe (Acts 16:9-15). Thus was recorded the cross fertilisation of a shattering idea across cultures. A New Testament to the Hebrew scriptures was created that would influence the message of the Gospels which were not written until after the destruction of Jerusalem in 70 CE, the point at which Judaism and Western Christianity parted company (Eliade, 1987, p. 186).

By the end of the first century Paul had transformed Christianity from a Jewish sect to a gentile movement which 'affected the arts and thoughts and feelings of hundreds of millions' (McNeill, 1991, p. 344). Christianity challenged the Roman Empire and the church eventually established Christianity as the official faith of the Roman Empire and became immersed in politics. It became so complex and unwieldy Church and State split as did its Western and Eastern institutions. In its Western development civil matters were allocated to the state and spiritual matters and moral vision to the Church.

Islam developed in response to the problems existing in Arab Meccan society and Islam provided early evidence of the interdependence working between the religions. It took its fresh interpretation of the revelations to new regions and to people in diverse cultures who were searching for principles upon which to base human relations, social responsibility and moral autonomy. Disparity of wealth existed between rich and poor in the thriving commercial Arabic centres and gambling and drinking were serious social problems that Islam sought to rectify and the resultant Islamic civilisation emerged quickly. No additions or deletions have ever been permitted to the Qur’an (Metzger, 1990, p. 639). Today Islam also has to contend with distorted perceptions of the original teachings particularly from fundamentalists who use terrorism to achieve unscrupulous political aims.
Part 2: Implications for Education

The Role of Education to Manage Tension and Misunderstanding Between Religious Faiths

Historical, conceptual and spiritual parallels exist across the three religions. Hostile historical understandings are not fixed for all time. Revision is necessary to eliminate political interests that have shaped current images. It is necessary to compose an image of the reality of the relationship that accommodates many viewpoints. This paper is but one. Each faith connects and shares values and principles with the others. Management of religious uncertainties should be founded on positive principles which recognise parallels and relationships between the faiths. As McNeill writes in his new forward The Rise of the West after 25 Years (1991, p. xiii) a new scholarship is needed. This should combine the appreciation of the autonomy of separate civilisations, with a 'portrait of an emerging world system, connecting greater and greater numbers of persons across civilised boundaries' (p. xxii). Scholarship which encourages fresh historical interpretation is essential if educators are serious about developing understanding at the site of cross-cultural contact. Many of today's conflicts have their roots in an era of the centrality of differing religious beliefs which categorised groups into 'believers' and 'unbelievers' despite the great core of commonality between the three faiths. Students need the opportunity to unpickle subjective values and search for relationships. Scholarly research and analysis of some of the most pressing and bitter issues of today must separate the spiritual knowledge presented in the Holy Books and the political/organisational aspects of religion to contribute to a lessening in world tensions and promote intercultural understanding.

Educating Students in a Post Modern Age

Education has a singularly important role to play in developing critical skills and processes within students to train them in how they should read, listen, select and analyse written and visual information, to understand the reality that 'European interest in Islam derived...from fear of a monotheistic, culturally and militarily formidable competitor to Christianity' (Said, 1995, p. 344). It is time to start to fill in the space of ignorance, discard inappropriate attitudes borne out of a medieval diplomacy that was anchored in revenge and to creatively think about future relations in a contextual framework of hope, justice, equality, freedom, social conscience, spirituality that make individual lives meaningful. Schools are preparing secondary students for a difficult period of social change. During most of their lives students will require a world view shaped by meanings and understandings that will be within the person and be governed by the degree to which their social and personal values are informed. This process has yet to be adequately addressed in curriculum policy, design and practice.

The Importance of a Well Designed Curriculum Framework

Educational management of flows of information will depend on adequately designed curriculum frameworks. The design of the framework should empower students to understand that the world is made up of complex overlapping networks of ideas. In such a framework Judaism, Christianity and Islam must be placed in a context of learning that enables historical reinterpretation to discover the relationship between the three to emerge. This is a starting point for improving intercultural understanding and tolerance. Classroom processes should challenge students to address human values, sentiments and actions and the role that these play in attitude formation (Watson & Martin, 1996).

The sense that students make of the world will depend on a dynamic combination of knowledge possessed, values, beliefs, attitudes, cultural background, openness to other cultural perspectives and experiences and an ability to reserve judgment until informed.
Developing New Modes of Enquiry

The methodology to construct informed images of Judaic/Christian/Islamic relations requires investigative research based on access to the primary religious texts in order to clarify confusion and misunderstanding.

Ideas for discussion and exploration could include:

- Is it possible to have a moral vision that rises above self-interest?
- When problems arise in human relationships, what are some of the techniques which these primary resources suggest will solve them and help to develop closer relationships?
- What guidance is there in the texts for balancing the two principles of social cohesion and individual freedom?
- What ideas from these religious books have contributed towards people learning to live together?
- Is it possible to reserve judgment until one is literate on matters of human faith?
- What is learnt from being informed on the social conditions under which people struggled and developed their ideas?
- Does a personal standard of righteousness ultimately lie within you—the human response Jesus speaks about?
- Have Judaism, Christianity and Islam a connecting religious tradition?

The following diagram summarises the commonalities, parallels and connectedness between the three faiths and demonstrates the cultural diversity in the revelations of the faiths. It can act as a model to be tested by students in their research.

The Many Commonalities of the Three Religions, Despite their Cultural Diversity

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Conclusion

Curriculum has a responsibility to develop methods of managing information flows which make it possible for students to develop a sense of relationship and openness with those of different cultural background. This obligation embodies specific learning outcomes:

- to realise there are alternative interpretations of historical issues;
- to understand values (as well as content/knowledge), their origins and their commonality across cultures;
- to investigate the source of these values and to discover for themselves that it was in the organisational structures which developed that misperceptions and manipulative processes emerged;
- to discover the historical/content connections across the Holy books, in order to develop intercultural understanding and overcome the misperceptions and historical animosity that have arisen; and
- to understand alternative interpretations of historical beliefs through appreciation of both the common visions and diverse cultural interpretations of religious revelation.

What we do now influences the future. There is some urgency to engage in a journey towards a preferable future. Empowering students to develop investigative skills and carry out basic social research that explores the textual and historical connections between three great religions of East and West provides a foundation for developing relationships and intercultural understanding that will support non-violent social change.

References


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Improving Image Literacy about China: a Study of Processes Shaping Australian Perceptions

Margaret White

In Australia, ways of learning about China in schools have historically been framed in selected disciplinary approaches which have sought to know China through traditional colonialist perceptions of a progressive West with thought patterns based on self interest. Practice based on scholastic, holistic, investigative methodology which incorporates knowledge accessed through the newer disciplines and the constellation of images available through interactive media is essential in the emerging postcolonial era.

Curriculum design needs to manage the function that clusters of images play as they fuse to form conceptions about China so that students understand the psychological processes involved in observing and cataloguing human experience at the site of cross-cultural contact and exchange. Erikson's research demonstrates that the agenda of image formulators is a critical component of observation; they must be self-critical about the relationship they hold with those they study.

It is inappropriate to observe China as an instrumental society - a means to develop our export culture. A new web-like, transdisciplinary curriculum framework must evolve to generate intercultural understanding through imagery which fuses many dimensions of knowledge and reality within human consciousness.

The Framework Analysis

This article has three purposes. Firstly, to outline the role image plays in learning about Asia generally and China in particular. Secondly, to demonstrate that considering the agendas of those who construct and present the images is a very important consideration in observing and researching. A theoretical model of the structure of process of image formation is developed as a methodological tool in figure 1, for interrogation of image formation. Thirdly, to speculate on the emergence of a new transdisciplinary framework, web-like in structure, that permits intercultural learning to move to combine perspectives of both surveillance and emerging human relationships. This is illustrated in figure 2, and discussed further below.

Broadening Notions of Literacy - the Importance of Image Literacy

Cognition, affect, belief and behaviour are all involved in the process of imaging. An image is a mental picture; idea, conception, general impression or view; a constellation of images fuse together to create new conceptions in human consciousness. The visual, auditory, venal and olfactory information processing involved in image formation is a very complex process by which 'human beings receive information and adjust their behaviour on the basis of that information'. It is imperative that there be balance in the development process as students combine their cognitive and imaginative skills to construct their own images to summarise knowledge and facilitate memory. In the combination of the constellation of imagery delivered from external sources with inner experience, the emergent images should be enriching and productive.

Electronic media images are playing an increasingly significant role in the way non-Asian communities perceive and learn about diverse Asian societies and cultures. The point of reception by non-Asian communities of electronic images of Asia is a new point of cross-cultural contact. These images can be empathetic, pragmatic, informative, creative, censored, alienating, disturbing or provoking. External images have no meaning until we apply our senses to the symbols and actions in them. We process, interpret and store ideas by drawing on language which determines perception and thought. Our experience or lack of it, filters reality (see figure 1). In an intercultural situation, confronted with ideas that can be entirely new, image formulators can process and interpret on immature perception processed through faulty sensory analysis, which interferes with higher-level processing 'to extract the meaning of the information'. This creates an imbalance in the development of skills across cognitive and affective domains to encode and analyse. Misperception occurs through disinformation because the individual's sensory environment has not provided appropriate information to process. Values, attitudes and behaviour are adjusted on the basis of that information. This has been evident in popular Australian interpretation of images about China. Image historically has been constructed through the realms of myth and imagination that have manipulated sensory and cognitive mechanisms. New images must emerge that are unadulterated by myth.

In creating images to 'know' societies with which we have less direct contact, the feeling mode connects the personality and perception of the observer with the knowing perspective. Observation becomes a function of the agenda of the observer as he/she reasons experience. Erikson warns that in intercultural situations the formulation of

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multi-dimensional imagery involves processing information from two stances of inquiry, surveillance and development of human relationships. Powerful external imagery influences internal information processing to create very enduring imagery and conceptions. A theoretical model can contribute to the development of methodology to interrogate the adequacy of, and manage imagery in multimedia. Historical experience alerts us to certain essentials. Comprehension from observation is:

- filtered through existing experience and existing perceptual lenses;
- there are two components to observation at the site of intercultural connection - surveillance and development of understanding and skills in human relations. The agenda of the observer in image formation is an important part of research;
- complex external imagery must enrich experience and sensation if more appropriate attitudinal formation about Asia is to develop;
- what individuals comprehend from material depends on what they already know
- discussion and debate are important components of image interpretation and must include the claims of both sides at the site of intercultural contact;
- students require skills to interrogate media reporting and validate it against scholarly research. Understanding the psychology of learning is an important tool in developing such skills.

The theoretical process of image formulation is illustrated diagrammatically in figure 1. The primary focus of the current discussion is on encoding (as shown in figure. 1)\(^6\) and its relationship to myths and imaginations in image formulation.

James and Martin\(^7\) demonstrate that before the dawn of written history people felt challenged to explore and form mental images of what it was like beyond the horizon and then to communicate these images to others. They cite\(^8\) Sykes and Needham to point out that this process was occurring continually not only in the European world, but among Chinese travellers coming from a civilisation that enjoyed the highest standard of living in the known world at the time, and who observed and documented the Mediterranean civilisations as early as 128 BCE. James and Martin further record\(^9\) that in 1287-88, ten years before the Travels of Marco Polo were written, a Chinese Nestorian Christian monk Rabban Bar Sauma discovered Rome, Paris and Bordeaux and documented meetings with the kings of England and France. One can reflect on how he imaged the barbarian ‘other’.

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6. After H. Irwin, p. 10 and K. Spoehr and S. Lehmkule, pp. 2-8, op. cit.
9. James and Martin, op. cit., p. 57
Imagery provides a powerful means of accessing other cultures beyond personal experience but visual images can be very effectively manipulated by influential people through a range of techniques including presentation, interpretation, organisation, use of content, emotion, tone, size, angle of vision, caricature, facial expression and colour. A clearly defined methodology to interrogate images formulated in intercultural situations is lacking in education despite the widespread use of multimedia in the classroom. Management of balanced information flows which present, organise and interpret sustained images that create powerful general impressions for storage in human memory is becoming critical to ensure observation is filtered through an intellectual environment of informed research.

Figure 1: The process of generating multi-dimensional imagery at the site of cross cultural contact through both external and internal experience
Linear narratives are too restrictive in interactive situations. They present one-dimensional interpretations and tend to be viewed through Western ideologies, memories and experiences which give undue weight to the West's period of ascendance and power. The focus is on the ‘self’ and the ‘other in relation to the self’. Scholarship must explore and encode in human memory a conscious perception of the contribution to world heritage of Asian civilisations and societies in earlier times. This involves recognition and evaluation of ways Eastern civilisations have influenced Western thinking. An appropriate organisational framework, web-like in design, (Figure 2, page 9), capable of being fair to historical global evidence must emerge quickly, to address this problem. Such a model offers the possibility for constructing a holistic paradigm to integrate and reflect on images and narrative from many perceptual lenses to assist in ‘knowing’ and interacting with other societies.

Within this web-like framework students can be actively involved in selecting and constructing images that are meaningful, to challenge their own knowledge bases. Lidstone and Duncan\(^9\) cite Marsh and Kumar who theorise that:

> learning is an active process of constructing informed knowledge whereby learners create meaning for themselves. What individuals comprehend from material depends on what they already know...the unique knowledge base of the individual determines what sequence is ideal for that person.

In conceptualising or dealing with intercultural situations students, if they wish to relate meaningfully at the site of intercultural contact, are required to rethink and reformulate historical experience grounded in notions of geographical separation of peoples and cultures.\(^11\) They need access to diverse viewpoints in order to reflect on and reconceptualise models that have outlived their usefulness, to construct new models which permit new forms of co-operation and action\(^12\), if they seek social cohesion in a global society. Experience, observation, sensation, abstract reconceptualisation and reflection are all components of information processing, drawing on diverse viewpoints to create wholeness and balance in human experience.

**Imaging Asia Generally and China Specifically**

Morris-Suzuki\(^13\) suggests ‘of all the European inventions which have transformed the modern global world view, one of the most successful must surely be Asia’. With the

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world imaged as a trisection at the Aegean (East, West and Libya), the Greeks began to harbour strong feelings, create myths about and negatively imagine their neighbours, particularly after the Persians were repulsed at Marathon, Thermopylae and Salamis between 490-480BCE. Davies14 believes the conclusions which the ancient Greeks drew about their sense of identity from their encounter with the 'otherness' of neighbouring peoples and their escape from Persian domination has passed into the body of European tradition from that time. The Greeks constructed myths both about 'the self' and 'the self and the other'.

Free Hellas was seen as the "Glorious West", the Land of Liberty, the home of Beauty and Wisdom. The East was the seat of slavery, brutality, ignorance...The notion that Greece was all liberty, and Persia all tyranny, was an extremely subjective one. But it provided the foundation of a tradition which has persistently linked "civilisation" with "Europa" and "the West".15

This mode of reasoning in the West has persisted in 'knowing' people beyond one's cultural horizons through the centuries. Mackerras' case-study of the imaging of China demonstrates the inability of the West to examine Asian countries in their own terms, but in terms of 'imperialism, profit and conversion to Christianity' from the nineteenth century.16 Current popular images have been formulated through the few centuries in which China's creative energies flagged. The West has largely ignored or failed to recognise the great Chinese contribution to global knowledge through a sustained period of social creativity, particularly in science and technology and has incompletely understood Chinese history and intellectual and cultural traditions. The simple trisection at the Aegean became an extraordinarily enduring image, both in the West and the East, to conceptualise Asia over a period of 2500 years. The European and Chinese worlds slowly discovered each other step by step. In the West, Asia would remain a vague, hazy general impression of division between East and the West until the modern era.17 The consequences of that 'rigid division... drawn between the "civilised world" of the Mediterranean shorelines and the "barbarian wilderness" beyond'18 bred enduring images through countless generations of thinking. Surprisingly accurate maps imaging Western countries existed in Chinese geography by 1000 CE. These were far ahead of the religious cosmography of Europe at the same time.19 In fact, conceptual images of clearly delineated continents did not emerge in Europe

15. Ibid., pp. 100-102.
18. Davies, op.cit., p. 146
until the sixteenth century. In the nineteenth century, most peoples of Asia widely accepted the idea of themselves as Asian. Asia became focal in international politics and economics during the twentieth century and at the dawn of the twenty-first century there has been a subtle shift in the world-view to accept that Asia has a distinctive, diverse character that is symbolised by its spread from the Mediterranean to the Pacific. Within Asia, China is emerging to play a pivotal role as a regional balancer of power in the emerging world system.

Western perceptions in international affairs have sharpened to recognise and accommodate the assertiveness now appearing within the many Asias within Asia as they seek to have their viewpoints represented. As a result of such developments there is increasing pressure on the West to search for more accurate images which recognise a diverse region of interlocking cultural identities. In the newly emerging East/West encounter the sustained images we process and hold must be accurate, and peel away layers of inaccuracies and layers of connotations that imply the West has a natural right to dominate, in the current process of regional transformation.

Geography was emerging as a field of advanced study when British image formulators sought to know and classify the Chinese through representations in The Journal of the Royal Geographical Society (1870); just as the Royal Geographical Society was being recognised as an important agent in legitimating information on Asia. Watson's analysis of the Geographical Society's journals demonstrates how knowledge was perceived through constructed images based on attitude, emotions and limited experience that were designed to stir profound passion about the 'other'. It was more than mapping of the geographical space. Mapping was carried out in order to formulate British policy on the Central Asian/China border. 'A region that was mapped had been explored, could be defined and decisions made as to its strategic necessity and desirability'. Prestige was added to the formulator's Orientalist status. The documentation of Hayward indicated surveillance based on minimal participation, and lack of respect for the people rather than reality. He commented...

...it is strange that we have no really correct map of the interior of the oldest continent of the world. The causes of the absence of this desideratum, now appreciated in the science of geography, may at once be traced to the antagonism of race and religion, which has hitherto been the deadly barrier to the acquisition of such knowledge. It is the fanatical tribes and bigoted Mahomedans in Central Asia which alone offer a barrier to its successful exploration, for no country possesses a finer climate, grander scenery, or places of more attractive interest.

23. ibid., p. 25.
Hayward's material was for reading in London by the newly emerging geography elites and created images that made the Chinese almost universally reviled. They were 'both physically and morally weak'; 'opium smokers and hard drinkers'; 'degenerate and effeminate'; 'degraded'; 'rascally and depraved'. The Mongols were generally demoralised by their proximity to and too-intimate intercourse with the Chinese. Such inappropriate stimulus continues to inform a sizable segment of our population about the Chinese people.

Erikson warns of the need to identify whose interests are being served and whose perspectives are being silenced in qualitative research. Barme reminds us 'history plays a central role in all discussions concerning contemporary China...the psychological heritage of the colonial past is also of central importance in understanding the present'.

**Instruments to Counteract Inappropriate Images**

With new technology changing the way we learn, the values and agenda of those whose representations tell us authoritatively about China becomes part of the new learning process. Students should be challenged to both understand the process of image formation and the agenda of the image maker as he/she controls image/narrative dialogue through carefully crafted organisation, interpretation and presentation. Emotion and sentiment play an important role in human vision, relationships and interaction and becomes a central component in the selection of knowledge. The camera is capable of capturing this dimension of reality well, and thereby providing checks and balances on other mediated truths, but it can also be used to distort and falsify to produce alienating images. Technological advances now allow students to 'interweave, words, pictures, video images and sound and image as a network of elements through which readers can travel'. Thus, there is potential for fusing of the cognitive and affective domains to occur to deal holistically with knowledge, experience and emotions through a web of connections in which images access emotions. Technology expands the potential range of interconnections and information sources that can be absorbed by the learner, through accessing texts, pictures, diagrams, radio, videos, the news media and the internet, to be reprocessed and reconstructed into personal literacy to facilitate learning, influence memory and develop human relations.

Within a complex framework of interconnecting ideas expressed in different mediums, reality can be accessed according to the interests, visions and values of the

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25. ibid., p. 28.
Figure 2 provides a curriculum framework to expand and manage the potential range of connections to generate intercultural understanding through imagery which fuses many dimensions of knowledge and reality within human consciousness.
researching developer and the learning user. The student can be challenged to critically analyse the assumptions and agendas of the knowledge creators, reflect on emotional intelligence, cross over cultural barriers to fertilise ideas and discover new images of commonalities, capable of introducing new values and aims, new forms of co-operation and action which make possible an image of a future one-world civilisation through a long historical process of planetary fusion of interlocking ideas. An alternative route is possible to the future scenario, imaged by Huntington, in which he foresees a clash of civilisations as inevitable because people are unable and/or unwilling to develop new forms of co-operation or recognise and fuse ideas and relationships across cultures. Hutchinson's route means getting beyond the fight and crossing the cultural divide by 'educating beyond violent futures' to develop a sense of global social cohesion. It requires mapping ways to generate more appropriate perceptions of China in order to achieve non-violent change. Image literacy is central to this route because well formulated imagery can help cross the East-West divide to access understandings of other cultures.

**Australian Imaging of China**

The Nineteenth Century

Nineteenth century imagining of China was exceptionally negative and contributed to a national policy of racial exclusion of non-Europeans. In the formulation of image across cultural divides information could not be processed through experience of either surveillance or human relations. There was no concept of a harmonious relationship through a sense of connectedness. In the vital formative years of the colony trade with China was expressly forbidden by the provisions of the British East India's monopoly charter. There were no official Australian diplomatic relations with China before federation. The Chinese made contact with Australians on Australian soil. The arrival of large numbers of Chinese coolies in Australia around 1850 fostered a combined sense of personal fear and economic threat. On the gold fields semi-illiterate miners perceived the Chinese in their loose pyjama-like trousers and jackets and their wide straw hats as alien and sinister. The general population had no understanding of Chinese history and intellectual and cultural traditions. Language

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32. Clarke, op.cit., p. 225.
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barriers made communication difficult. In the complex process of receiving information, conclusions were drawn from faulty sensory experience and encoding of inappropriate information for processing and reasoning experience. The mode to know the Chinese was through myth and imagination. Eurocentric education had provided no preparation for living in the region. Shreds of fact were combined with fears and passions in response to the emergent problem of unrestricted Chinese immigration which threatened social disorder. The stage was set for confrontation of cultures. It would be over a century later that formal diplomatic relations would develop in an international framework to enable more balanced perceptions to develop.

Reports of the Gold Commissioners who investigated the Eureka rebellion in 1854 expressed official concern about Chinese immigration, recording that a comparative handful of colonists might be buried in a 'countless throng of Chinamen'. The **Chinese Immigration Restriction Act**, passed in November 1861 effectively stopped the arrival of Chinese immigrants.

Economic factors initiated the divisive relations with China and fledgling racism in Australia. Tunneled perceptual lenses saw the Chinese as a source of cheap labour and a threat that would undermine the living standards of workers. The Australian Shearers' Union fostered fears by creating hostile and threatening representations of the Chinese as scab labour which undercut Australian workers. Banjo Paterson's poetry took up their cause.

I looked along the shearing board afore I turned to go.
There was eight or ten dashing Chinamen a shearing in a row.

British opinion and imagination played its part in the development of anti-Chinese myths in Australia as the print media sought to create an Australian market. Racism was fostered through the powerful perceptual lens of vulgar journalism such as:

A Chanson for Canton
John Chinaman a rogue is born,
The laws of truth he holds in scorn;
About as great a brute as can
Encumber the Earth is John Chinaman,
Sing Yeh, my cruel John Chinaman
Sing Yen, my stubborn John Chinaman;
Not Cobden himself can take off the ban
By humanity laid on John Chinaman.
With their little pig-eyes and their large pig-tails,
And their diet of rats, dogs, slugs and snails,
All seems to be done in the frying pan
Of that nasty feeder, John Chinaman.
Sing tie-tea, my sly John Chinaman,
No fightee, my coward John Chinaman;
John Bull has a chance - let him, if he can,
Somewhat open the eyes of John Chinaman.  (*London Punch, 10 April 1858)*

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The long and rich cultural and scientific tradition of Chinese civilisation played no part in image formation.

Buggy documents evidence of imaging of Australian racial superiority fostered through media accounts and cartoons widely read by the masses particularly in the Bulletin a new publication which appeared in 1880, followed by the Boomerang. A new and more outspoken stage in the expression of anti-Chinese feeling emerged, which, by association, was conditioned into colour prejudice. The Bulletin continuously provided a sensory environment for experiential learning that fostered economic fear, racial tension, nationalism and colour prejudice. The general mode of reasoning was through ugly, manipulated external images in the form of cartoons or newspaper narratives that provided inappropriate sensory experiences for individuals to encode and process information. Internal images were conceptualised on misperception created through use of extraordinarily inappropriate, insulting language to determine thought. Popular images were built on the use of emotive terms such as 'hordes', 'sub-human', 'alien' and 'servile'. External and internal imagery fed on each other. The attitudes of newspaper editors in Australia were supported by the readers to create myths and imaginations of their Chinese neighbours. The very complex issue was eliminated from discussion as simplistic images conditioned observation.

At present the Chinese who are properly speaking not morally, physically or intellectually fit to sit down on the same continent as Europeans are living among us as a favoured nation. He produces two things: vice and vegetables. (Bulletin, 4 May, 1880)."}

Yarwood reports the tone of a deputation to Sir Henry Parkes on the Chinese question, taken from the Sydney Morning Herald, 29 May 1880, a more moderate newspaper.

Mr. Douglas read the document, which set forth that the Chinese were not desirable colonists nor traders; that their habits were antagonistic to those of Europeans, and that great antipathies existed between the two races; also that the presence of the Chinese race obstructed the social progress of Europeans, that the Chinese were not amenable to the governmental authorities, but only to their own, while their numbers were increasing so rapidly that they would be able soon to defy the law; that unless the introduction

38. A. Broinowski, The Yellow Lady: Australian Impressions of Asia, Melbourne, 1992, p. 34.
41. White, op. cit., pp. 24-28; The Mongolian Octopus, (Bulletin, 1886); Baby Australia confronts the Chinese Dragon, (Bulletin, 14 April, 1888), and Yellow Rogue, (Natural Historian), c. 1886, are typical examples.
42. Buggy, op. cit., p. 8.
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were shortly checked they would absorb all the means by which Europeans derived a livelihood; that the sanctuaries of the colony were reeking with their abomination, to alleviate which nothing had been done, and that it would have been better for the colony to have remained a convict settlement than for it to become a sink of Chinese depravity.

Sir Henry Parkes' response, laced with shreds of factual material, created a powerful new 'China threat thesis' to which the media would provide momentum.

He listened to the statements the deputation had made, and he sympathised with much that had been said. The evils attending the introduction of large numbers of Chinese into the colony were very great, and might lead to consequences which even far-seeing men did not clearly foresee just now; but the applying of a remedy to them was more difficult than appeared to be considered by the persons the deputation represented... Nothing could be effected in such a matter without having in view their relations with other countries. England, of all countries in the world, had been the pioneer in insisting upon the free intercourse of nations; and it must be borne in mind that, far above the mere letter of treaties, the object of England was to force an entry into China for Englishmen. This was the policy of England, and it was accompanied by a measure extremely difficult to defend - compelling the Chinese to receive opium of England... Some things the deputation... expressed he could not agree to. They were not borne out by history or fact... It was no use to say that the Chinese were a semi-savage race, when they possessed one of the oldest forms of civilization in the world, although to a great extent it was a mystery to Europeans... He considered them a very intelligent people. They would be able to conquer the world.

Parkes was cleverly introducing and playing on a 'threat thesis' to strengthen support for federation. The newspaper's intention was to increase its market share by providing journalism that would sell newspapers. The threat thesis certainly offered this possibility because it implied conflict. There was a subtle shift in the paranoia surrounding the Chinese. Hostility was no longer directed only to the Overseas Chinese in Australia but to China itself. The new paranoia was strategic fear of China looking south to threaten Australia and engulf the region. The constellation of images related to nationalism, economic threat and the anti-Chinese issue were fusing into a new complex and enduring myth.

In the move towards federation national policy was designed around the prejudices of the electorate. The media carefully managed and crafted paranoia to engulf the consciousness. A distinctive type of Australian literature, the 'Invasion Novel' began to appear. Reviews considered them a contribution to national service. The novel The Yellow Wave, written by a New South Wales member of Parliament, K. Mackay was reviewed in the Bulletin.

44. Buggy, op. cit., p. 15.
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K. Mackay has done something like a national service which crystallizes into vivid languages the hazy impressions dormant in many minds.45

Sir Henry Parks, speaking of China in the New South Wales Parliament in 1890, cleverly developed a conceptual model of China for his own political ends. He stressed the naval power of China and warned ‘We may yet have to wrestle with her for mastery of the Pacific’.46 Such ideas enabled conclusions to be drawn from encounters already stored in popular memory on how to solve the Chinese immigration problem: exclude them. Faulty sensory analysis interfered with processing to extract meaning from information. Cognition played little part in popular imaging. Language accentuated the sinister, myths were rarely challenged. By the time the Immigration Restriction Act of 1901 was passed, the Chinese ‘problem’ was basically solved through national policy of racial exclusion. It was enacted as a direct outcome of nineteenth century Australian relations with China and Chinese immigrants and overseas workers in which myth and imagination got out of hand at both the conceptual and actual sites of intercultural contact.

The Twentieth Century

Australian imaging of China in the twentieth century continued to create an atmosphere of strategic paranoia which persisted in popular thinking right through to the end of the Vietnam War. Despite federation, at the end of the Great War the federal government had no official relations with China. That meant there was no ambassador or trade commissioner to develop relations and understanding at the site of cultural contact. Australian foreign policy was dependent on British policy and ‘until the 1930s and the Statute of Westminster, it was constitutionally and diplomatically understood that Britain made major external relations decisions for the Empire’.47

During the Depression China started to become a more important market for Australian primary producers and the pattern of trade was about to very slowly change direction. Imagery still presented China as a source of strategic instability and worry, but now it started to include preoccupation with communism,48 despite the fact that a weak China was engrossed in very complicated domestic politics and social issues, as it searched for ways to rid itself of foreign spheres of influence, deal with Japanese aggression and transform its society. Little intellectual research emerged in Australia to reconceptualise the Australian view of China. The press was not interested because China was of little interest to the Australian public.

However, there were increasing demands for Australian representation in Asia and some sympathy started to emerge about the plight of the Chinese in the Sino-

45. Ibid.
46. Ibid., p. 7.
47. Elphick, op.cit., p. 5.
Japanese War. But Australian security was prioritised above Chinese suffering. A long overdue beginning was welcomed when Australia and China first established diplomatic relations in 1941, at a time when the West saw China as a friendly security ally in the Pacific War against Japan. Australia was realising it must become involved in its own foreign affairs to deal with external issues. Attitudinal change towards China can probably be pinpointed to this date. The forerunners were academic and religious leaders who wished to be dissociated from the racially offensive ‘white Australia policy’. Elements of humanity, ethics and vision were being drawn into observation and relations.

These relations were discontinued in 1949 when the Chinese Communist Party came to power and the People’s Republic of China (PRC) was established. Opposing China became a key link in the battle against communist expansion in Asia. As a widespread feeling developed that the West has ‘lost’ China and became a major ‘security’ concern, Australia, feeling very vulnerable in southeast Asia, established kinship ties with the United States to contain expansion of communist influence. Negative American images of China now dominated Western perceptions. Old phobias and recurring fears were readily revived in Australia and imaged in The Bulletin. For example, the ‘Red River’ cartoon of teeming millions approaching Australia appeared on 16 June 1954. Mackerras suggests that the peoples of the United States and Australia accepted a more negative image of China than those of most other Western countries. As a result, diplomatic relations remained frozen until 1972. Up until that time Australia perceived itself in relation to China to be ‘dominant culturally and economically’ and its interest in China was to ‘know the enemy’.

According to Andrews in 1963 the Democratic Labor Party ran a sensational television election advertisement of a mound of human skulls (representing, as the caption said, ‘Communism’) and a map showing China, with an arrow leading down to Australia. There was always a politically useful need to find a potential enemy to turn the minds of the people away from internal reform.

We must accept, I believe, for the present that China constitutes the greatest threat to the security of the region in which we live. Indeed, there is no other major threat at this time. Sir Garfield Barwick, 1964.

49. ibid., pp. 92-147.
50. Yarwood, op. cit., p. 115
51. C. Mackerras, Western Images of China, Griffith University, 1987, p. 4.
52. ibid, p. 5.
55. ibid., p.181.
Margaret White

The exaggerated 'threat myth' had returned to foster an inappropriate learning environment. Politicians sensed the electoral consequences if they were perceived to be encouraging a communist regime. China thus became a major enemy, in fact through faulty analysis by the government, the main enemy to Australia. Irrational fears of China reached a peak during the Cultural Revolution during which time Australian image formulation was based on misinterpretation of what was happening. China became 'the hub of Australian foreign policy'. Nevertheless there were ambiguities in Australia's view of China and economic self interest allowed Australia to indulge in considerable trade with the potential enemy.

Gregory Clark's detailed examination of Australia's political relations with China in the mid 1960s found there was nothing in the Chinese or their government to indicate aggressive tendencies. Clark noted that 'few western countries have been less the target of Chinese hostility than Australia. Few countries, western or non-western are more hostile to China than Australia'. According to Harris, writing in 1996, 'that judgment remains valid today'.

Nixon's visit to China in 1972 marked a dividing point in political perceptions. The victory of a Labor government in Australia the same year led to a complete change in Australian policy towards China. China was no longer a major enemy to Australia. Diplomatic relations were established. The intellectual community seriously began to establish dialogue and networking. Reality entered image formation. Attitudes and assumptions that had created the myths and imaginations about China and Asia had to be rethought. Growth in information and interconnectedness emerged through many perceptual lenses: the intellectual community, radio, film, television and narrative. Imagery became capable of moving people into the social gravity of the other. As Mackerras, has documented there was a decisive change of Western images of China between 1966 and 1976.

In Australia perceptions of China as an economic threat were refocused to promote economic opportunity. This encouraged the development of a new phase of more positive but contradictory imagery of China in particular, and Asia generally, in the eighties. The agenda at the political level pushed a new dimension into peoples' consciousness. Economic interests now shaped perceptions of China as an instrumental society; a means to develop our export culture, and China was viewed as the object of

60. Harris, ibid., p. 19
Australian economic opportunities and an important export market. Those influencing the imagery framed it in survival language which was anything but value free.

We will either succeed in Asia or perish in it. We cannot change the reality of our geopolitical position and we must therefore face up to that reality and develop a positive strategy...because our survival and future prosperity depend on such links. We must look to our self interest in an increasingly competitive world. That self interest dictates this policy.

Images of China are more complex in the nineties but still lack depth and continue to be tied to political and economic conceptions of ourselves. There is no equity in presentation and the Chinese perspective, as a subject in its own right, tends to be dismissed. Imagery does not access vital experiential learning to acknowledge the Chinese contribution to global knowledge in the past or to link Chinese culture with its growing international importance both regionally and globally. Mature understanding is essential to develop improved personal relationships. This cannot develop if a curriculum framework that enables this to happen does not exist. Australians generally are conscious of China as an important export market and a growing political power in the region, but knowledge of China itself rarely goes beyond tourist needs which search for difference. Graphic imagery continues to be threatening, narrative description invokes tones of confrontation, ambiguity and contradiction and a remarkable degree of continuity with earlier images based on myth and imagination persists. Australian imagery must be capable of operating in 'the social gravity within which "the observed" lives'. Rudd argues that political relations within the Asia region will be shaped by the attitude of the Australian media. Historical experience demonstrates the truth of his view. How sad that education cannot or will not be involved in developing appropriate imagery to shape attitudes and alter the assumptions under which we relate to China in a global context.

Reflections for the Twenty First Century

Imagery involves information processing which is very complex because individuals adjust their behaviour on the basis of information derived from the external imagery.

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63. ibid.
In the maturing practices of image representation, much needs to be understood about the relationship between technology, and the organisation, interpretation and presentation of the imagery. Well constructed multi-mode images are capable of generating new waves of thought, reviewing past relations with China, which have produced current frictions, and extending our knowledge and understanding of Chinese people and culture to facilitate future peace-making. The notion must be challenged that difference implies hostility across the divide. Knowing China requires creativity in image formation by accessing many viewpoints. New values, aims and practices to know China can be investigated through a web-like curriculum framework, (refer figure 2), to generate more appropriate conceptions and perceptions of China within human consciousness.

China and the Chinese people have been misread in Australia and its complex culture and civilisation have been trivialised through myth and imagination. As Chey68 points out there is a lot of work to do to make Chinese culture part of mainstream Australian culture and to get it included in the curricula of schools and university departments at a deep and meaningful level in order to understand its history, intellectual, scientific and cultural traditions. Crossing the East-West divide to create the global culture emerging for the twenty first century requires both understanding of the enriching process of cross-fertilisation of ideas that originated from China and the long process that has been in operation intermingling and connecting people across civilised boundaries.

The theoretical model offered at the beginning of this paper alerts practitioners to issues involved in image formation. Images combine internal and external experience to create new conceptions in human consciousness. Images that develop a sense of intercultural understanding at a deep and meaningful level need a variety of experiential material to move through a hierarchy of very complex processings to encode and create meaning that reaches across cognition, affect, and belief to affect behaviour. Ultimately the internalised value system of the student is the core element in the learning process. It will determine what students are willing to access to develop their image literacy about China. They must be exposed to a multiplicity of material to access and create images that allows the development of a sense of connectivity in human relations with Chinese people as well as surveillance of them. Imagery requires considerable rerepresentation, reconstruction, reconceptualisation and on-going reformulation based on scholarship that seeks relationships and language that commands respect.

China imagery is now much more complex, ambiguous and contradictory, but, despite the admiration of growth that has taken place in countries such as China, Australians still view China with a 'remarkable degree of continuity with earlier

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68. J. Chey Chinese Culture: East and West Come Together in China Education Centre Australia Newsletter, October, 1998
images'. Relations are pragmatic, their framework commercial. The Dragon continues to be an omnipotent creature, his expression one of greed, despite the affection held for the dragon in Chinese mythology. China is both an object of 'desire and derision'. Political and economic instrumentalist thinking dominate education. Lurking behind our determination to survey and understand China is maintenance of defence capability in southeast Asia against a potential enemy. Chinese language must be learned to increase our trade. A new distance is being created between us and the complex 'other' because of lack of preparedness to form human relations at the deep and meaningful level required in the global society of the twenty-first century. A process of critical revision is necessary to place the cumulative knowledge of China into a coherent framework which is capable of addressing scientific, philosophical, ethical and aesthetic issues, along with pragmatic issues. In order to enhance our experience and understanding and deepen cultural links in an emerging global civilisation, there must be a focus on China itself, its past (with its intellectual and cultural traditions), its present (with its problems and aspirations) and its future place in the world.

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70. Sheridan, op. cit., front cover.
Margaret White


Crossing the East West Divide:

New Perspectives on East-West interaction

by

Margaret White

VOLUME 2

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Eastern influence on Western Thinking:
An analytical and historical portrait

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Introduction

Eastern Influence on Western Thinking: an analytical and historical portrait

Part 1: An overview of the Portrait

The Structure of the Portrait

The Portrait is basically a study of the influence of premodern Asian civilisations on the West and is composed of nine shorter portraits. When referring to the Portrait as a whole, an upper case letter is applied. When referring to the individual portraits, lower case is applied. The portraits are designed as a resource for educators, teachers and students. The portraits are not a litany of facts but connecting snapshots or pictures composed out of research pieced together to capture the dynamics, complexity and trans-civilisational processes occurring. In this way, it is possible to rectify the failure to include non-European viewpoints in the context of a diverse whole world or global system. These portraits thus provide a panoramic synthesis of ideas and events that combine fact, evidence, analysis, synthesis, explanations and interpretations about important ideas and events in Asia. The time frame generally covered extends from the beginnings of the appearance of civilisation in Asia to the end of the premodern period. Thus the debt owing to earlier antecedents and achievements in Asia is recognised. The chronological format has been used to make the Portrait more readable and to enhance its value as a resource of source material.

The portraits are organised so that they provide a comprehensive historical overview of key events and ideas in premodern Asia that had a significant impact on the West. The criteria applied for selection of the research material has been that this new knowledge provides multiple perspectives, or augments and modifies existing knowledge. For these reasons, each portrait is in two columns. The first column shows the date. The second
and main column provides an historical and analytical snapshot of the episode under discussion. In addition relevant abbreviated references for each snapshot are provided, followed by a page number. Full bibliographic details are in the Reference List.

The portraits make a unique contribution to scholarly understanding because they provide the first chronological overview of themes that were central to the development of regions in Asia during premodern times, and of the relationship between these developments in the East and the West. In the case of religious and spiritual life, the West continues to be influenced by Asia as we enter the third millennium. As a result of this goal, each portrait has drawn on a broad range of source material that traverses a number of disciplines. Although the information used in the portraits generally originated in scholarly papers and literature, particular effort has been made (where possible) to produce new connections that expand and synthesise across that knowledge and information to develop new understandings of intercultural interaction between the East and West.

The Portrait contains an introduction and nine separate portraits, as follows:-

Introduction

portrait No. 1 East and South Asia - Civilisation and Culture
portrait No. 2 East and South Asia - Religion and Philosophy
portrait No. 3 East and South Asia - Science and Technology
portrait No. 4 West and Central Asia - Civilisation and Culture
portrait No. 5 West and Central Asia - Religion and Philosophy
portrait No. 6 West and Central Asia - Science and Technology
portrait No. 7 West of Asia - Civilisation and Culture
portrait No. 8 West of Asia - Religion and Philosophy
portrait No. 9 West of Asia - Science and Technology

References

The nine portraits can be seen to be composed of three categories of knowledge related to three geographical areas. Each of the three categories: Civilisation and Culture, Religion and Philosophy, and Science and Technology represent a pair of closely related
subjects, and the three categories together cover the whole range of human knowledge. The three geographical areas: East and South Asia, West and Central Asia and areas West of Asia are each fairly distinct and unique in their history and geography but in total cover the area addressed in the portraits.

Rationale for the Portrait
The intention of the Portrait is to provide educators, teachers and students with a variety of knowledge, images and dimensions to enhance their own learning and to draw upon as they construct their own contact zone with Asia. The Portrait seeks to inform attitudes and values, and to facilitate understanding and balance through the provision of a combination of world rather than eurocentric viewpoints. To achieve this outcome, the portraits combine knowledge inherent in a wide range of learning disciplines and sourced from both eastern and western sources.

Collectively the Portrait is intended to:

- challenge restricted popular conceptions of what is Asia and explain the historical perceptions of Asia as an artifact related to the formation of Western identity;
- acknowledge the existence of Asia in its own right;
- extend readers’ conceptual horizons to accommodate alternative customs and practices;
- provide knowledge as a basis for establishing dialogue and negotiating divisive cultural boundaries; and to
- develop a sense of co-operation, co-existence, community and social cohesion across the East-West divide.

The approach for knowing Asia in the Portrait contrasts with approaches used by other writers in the past. These have been marked by polarity and Europe’s long tradition of engaging with Asia on the basis of strategic and economic self-interest. Such approaches have been characterised by eurocentrism, the tendency of Europeans “to regard their civilisation as superior and self-contained, and to neglect the need for taking non-European viewpoints into consideration” Davies, [Ref.68:15-17].

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In contrast to such eurocentrism the Portrait is designed to show
(a) the development of intellectual, scientific and religious thought in Asia;
(b) the influence of Asia on western and global thinking; and
(c) some early developments in the West which tie in with the development of thinking in Asia.

The emphasis on these three dimensions of history provides a resource for educators, teachers and students in areas that tend to be neglected in western texts and which are not adequately covered in reference sections in most libraries or in university and school courses. Consequently, the Portrait offers an alternative perspective of the development of Asia and its influence on the West as well as being presented in a form that can be readily accessed by the wider public. The Portrait is designed to present teachers, students and others with resource material that will enable them to understand the history of cultural symbiosis across the East-West divide and to provide a knowledge base needed to redress the misunderstandings of the past.

The resulting narrative provides a panoramic synthesis that is based on scholarship, fact, evidence, analysis, explanation and interpretation rather than myth and imagination. The story that emerges is one of continuous engagement and co-existence across the East-West boundary. The narrative provides glimpses or snapshots of peoples creatively enmeshing through new sets of ideas, inventions and discoveries. An example of such engagement is evident in the influence of Chinese nautical engineering on western practice. To a large extent the superiority of the British navy has been due to its readiness to adopt Chinese inventions more rapidly than other European powers. The Chinese were probably the greatest sailors in history. For nearly two millennia they had ships and sailing techniques so far in advance of the rest of the world that comparisons are embarrassing [Ref.36:185].
The Portrait reflects a learning perspective that is essential for a non-violent future as a desired outcome of education. The way forward is to know Asia through informed knowledge and attitudes which focus more attention on the interaction of European and Asian peoples, to use Asian sources of information (rather than those filtered through western paradigms), to be honest in making comparisons with and evaluations about Asian neighbours and to moderate the tone that interprets the past. This task involves analysis, deconstruction of the current nature of western knowledge that has developed out of myth and imagination, acknowledgement of the equality of race, a willingness to be open to other systems of discourse and a desire to interact and co-exist with human beings in all their diversity. Sometimes the understandings that emerge will not be favourable to the West [Ref.49:19].

The organisation of the Portrait

The Portrait is not intended to give a comprehensive view of world history. The emphasis, as explained above, is to provide snapshots or glimpses that serve as a resource for teachers and others in areas which currently tend to be neglected. The boundary of Asia presented in the Portrait is defined as all lands east of the Aegean. The Portrait presents a much wider notion of the geographic boundaries of Asia than is often addressed in school curricula. This boundary incorporates historical and geographical dimensions of the notion of Asia identified by Evans [Ref.38:1] as “East” from “The West”, as well as use of the popular but restrictive definition that is sometimes used in Australia and which encompasses only East, South and Southeast Asia.

To simplify and clarify the different strands of history, separate portraits address the following major areas of human thought and endeavour: Civilisation and Culture; Religion and Philosophy; and Science and Technology which includes Astronomy (a branch of science) and Mathematics (a method of scientific thought).
Each of these three fields has been divided into three separate but interdependent geographical areas of East and South Asia, West and Central Asia and West of Asia. It has been essential to include the category “West of Asia” in order to provide a window to focus on the historical development of the geographical East-West divide whilst at the same time to demonstrate the pivotal role the “Near East” played in Greek and Roman cultural development in ancient times to make possible the emergence of a Mediterranean common culture. In “West of Asia” has been included western parts of the Middle East, such as Egypt, which are outside West Asia but which interacted closely with Asia at various periods in history.

“East and South Asia”, which includes China, Korea and Japan together with India, represents the popular contemporary perception of Asia and the area that is most often associated in the minds of Australians with the definition of the Asia on Australia’s doorstep. For example, the map on the front cover of Studies of Asia: A Statement for Australian Schools, 1995, [Ref. 99], confines itself to this area. Pakistan, Sri Lanka, Hong Kong, Taiwan and Southeast Asia are modern identities. In the overall concept, this area is closely interlinked and the Portrait documents the advances in human development in China and India in particular, which have influenced and interacted with the rest of the “Far East” and “Southeast Asia” in a process of cultural symbiosis.

“West and Central Asia” are currently almost totally neglected in school curricula. Paradoxically this is the area in which “civilisation”, as we know it, originated and where pre-western Greek culture and scientific thinking originated. Not only did the later inhabitants of this area preserve and develop early culture but they also made many advances themselves and finally transmitted the important advances from East and South Asia to the West as well. It was the area of great cosmopolitan interaction. Without these Asian precedents and contributions, modern Western civilisation would not have evolved in its present form. These contributions were so important that they have often been, quite erroneously and prejudicially, attributed to “Eastern Europe”,

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Davies, 1996 [Ref.68:18-22]. The idea of "Asia", or the "Orient" or the "East" is as old as the Greeks' conceptualisation of themselves as the "antithesis of Persia lying to its East" [Ref.68:22; 38:I]. The idea of Asia has helped define "Europe", Said, 1995 [Ref.60:I] through its "contrasting image, idea, personality, experience". The definition of Asia Minor, according to the Oxford Dictionary, is the peninsular bounded by the Black Sea, the Aegean and the Mediterranean and comprising most of Turkey. The Bosphorus marks the division at which Europe finishes. Historically and geographically all areas east of the Aegean are Asia.
Part 2: The thesis of the Portrait: networking in time and space

International understanding develops through networking that links people and their ideas, innovation and technology. According to Polomka [Ref.92:6] "a ‘network’ world shifts the focus of attention towards organisation, information and culture”, as people globally communicate their ideas and move across traditional and cultural divides. Networking is not new. What is new is that in the globalisation of the new millennium, analysts seek to assess how the acceleration of networking will shape the future [Ref.92:1].

It has been alleged that Australia must observe and interpret the shifting economic and political systems with which she is involved to develop a strategic policy for the creation of wealth and security (for example Dawkins [Ref.104]; FitzGerald’s underlying utilitarian focus [Ref.105] and Garnaut’s [Ref.106] focus on strategic defence). Such a perspective emphasises contact between nation states and how they impact on one another. It is problematic because it embodies a process of surveillance analysis that is driven by self interest.

Western literature documents a long tradition of Europe seeking contact with Asia and such contact has been premised on notions of surveillance and power [Ref.103:93] that involved self interest, hegemonic aspirations and conquest.

More recently, transnational business corporations such as McDonalds have been concerned with establishing hegemony through economic monopolies. However, a successful global economy is surely ultimately dependent on a perception of human co-operation in international relations? Bull [Ref.88], an Australian scholar and one of the leading twentieth century theorists of international affairs, has argued for a “societal” rather than “systems” approach to international relations to produce an understanding of common interests in a context of coexistence and co-operation instead of political organisation. Such a view places a cultural focus on human beings and their relations
with each other. Thus writers like Bull [Ref.88] and Landes [Ref.93:516] consider a systems approach, which tends to regard international affairs as involving a state of war, as no longer appropriate. Rather, Landes, [Ref. 93] argues that the values and attitudes that guide a population ought to be considered because values focus on human beings and in international affairs converge on common interests, networking and connectivity which go beyond management of individual nations.

Western accounts of networking start with Greece. However, the enmeshing ideas, inventions, discoveries and technologies first appeared in the practices of the areas that have been categorised as the Near East, (or West Asia). These ideas gradually diffused and were grafted onto the cultural identities and ideas that emerged in the East and West. The Portrait traces the amalgam of systems and social connections since the time when the Phoenician alphabet was taken to Greece in the period when Iranian peoples, newly arrived from Central Asia under Cyrus, dominated the power centres of the Mesopotamian world. By documenting the increasing connections across the world, the Portrait seeks to facilitate understanding of world history as a process of common interests based on networking and hybrid ideas. Through these networking processes it is possible to image very significant cultural and international development and change in ideas across space and time.

The Portrait outlines an evolving process of stimulus and diffusion as ideas from one culture stimulated thinking over its border, and that very often created hybrid ideas that were adapted to the needs of other cultural groups in their own particular historical and geographical contexts. Religious ideas, for instance, have enriched human development, created a sense of spiritual connection with nature and a set of shared moral concepts. Similarly, spirituality enhances the desire to advance the lot of human beings, while technological, scientific, economic and political innovation can facilitate the achievement of those desires in social advancement.
It is appropriate to focus attention on a sense of social cohesion and belonging within groups as part of the process of human development. New global organisation, information pathways and cultural dispersion now make it possible to modify the East-West divide by redefining the boundaries of what forms a group network in a globalised world. A world view of social cohesion, belonging and relationships is now possible across diverse cultures [Ref. 88]. Ideas, values and attitudes can influence the future by enmeshing and assimilating in human consciousness patterns of behaviour that determine and promote harmonious relationships across the cultural divide. By discovering common inner values and attitudes across groups, there is the potential to accelerate development, growth, interconnectedness and evolution of intercultural understanding. It could be argued, for instance, that religious maturity has reached a stage where it is possible for people to engage in dialogue across the culturally diverse faiths and learn from the experience of others as part of a process of renewal within one’s own faith. For example, Gandhi never forsakes his Hindu faith but he was able “to respect all other religions...to admire and assimilate whatever may be good in the other faiths”. Gandhi stated that Jesus “was one of the greatest teachers humanity has ever had...I believe that He belongs not solely to Christianity but to the entire world” [Ref.46:56]. Jesus’ preachings of love and “turning the other cheek” paralleled those of Ghandi who believed non-violence found highest expression and application in Hinduism [Ref.46:53]. This value provided Gandhi with the philosophy to develop a strategy of militant non-violence to secure India’s independence.

Many of the interacting flows and achievements in human ideas, innovation and technology that came from the East produced dramatic cultural exchange in the West. The development of Christianity, for instance, demonstrated the cross fertilisation of an idea across cultures and its hybrid adaptation when Paul took Christ’s teachings from Asia to Europe [Ref.32:Acts16:9-15]. Yet much western scholarship has failed to adequately acknowledge the Asian origins of Christianity when documenting the story of its development.
Seizaburo [Ref.90:45], for instance, illustrates the cross-cultural fertilisation of ideas within Asia and between the East and the West:

Japan was able to assimilate Chinese civilisation over time while simultaneously developing its indigenous culture. In the case of Sinic civilisation, too, the revival of Confucianism based on the teachings of Zhu Xi (1130-1200) and the florescence of literature seen in the T'ang and Song periods (seventh to thirteenth century) could not have occurred without the influence of Hindu civilisation and Hellenism. Likewise, the Renaissance, the first step toward modern Western civilisation, was catalyzed by contact with Islamic civilisation.

Yet Seizaburo's argument differs from that presented by Huntington's thesis [Ref.96] in *The Clash of Civilisations and the Remaking of World Order*, which contends that Chinese and Islamic civilisations are dangerous challengers to western civilisation.

Nevertheless, Wang Gungwu [Ref.71:50] contends that the future hinges on cooperation. He argues that "the world is ultimately human, making up a diverse whole with a sense of interlocking and interdependent regions - a complex integration which makes possible a one-world modern civilisation". Such a civilisation, however, requires respect for diverse identities and cultures.

Co-operation as a basis for human energy does not derive from economic, political and strategic desires such as trade, power, control and conquest in rival spheres of influence. It derives from a sense of harmony, belonging and social cohesion. Thus Gelber [Ref.87:227] concludes:

> It is a condition for the formation and maintenance of any society that it has an agreed moral foundation and is held together by certain moral concepts. Technology and economics can shape ideas and culture. So can ethnicity, language, history and habit. However it is moral and ultimately religious, ideas which must be at the core of social cohesion.

Centrally located Persia was the site where change-making forces in international relations were generated. Increasingly complex, inter-regional trade developed that linked
Babylonians, Lydians, Greeks, Chinese, Indians, Medes, Parthians, Jews and Arabs, and broadened people's horizons and stimulated the human imagination. Along the crossroads of Asia (around what is now Pakistan and Afghanistan), Persian, Indian, Chinese and Greek ideas met. Some of the most influential ideas that travelled the Silk Road were based on religion, but the movement of such ideas and scientific inventions has largely been omitted in western scholarship, (for example Wetterau [Ref.22], Said [Ref.60:70-71], Clarke [Ref.75:16] or briefly acknowledged and treated as a “superseded origin” [Ref. 60:25]).

The perception of Islamic religious beliefs as a “threat” to Europe is deeply embedded in western cultural traditions, Said [Ref.60:3,74,104] and emanates from a time when the East and West were divided politically and ideologically between Persia (now Iran) and the Greco-Roman world (about the sixth century C.E.), Davies [Ref.68:100]. Asia Minor was the frontier where the two cultural worlds met and overlapped. Religion dominated human consciousness as Islam, centred in Arabia, emerged during the seventh century to replace the political alignments and balance of power between Persia and Rome. Yet Islamic civilisation made significant contributions to global social and scientific thought and laid the foundations for the emergence of the modern West through the transmission of Asian and Greek knowledge to medieval Europe and in the development of these ideas.

Modern science and civilisation sprang out of remarkable and complex human precedents in thinking that were accumulated over thousands of years and was energised during the Dark Ages by Islamic civilisation's translation, storage and transmission of the accumulation of earlier thought. Whilst the Greek manuscripts that recorded the ancient sciences and Greek philosophical thinking disappeared through fire or were lost, Arabic translations were preserved in Asian libraries and later translated into Latin to provide the knowledge basis for the European Renaissance of the fourteenth century.
Christ was born and lived in an oriental culture and his teachings emerged in an oriental
culture. The cross fertilisation of Christianity into the Greco-Roman world marked a
dramatic meeting of Eastern and Western civilisations that began centuries of rivalries in
the ownership of Jerusalem as the geographical and spiritual centre of the "revealed"
religions of Judaism, Christianity and Islam.

Similarly, Buddhist missionaries attempted to create socially cohesive international
networks when, in the third century B.C.E., Asoka of India, influenced by the teachings
of the path to good conduct through universal compassion, sent missionaries abroad to
urge the abandonment of aggression and reassess the purpose of the existence of
humanity, Oliphant [Ref.21:157]. Buddha's discovery of a path to reach a state beyond
suffering and sorrow has increasingly influenced the development of religious and
spiritual life in the West, particularly during the twentieth century [Ref.75:219].

In part, western knowledge of the East has been inhibited by time and space.
Understanding of the processes involved in the production of knowledge and images at
the sites of cross-cultural contact make it possible to establish dialogue and forge
collaborative relationships across cultural boundaries. This requires openness to other
cultures, the discarding of eurocentric assumptions and acknowledgment of the
existence and value of Asia. It is hoped that the research and analysis that forms the
basis for each of the following portraits will facilitate such a process.
Part 3: Discussion of the themes

An Overview of the Civilisations and Cultures of Premodern Asia

portraits 1, 4 and 7

The roots of civilisation emerged out of the “slow rhythm of genetic evolution”, Roberts [Ref. 14:37]. It required conscious human endeavour to control and organise human beings and their environment. The nature and emergence of “civilisation” is difficult to pinpoint. Civilisation is a term widely used but does not have a single fixed meaning. However, history identifies a stage in social development in the formation of cities where agreed moral concepts and core religious ideas produced social cohesion and that is the focus of the meaning of civilisation in these portraits.

The principles under which this section of the Portrait were developed are well summarised in the work of the author of Oriental Enlightenment, Clarke [Ref. 75]. Clarke contributes an historical and critical overview to Western scholarship on Asia through a detailed intellectual exploration of encounters with Asian civilisations. Clarke’s purpose is to challenge the myths and practices that have led to Western political and economic domination of the East and to the development of Western assumptions of racial superiority. The panoramic survey contained in Oriental Enlightenment demonstrates “a long conversation of humanity” (p. 225).

Landes, [Ref. 93:516] pinpoints a key problem in any analysis that goes beyond material approaches to a discussion of the inner values and attitudes that guide a population. Landes argues that analysis of values and attitudes “frightens scholars”. Assuming that there is an immutability to culture can lead to a focus on management and the alteration of economic and political institutions. Kluckhohn, [Ref. 95:36], in Personality in Nature, Society and Culture, argued that there are intricate connections between individuals and their total environment, and that these interrelationships are the key to understanding other peoples and how they are energised and inspired to

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create diverse ideas, values and technologies. The sections of the Portrait that are devoted to human encounters between cultures and civilisations endeavour to explore these complex interconnections and provide a narrative of cultural crossings between East and West that will facilitate dialogue for intercultural understanding.

Civilisations and Cultures in West and Central Asia

West and Central Asia, long acknowledged as the earliest civilisation, is rarely related to its Asian geographical location. Mesopotamian civilisation emerged between the Tigris-Euphrates rivers before 3500 B.C.E. In Sumerian Mesopotamia writing was first invented. Egyptian communities developed in the Nile river system before 3000 B.C.E. Out of the interaction of the desert nomads and the peoples of the sea-faring kingdoms emerged a distinctive hybrid culture in Western Asia that drew on many local traditions and connected Babylonia, Assyria, Phoenicia, Syria, Judaea and Egypt. The Phoenicians, a sea-faring Semitic people, were important purveyors of cultural interchange to Greece and this role was facilitated by the invention of the new Semitic alphabetic script which was a defining element of the evolving Mediterranean civilisation and which provided the means to record and accumulate knowledge.

Cyrus of Persia, the conqueror of Babylon, Asia Minor, Syria and Palestine, created the largest united empire the world had seen until that time. According to Roberts, [Ref.14:155] it was a “beautiful and gentle civilisation”. Cyrus set an example in protective religious tolerance when he rebuilt and opened the Jewish temple at Jerusalem around 537 B.C.E, after it had been destroyed by the Babylonian King Nebuchadnezzar in 586 B.C.E. Under Darius, Cyrus’ successor the Persians attacked Greece but were repulsed at Marathon, Thermopalae and Salamis between 490 B.C.E and 480 B.C.E. The failure of the Persian attack has often been interpreted as preventing the annihilation of the emerging Greek civilisation. However, the Greeks overlaid their victories with myths and eulogised Greece as the cradle of liberty and the seat of learning while
portraying their Asian neighbours as ignorant, uncivilised tyrants. As Davies, [Ref.68:103] points out this particular “encounter with the *otherness* of neighbouring peoples passed into the body of European tradition...[The idea began] of ‘Europe’ with all its arrogance, all its implications of superiority, all its assumptions of priority and antiquity, all its pretensions to a natural right to dominate”.

The evolution of “Asia” as the “Other” marked the geographic and cultural division of the world. As Morris-Suzuki [Ref.100:5] suggests:

> Of all the European inventions which have transformed the modern global world view, one of the most successful must surely be Asia. Originally a name by which Phoenicians distinguished the lands to their east (Ani-the land of the rising sun) from those of the west (Ereb-the land of the setting sun), “Asia” came to be incorporated into the threefold Greek division of the world, whose other parts were Europe and Libya.

The period of Greek classical culture lasted from 479-338 B.C.E. Drama, poetry, history, medicine, philosophy, sculpture and architecture flowed from the creative energies of the mainland Greeks and their Asian colonies. These colonies, which had provided the initial impetus to record abstract and scientific thinking had benefited from their proximity to the more ancient civilisations of Mesopotamia and also Minoan Crete which drew much of its culture from Asia and Egypt. The cultural energies then returned to Western Asia in the form of Hellenism with Alexander of Macedon’s invasion of Asia Minor. Alexander eventually conquered Egypt (332 B.C.E) and Persia (330 B.C.E) and reached as far east as the Indus valley. It was not a one-directional flow from the West that obliterated Persian and Indian civilisations, but an unprecedented energising mixture as oriental attitudes and ideas diffused into Hellenism. East and West mingled in the intense flow of ideas on the frontiers of eastern and western civilisations. Eastern monotheism withstood the onslaught of Hellenism and polytheism to dramatically influence the western world when Paul took Christianity to the West. Similar cultural energy later marked the transmission of Arabian culture to Spain, which helped lay the foundations of the Renaissance in Europe.
The sea-faring people of southern India cultivated close maritime ties with West Asia, while from the second century C.E. the vast Kushan Empire, which extended from the northern half of India across a great part of the central Asian landmass, was linked by the Silk Road that provided a cosmopolitan network, for commercial and cultural exchange and links.

Islamic civilisation was founded by Muhammad and emerged in Arabia around 632 C.E. to overlay all the other civilisations and connect them to a common culture as part of an emergent world system. Islam drew on the cultural development earlier identified around Phoenicia. Islamic religion and culture travelled west to Europe through Spain, east to northern India and reached China during seventh century. The old divide between Persia and Rome disintegrated as Islamic civilisation became the catalyst for the diffusion of scientific, mathematical, social and religious ideas. It replaced the boundary between Persia and Rome and became an agent for ideas from Arabia, Byzantium, Persia, India, China and Greece as well as the Central Asian Steppes.

Islamic civilisation adopted the main features of both Hellenic and Persian cultures and contributed a remarkable intellectual heritage to human development through the documentation, accumulation, organisation, translation, storage and retrieval of knowledge. According to Roberts, [Ref.14:520] “to no other civilisation did Europe owe so much in the Middle Ages as to Islam”. These contributions are documented in portraits 4, 5, and 6. During the thirteenth century the hegemony of the Mongolian nomadic conquerors enabled the Mongols to keep the Silk Road open and along this cosmopolitan route flowed goods, knowledge and religion. Contact between Western travellers and Chinese, Indian and Arabian influences facilitated the distribution of global knowledge which energised the emergence of modern Europe. Islamic culture also energised the Renaissance through Western translation of Greek knowledge, especially scientific, mathematical and ethical thought from Asia preserved in Arabic transcripts.
Thus, it can be argued that the European Renaissance emerged through a fusion of East-West discourses.

**Civilisation and Culture in East and South Asia**

*portrait 4*

**East Asia**

As a result of distance and topography, Chinese cultural ideas, innovations and inventions developed distinctively and independently from those elsewhere, before later filtering across to Korea, Japan and Vietnam. Chinese ideographic script is the oldest living language with a continuous history of use. However, ignorance of it in the West acted as a barrier to understanding the wisdom contained in Chinese literature until people like Joseph Needham learned Chinese and translated into English the vast store of knowledge contained in the ancient cultural archives of China.

Chinese contribution to global knowledge has been outstanding and is documented in detail in later pages of the *Portrait*. On the Indian-Chinese border, the diffusion of ideas and innovations was very active. Chinese rulers sought contact with the West through sporadic diplomatic and trading contacts. China influenced and was influenced by Hellenism. Chinese armies established regular caravan routes between China and West Asia, along the Persian route of the Silk Road. The seeds of scientific and mathematical thinking came from the East to the West during the Dark Ages in the West and glimpses of these are evidenced in the *Portrait*. Between the third and fourteenth centuries, Chinese intellectual energies maintained the development of scientific knowledge that set it far above western civilisation of the time.

Chinese civilisation and culture was assimilated by Japan and Korea who then developed their own indigenous, independent cultures. Buddhism and Confucianism were integrating forces that provided Japan and Korea with many common values and a shared social order. Japanese culture remained insulated but was renowned for its
ability to borrow and adopt from other cultures. Korea’s contribution to the diffusion of ideas and knowledge is evidenced by the fact that during the Sung dynasty the Chinese government “sent to Koryo to secure works unavailable in China” Lee [Ref.25:170] and Korea developed the art of printing with movable type. China stimulated a love-hate relationship with the cultural area of Indo-China, which adopted the civil and moral laws and the institution of the Chinese imperial system but despised China’s political domination. Indo-China became the crossroads and symbiosis of Chinese, Indonesian and Indian influences.

**South Asia**

The first civilisations in South Asia emerged from the earlier civilisations in the river valleys of the Tigris-Euphrates in Western Asia and gradually extended down the western side of the Indian sub-continent through the valley of the River Indus. The first large-scale settlement and cities appeared at Harappa and Mohenjo-daro, in the fourth millennium B.C.E. Harappa and Mohenjo-daro disappeared fairly suddenly without trace for some unknown reason. Archeology in this area is only in its infancy compared to Western Asia and these two great ancient Indian cities only became known as late as 1925.

After the invasion by the Aryans, around 1750 B.C.E., civilisation in India extended down the valley of the Ganges. Early oral development of ethical codes occurred and mathematical thinking emerged which may have been influenced by developments in the Fertile Crescent and China. The earliest pieces of sacred Vedic literature were hymns to the Aryan gods (see notes on portrait 2). These, together with the epic poems, the *Ramayana* and the *Mahabharata*, and the earliest of the great world religions, the Hindu faith, have all survived the many changes that have occurred including domination by Islamic and Christian rulers [Ref.21:146]. Hinduism is a nineteenth century British construct, created to refer to religious beliefs and practices that were non-Jewish, non-Christian, non-Islamic, non-Sikh, or non Jain. The concept was taken up by Indian people to construct a religious identity to their spiritual beliefs and challenge “and
surpass in age and authority that of the Christian colonisers and their missionaries” [Ref.52:4]. Scholars, both Indian and European have since retrospectively applied the concept to the historical range of related indigenous Indian religious spiritual consciousness. It must be realised that Buddhism, an off-shoot of Hinduism, had disappeared from India centuries before. However, Buddhism, produced a cultural connection to central and southeastern Asia and to the Chinese and Korean civilisations to its north and ultimately to Japan.

**Southeast Asia**

Southeast Asia did not play a significant part in East-West relations until times that are outside the premodern period addressed by this research. SarDesai [Ref.89:78] suggests that China dominated the area politically but only in Vietnam did it exert a very strong cultural influence. The rest of the area was culturally influenced by India. India provided the region with intellectual and spiritual leadership until the thirteenth century when the government of India passed from Hindu to Muslim hands. Thus SarDesai [Ref.89:78] argues that:

> Until the thirteenth century the entire region, with the exception of Vietnam and the Philippines, was deeply influenced by Indian culture. Although first introduced by Indian traders, the real initiative to import Indian ideas of kingship, court ritual, religion, literature, script and fine arts came from the ruling classes from Southeast Asia...Vietnam, limited for the large part to the Tongking Delta until the defeat of Champa in 1471, was ruled for the bulk of the first millennium, from 111BCE to CE 939, directly by China, which introduced Confucianism, Mahayana Buddhism and other elements of Chinese culture to its Vietnamese subjects.

**An Overview of Religion and Philosophy in Premodern Asia**

*portraits 2, 5 and 8*

It is impossible to understand the diverse cultures of Asia without knowledge of the moral and ethical bases of the religions and philosophies that are deeply embedded in the psyche of Asian societies and people. Understanding the ethical framework in which
“the Other” forms his/her values, beliefs and morals is fundamental to the development of intercultural understanding. Such thinking can lead to new values and aims, new forms of co-operation and action, Pieterse [Ref.101:13], which recognise universal rather than exclusive values, beliefs and morals and respect the significance and complexity of the historical content of other religions [Ref.75:146].

The human capacity to determine moral and ethical thought and to develop appropriate behaviour and action is rooted in diverse historical religious beliefs that go beyond self-interest. Ethical choices arise in a web of interconnectedness “within a complex interaction of social forces”, Preston 1996, [Ref.48:8]. Responsible values are generated from diverse points and interests. These values help people to select preferences. From these preferences people formulate beliefs through which they generate principles to form a code of moral conduct. Within this sense of morality, people make ethical choices about confronting the future. Educators are critically involved in this process when they frame curriculum. Through emphasis on intercultural understanding, educators can develop a framework which ensures that one of the outcomes of education is that it relates to values which follow a path to a non-violent future and which develops positive attitudes to global interdependence, connectedness, engagement, co-operative action and social cohesion, Hutchinson Ref. 76].

Teachers and students should have a clear conceptual image of the meaning of and subtlety of difference between religion and philosophy in order to appreciate the discussion about motivation to behave morally and fit into a universe greater than their own lives and the pursuit of wisdom in the conduct of life.

The New Oxford Dictionary defines RELIGION as “the human recognition of superhuman controlling power and especially of a personal God or gods entitled to obedience and worship, and the effect of such recognition on conduct or mental attitude”. Religion motivates people to behave morally in order to fit into a universe
greater than their own lives. A central precept is one's relationship with a supreme being, spirit or state of bliss and is reflected in one's relationship to others.

With regard to PHILOSOPHY, the New Oxford Dictionary defines it as the "love, study, or pursuit of wisdom or knowledge, especially that which deals with ultimate reality, or with the most general causes and principles of things", and includes systems for the "conduct of life". Confucianism is a good example of a particular philosophy. Values and religious beliefs have been central to action and behaviour at every point in human societies and cultures. Questions that have been addressed in every civilisation are: "What is virtuous action"? and "How should we behave towards one another"? Such questions often stand alongside the development of questions on "How should we be governed"? These questions underpin the discussion in the portraits related to religion and philosophy and are relevant as we seek to shape the future in the third millennium C.E.

Primitive religions are unlikely to have any important effect on East-West interactions or the development of twenty-first century global relations. The possible exception could be Shinto, the indigenous religion of Japan, and for this reason it is included in the Portrait.

All of the great influential current religions came from Asia. In the case of Christianity, two quotes from recent histories support this contention. Professor Norman Davies, in his book Europe: A History, 1997, [Ref.68:192], says "Christianity was not a European religion. Like Judaism and Islam...it came from Western Asia". Similarly Eamon Duffy, in his history of the popes entitled Saints and Sinners, [Ref.67:2], says: "Christianity is an oriental religion".

Religion had a far-reaching influence on the culture of the particular country in which it originated and, in some instances, had a powerful pan-Asian impact. Some religions, such as Christianity, involved major East to West interaction, and later, West to East
interactions. *Portraits* Nos. 2, 5 and 8 provide an overview of the development of the underlying principles of Judaism, Zoroastrianism, Christianity and Islam from Western and Central Asia, Hinduism and Buddhism from South Asia and Taoism, Confucianism and Shinto from Eastern Asia. Whilst diverse values, morals and beliefs about ethical behaviour can be traced to the emerging identities distinguishing the religions, cross-fertilisation of ideas is also evident in the continuing process to strengthen ideas about *moral autonomy*, human relations and social conscience which extend beyond self interest.

The study of Asian religions and philosophies enables us to begin to realise the understanding and tolerance needed to co-exist with other peoples and cultures. These *portraits* provide a base to develop that understanding, in line with Gelber’s point of view [Ref. 87:227] that “it is moral and ultimately religious ideas which must be at the core of social cohesion”.

Religion can arouse passion in the believer and political expression of religion has sparked non-virtuous action in the form of ugly human action borne out of unreasoned passion. Education has a role to manage tensions and misunderstanding between religious faiths. The cross-fertilisation of the oriental religion of Christianity into the Greco-Roman world marked a dramatic meeting of Eastern and Western civilisations, but it also marked the beginnings of centuries of bloodshed in the incessant conflict over Jerusalem, the honoured city of the three “revealed religions”, despite the connectivity of values across the religions.

It is important to understand each religion through its own value system [Ref.46:263] and these *portraits* focus on ways religion concentrates on human belonging and our place in the total system of the universe. The *portraits* provide insight into the role religion plays to inform attitudes and direct action. In the study of the religions of Asia there are three desired outcomes for educators and students: firstly, they appreciate that the interplay of religion and society is very complex; secondly they be aware religion
shifts and adapts to historical change and thirdly, they realise an open mind is necessary to consciously make new connections across the boundaries of each faith in a process of personal growth. We must take each other’s faith seriously and be informed of the ways each offers a pathway to understanding human purpose, so that in engagement we are informed and display across faiths love without imposing will to control.

The embryonic beginnings of two major religions, Judaism and Hinduism, emerged around 1300 B.C.E. In Hindu religion and philosophy, the chief influence is its concentration on the spiritual [Ref.46:9]. To a Hindu, human beings are spiritual in nature and material welfare is not the goal of human life. This idea parallels Jesus’ teaching regarding the laying up of treasure in heaven rather than on earth [Ref. 32: Matt. 6.19-21]. Even as early as 1230 B.C.E. in the literature of the *Rig-Veda*, the most sacred scriptures of Hinduism, there is a recognition that true religion comprehends all religions and that “God is one but men call him by many names” [Ref.46.12].

Buddha found a pathway to liberation from suffering and showed it to others [Ref.31:12]. Buddhism, the off-shoot of Hinduism appealed to millions of people east of its country of origin, especially through East and Southeast Asia where the meditational rituals entered the psyche of many nations.

For the people of Eastern Asia and the overseas Chinese, the *Analects* of Confucianism provide the main sources of social wisdom. Confucianism is concerned with conformity and orderliness, while Lao Tzu, regarded as the father of Taoism, enunciates the philosophy of Tao, which preaches “the Way” or as Arthur Waley calls it “the Way the universe works” and “ultimately something like God” [Ref.46:197]. Both indigenous Chinese religions are followed simultaneously by each person and both influence a Chinese individual’s character at the same time. They are different but complementary and it is necessary to understand both in order to understand Chinese identity.
The two most vital texts of Shinto, the *Kojiki* and *Nihon Shoki* have defined Japanese identity and even act as a national refuge in times of national crisis.

From around 1200 B.C.E., Zoroastrianism became the official religion of the vast Persian Empire. At the time of Christ it was the most widely practised religion in the world. Its emphasis cross fertilised into Christianity and Islam.

Judaism, Christianity and Islam are sometimes referred to as a “family” of religions. Cross-fertilisation, connectivity, similarities and parallel ideas [Ref.108:23] are clearly evident. Judaism is a way of life rather than a system of belief or creed. Being a Jew means “first and foremost to belong to a group” [Ref.46:263] whose experiences as a Hebrew people documented their human predicament which provided the source of their inspiration and vision to safeguard freedom, equality and justice, White, 1998 [Ref.108:25] in setting up their community through a legal relationship with God. In Islam belief in God’s existence does not involve belief that His existence is through a “chosen people” or a Christian trinity [Ref. 108:29].

These *portraits* focus on the manner in which religion concentrates on human belonging and our place in the total system of the universe. The world’s great religious traditions offer guiding principles across their boundaries in terms of interpersonal relationships. The focus of the emphasis may be different and the diverse narratives recorded at different times but there is a centrality of spirituality in the guiding principles about moral precepts and ethical action, compassion, the fostering of harmony, and serenity contained in all the religions.

**An Overview of Science and Technology in Premodern Asia**

*portraits* 3, 6 and 9

The understanding of ancient science has often been spoiled by two unpardonable omissions. The first concerns Oriental science. It is childish to assume that science began in Greece; the Greek “miracle” was prepared by millennia of work in Egypt,
Mesopotamia and possibly in other regions. Greek science was less an invention than a revival. The second concerns the superstitious background not only of Oriental science but of Greek science itself...Hellenic science was a victory of nationalism...which had to be won in spite of the irrational beliefs of the Greek people; all in all, it was a triumph of reason in the face of unreason.


The rationale for the selection of content for this section of the *Portrait* is to inform attitudes about scientific, mathematical and technological thinking through provision of non-European viewpoints. The material provides evidence to support the argument that the history of human civilisation needs to be modified as new knowledge and alternative viewpoints become available in order to counter the limitations of earlier understandings.

As Sarton [Ref. 98] argues, the impact of Asia’s scientific and technological developments on the West have often been ignored. Ronan, 1978 for instance points out [Ref.2a:1-2] that

A century and a half ago, the scientific contributions of the Sumerians and Babylonians, for instance, were quite unsuspected. In 1837, when William Whewell wrote his memorable *History of Inductive Sciences*, he could display a bland unconsciousness of any contributions by other civilisations to the scientific culture of the modern West, and do so without criticism.

[Yet]...The Chinese succeeded in anticipating many scientific and technical discoveries of the Greeks; they managed to keep pace with the Arabs who had all Greek knowledge at their disposal; and between the first and thirteenth centuries A.D. reached a level of scientific knowledge unapproached in the West [Ref.2a:2]

In order to understand the contribution of Eastern Asia, and especially China and its sphere of influence, to science and technology one cannot escape using the monumental work by Dr. Joseph Needham, the beginnings of which were first published in 1954. His treatise is projected to eventually run into 25 volumes, entitled *Science and Civilisation in China* [Ref. 24], or the authorised summary, by Ronan and Needham, *The Shorter
Science and Civilisation in China, [Ref. 2] or even the distillation written by Temple, China - Land of Discovery and Invention [Ref. 36] with Needham’s blessing.

After surveying the history of China’s influence on science and technology Needham concludes:

...My friends among the older generation of sinologists had thought that we should find nothing - but how wrong they were. One after another extraordinary inventions and discoveries clearly appeared in Chinese literature, archeological evidence or pictorial witness, often, indeed generally, long preceding the parallel, or adopted, inventions and discoveries of Europe. Whether it was the array of binomial coefficients, or the standard method in interconversion of rotary and longitudinal motion, or the first of all clockwork escapements, or the plowshare of malleable cast iron, or the beginnings of geobotany and soil science, or cutaneous-visceral reflexes, or the findings of smallpox inoculation - wherever one looked there was 'first' after 'first' [Ref.36:7].

In [Ref.24: Vol, I:19] of his treatise, Needham anticipates the response to his work. People will be “astonished at the richness and variety of the techniques which Europe adopted from China, generally with no appreciation of their origin during the first fourteen centuries of our era”. He cites Francis Bacon, the first great English scientific writer’s evaluation of the role that printing, gunpowder and the magnet have played in global affairs. “These three have changed the whole face and state of things throughout the world, the first in literature, the second in warfare and the third in navigation” and these mechanical discoveries exerted enormous influence in human affairs, but nowhere in Bacon’s book is there even a footnote pointing out that none of the three was of European origin, and he apparently died without realising they were all Chinese inventions.

Needham continues, “During the following centuries, Europeans acquired a much greater knowledge of China than was available when Bacon wrote. But those who should have known better failed to give the acknowledgement that was due” [p.19]. In the introduction to Temple’s book, Land of Discovery and Invention Needham expresses
the opinion that: “Chauvinistic Westerners of course always try to minimise the indebtedness of Europe to China in antiquity and the Middle Ages but often circumstantial evidence is compelling” [Ref.36:7].

Needham was drawn into a study of what he calls “the extraordinary inventiveness and insight into the nature of ancient and medieval China” by posing two questions. Firstly, why were the Chinese so far in advance of other civilisations? Secondly why are they not still centuries ahead of the rest of the world? [Ref. 24, Vol 1:4]. His entire treatise is the answer to the first question. In trying to answer the second question Needham argues that the excellent bureaucratic organisation in China in the early days helped science to grow there far more than the lack of such organisation did in Europe, but finally this bureaucracy grew to become such a powerful monster in China, it eventually stifled scientific thought, as did the religious hierarchies of Europe during the Middle Ages.

In his Ruth Wong lecture to the Institute of South-East Asian Studies in Singapore in November, 1996, [Ref.71:62], Wang Gungwu argued that:

If national education fails to include the sense of range and depth in several scientific traditions, I foresee two scenarios for societies in Asia that give great precedence to science. One, the universality of modern science in our education will strengthen the assumption that the Western heritage alone brought it about. It will follow that all sense of the past, and in the end, of the future as well, would be dominated by that worldview. Secondly, the impact of scientific knowledge, that is regarded as outside the framework of the living cultures that still have moral and spiritual meaning, is likely to produce an imperfect and partial learning of modern science.

Wang Gungwu was speaking of both early Chinese and Muslim achievements in the field but at the same time sought to demonstrate the precedent that “the extraordinary achievements of the Greeks” (p.54) to contribute key parts of modern science have been widely acknowledged. However, according to Wang Gungwu the West does not recognise that the Muslims appreciated Greek science earlier than the Christians and “at
the height of their power, from the ninth to the twelfth centuries, their mathematicians
and astronomers were some of the most sophisticated of that age” (p.52).

Wang Gungwu assesses that there is no treatise comparable to Needham’s work Science
and Civilisation in China to inform us with precise and adequately documented research,
on Indian science, technology and medicine. Doubtless it will be written in the near
future as archeological research in India develops. Cajori, 1893, 1985 [Ref. 34] shows
that Indian mathematics enters into the science of our times, in notation of numbers and
algebraic operations. Reference is made to this in historical literature, such as Basham’s
work [Ref. 80] but there is currently inadequate western scholarly research and
referencing to validate India’s contribution or to access the Indian narrative in order to
analyse and extend knowledge of the interlocking and interdependent patterns of
scientific and mathematical thinking.

The wealth of information available in and given reference to in this set of
portraits must surely alert scholars, teachers and students to the need to develop skills
to deconstruct existing texts that contribute to knowledge in this field. Evidence
presented in portrait 6 of the three great Ionians Thales, Pythagoras and Anaxagoras,
coupled with the treatment of Democritus by the Athenian Greeks, forces us to
conclude that scientific thinking originated in Western Asia. Research techniques must
enable exploratory skills to develop capable of challenging imaginative constructs about
science and technology in Asia. As it becomes available scholars must access new
knowledge to modify presently constructed images and concepts about the Oriental
origins and precedents of European science and technology. Western science flowed on
from Asian precedents. It is inappropriate to treat such knowledge as superseded and
therefore dismissed.

The evidence contributed in the portraits documenting science and technology presents
an argument to prove “the technological world of today is a product of both East and
West”, Temple [Ref.36:12].
500,000 B.C.E. The Beginnings of Civilisation in East and South Asia.

Two famous skulls of early species of humans, dating back 500,000 years and more, were discovered in Asia. These were Peking Man and Java Man. However, both of these were of the species *Homo erectus* which pattered out some time later. *Homo sapiens sapiens* or true modern man is currently believed by most scholars to have originated in Africa and spread about 60,000 years ago to all of the areas occupied previously by *Homo erectus*, including Asia and even Australia. Today, archaeology in East and South Asia is more or less in its infancy compared to Western Asia, Egypt and Europe, so the story of civilisation in these countries is far from complete.

60,000 B.C.E.

After the great Ice Ages which lasted for unimaginable aeons of time (of the order of 800,000 years) animals and plants began to colonise the thawing lands across the globe about 10,000 years ago and this encouraged hunting and food gathering. Actual farming of animals, followed later by agriculture, appears to have developed independently in the East and the West in ways dependent on local climate and other natural stimuli. However, the beginnings of cereal cultivation are clearly associated with West Asia and eventually extended down the western side of the Indian subcontinent [Ref.51:2-5].

From c.8000 B.C.E.

The first of all civilisations, in Mesopotamia, grew up in these cereal cultivation areas (see *portrait No.4*), especially after the invention of irrigation using the waters of the two great rivers, Tigris and Euphrates. In India, the first civilisation in South Asia developed in the Indus Valley at Harappa and Mohenjo-daro during the fourth millennium B.C.E. where highly developed cities covered over one and a quarter million square kilometres and lasted for over a thousand years, during which time they developed a sophisticated trade with Mesopotamia using a standardised system of weights and measures. Mysteriously, however, these cities were abandoned soon after 2000 B.C.E. and later civilisations in India developed in the Ganges Valley rather than the Indus Valley [Ref.51:8].

From c.4000-3000 B.C.E.

The first Chinese civilisation developed in about 1800 B.C.E. in Northern China and by 1100 B.C.E. great cities such as Cheng-chou and An-yang had grown up [Ref.51:8].

From c.1800-1100 B.C.E.

South Asian civilisation influenced the establishment of early civilisations in Southeast Asia (notably in Vietnam, Thailand, Malaya, Sumatra and Java) [Ref.51:8].

From c.1500-500 B.C.E.

Rice, which originated in Southeast Asia and Southern China, passed across to Western Asia and Europe where it joined wheat and barley as staple foodstuffs. From around 6000 B.C.E., crops of millet were being grown in the Yellow River area of China and this also spread to Western Asia. As early villages in East Asia grew and prospered, new technology such as the wheel throwing of good quality pottery, jade carving and the making of silk wearing apparel appeared [Ref.51:6].

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By the middle of the first millennium B.C.E., civilisations in both India and China became consolidated. In India by the end of the fifth century B.C.E., sixteen political units were reduced to four and of the multiplicity of feudal principalities in China, only seven major states were left to battle for supremacy.

In India, the centre of power moved from the Indus to the Ganges and consolidation of the internal Indian empire became complete under the one ruler, Asoka (269-232 B.C.E.). In China, the dominant power became the state of Ch’in in 221 B.C.E. Although stability did not last, at least for a short time the two civilisations of India and China could be recognised as definite entities rather than as a chaos of warring factions.

By about 200 B.C.E., the beginnings of civilisation in East and South Asia could be said to be complete [Ref.51:28].

The greatest contributions India made to global civilisation were religions – Hinduism (from 1300 B.C.E.) and Buddhism (from c.530 B.C.E.) in particular. These are covered in detail in Portrait No.2: “East and South Asia - Religion and Philosophy”, and so their history will not be discussed here.

A.L.Basham [Ref. 80:487] claimed that “the whole of South-East Asia received its culture from India”. This is supported by D.R.SarDesai [Ref.89]. See also the snapshot on “Southeast Asian Civilisation” (below).

Ceylon was converted to Buddhism in the reign of the Indian King Asoka (269-232 B.C.E.). By the fourth century C.E., Indian/Buddhist influence had spread to most of Southeast Asia including Malaya, Sumatra and Cambodia while Sanskrit became the official language of the region. Buddhist influence also spread to China, Korea, Tibet and Japan. However, Indian culture could not be said to have had a major effect on the West.

Rice, cotton, sugar cane, domestic fowls and many spices came to the West from India. The game of chess in its military form was developed in India from a more primitive form which was imported from China.

Most scholars would not agree with A.L.Basham [Ref.80] that India invented the decimal system which Joseph Needham attributes to China [Ref.41:44]. The use of the circular sign for zero seems to have first appeared in the region of the Indo-Chinese border.

Probably the most significant Indian contribution to world mathematics was the system of numerals passed on to the Islamic scholars in Arabia and called by the Arabs “Indian numerals”, but which, after some modification, have been referred to in the West as “Arabic numerals”. It certainly appears that India was the first country to have an influence on the new Muslim intellectual movement before the recorded knowledge inherited from Greek-Hellenism became the major intellectual force in Islam. This is discussed under the Islamic contribution in Portrait No.6: “West and Central Asia - Science and Technology”.

Since Alexander the Great conquered the whole of Western Asia and even penetrated India in the early third century B.C.E., there has been continuous contact between Western Asia, India and China, although interaction actually occurred well before that as instanced by the trade between Western India and Mesopotamia prior to 2000 B.C.E.
It has been documented that Mesopotamian traders journeyed as far east as India in around 2000 B.C.E. [Ref.22:3].

Around 510 B.C.E., the Persian King Darius, having conquered north west India, sent a Greek, Scylax of Caryanda, on an exploratory voyage down the Indus River. Scylax sailed to the mouth of the Indus and then followed the coast around to the Red Sea [Ref.22:3].

As D.R. SarDesai [Ref.89:16] argues, India made valuable contributions to the development of civilisation in countries outside the main subcontinent, especially in Southeast Asia, in diverse fields such as religion, language, art, law, medicine, mathematics, commerce, nautical technology, and government. This could only have come from a very advanced civilisation in India itself.

The Contribution of China to World Civilisation.

The contribution of China to world civilisation in science and technology alone has been enormous. The three inventions which Francis Bacon regarded as influencing the course of world history more than any others were gunpowder, the mariner's compass and printing on paper and all were of Chinese origin [Ref.24:Vol1:19]. Even if China contributed no more than these inventions, the world would be deeply in her debt. However, when we take into account the incredible range of the other major contributions described in portrait No.3: "East and South Asia - Science and Technology", China's achievements were incomparable for the time. These include developments in such diverse fields as astronomy, mathematics, geography, world exploration, agricultural engineering, metallurgy, medicine, anatomy, mechanical engineering, civil engineering, manufacturing techniques, nautical technology, cartography, military technology and rocketry as well as discoveries such as the circulation of the blood and inventions including the horse harness, the stirrup, deep drilling for gas and brine, porcelain, clocks, paper money, vaccination, and many more.

China did not make any original contributions in the field of religion, except perhaps through the development and promulgation throughout Asia of Mahayana Buddhism (initially from India).

The two major Chinese philosophies of Confucianism and Taoism, both dating from the fourth and fifth centuries B.C.E., became part of the psyche and culture of East and Central Asia but did not have a major influence outside these areas during pre-modern times.

Following the initial consolidation of China under the Ch'in Dynasty in 221 B.C.E., the history of China is one of disunity until it was reunified, in 589 C.E., by the Sui Dynasty who consolidated the empire under a system of centralised institutions. The consolidation was assisted by the state patronage of a style of Buddhism acceptable to both north and south; by the construction of a canal system linking the Yangtze with the Yellow River and the Peking region; and by the reconstruction of the Great Wall. After an economic collapse brought about by these huge public works, the government of China was finally centralised by the strong Tang dynasty in 618 C.E. with a simple but efficient system of administration [Ref.72:124].
The Times Atlas of World History [Ref. 72:124] claims that during the 650 years from 618 to 1278 C.E., China was “the world’s greatest power and Chinese culture the world’s greatest splendour”. While Chinese science and technology evolved over many centuries it was during this period that some of the greatest advances were made, including the mechanical clock, vaccination against smallpox, printing with movable type, rockets and the spinning wheel [Ref.72:124].

By 1100 C.E., the population of China had increased rapidly and the capital at Hang-chou had become “indisputably the world’s greatest city” [Ref. 72:125]. This was a period of great cultural achievement. The visual arts, literature, philosophy, science and technology all reached new peaks of achievement. Education was widespread, aided by the dissemination of printing, and a state examination system was introduced to recruit officials based on merit. Commerce multiplied based on increased trade, new credit systems and paper money. In addition, because of the difficulty of maintaining a monopoly over the very long overland routes across Central Asia, China slowly developed into a major sea power [Ref.72:125].

Chinese military power was dominant in Asia prior to the rise of the Mongols in the thirteenth century and China had exacted tribute from most states in East and Southeast Asia. At the same time, Chinese culture, written language and political institutions were adopted in the states around China’s eastern periphery such as Korea, Japan, Manchuria and Yunnan. Thus began Chinese cultural dominance in the Far East, which persisted well after 1278 B.C.E. when the Tang military power had declined [Ref.72:124].

In the thirteenth century, this great period ended due to a number of factors. Immense destruction and social disruption was brought about by the Mongol conquests. However, probably even more important, was the overgrowth of the enormous bureaucracy which stifled change and, as Dr. Joseph Needham [Ref.24] proposes, probably led to China’s failure to develop modern science and civilisation despite having been so far ahead of the West at the end of the fifteenth century. [Ref.36:8; 110:2-3].

Mainly from 3rd Century B.C.E. Southeast Asian Civilisation.

Southeast Asia is assuming an ever-increasing role in world civilisation and is of special importance to Australia’s future as it includes our nearest Asian neighbours.

Although of recent origin, particularly due to the title of Mountbatten’s Southeast Asia Command in World War II, the term “Southeast Asia” is used to designate the geographical area occupied by a number of ancient countries including Burma (Myanmar), Thailand, Malaysia, Singapore, Brunei, Indonesia, Laos, Cambodia or Kampuchea, Vietnam and the Philippines - but not Taiwan or Korea [Ref.89:3]. In D.G.E. Hall’s monumental History of Southeast Asia [Ref.109:3], even the Philippines is excluded because it was not considered to be part of the region’s “mainstream historical development”.

The development of the area prior to Western colonisation was greatly influenced by both India and China but, strangely, there was little conflict between these two influences.

D.R.SarDesai [Ref.89:14] quotes French scholar-diplomat, Reginald Le May who wrote in 1954, regarding the Sino-Indian cultural demarcation, as follows:-

*On the map of Asia there is a range of mountains running down the spine of Annam (west of present Vietnam), and this range marks the boundary or*
dividing line between Chinese and Indian culture. Everything North and East of this range is culturally based on China, while everything West and South is based on India, and the two neither overlap nor clash.

Consequently, the main cultural influence of China occurred only in Vietnam.

We must remember that, prior to these two foreign influences, Southeast Asia had a widespread and diverse indigenous culture based on irrigated cultivation and sharing of the common problems and benefits dictated by the Asian monsoon [Ref.89:12-13]. They had also learned the skills of bronze and iron metallurgy from their trade with other countries. Three very specific examples of unique indigenous developments in the Indonesian area given by Dutch scholar, N.J.Kron [quoted in Ref.89:14] were: “the shadow puppet theatre, the gamelan orchestra and batik work in textiles”.

As the Han Chinese moved south across the Yangtze a couple of centuries before the Christian era, they drove the minority ethnic peoples south and these refugees were forced to cross the mountains into what is now Southeast Asia [Ref.89:6-7]. Although some migration had been taking place for nearly two millennia before the Chinese political consolidation in the third century B.C.E., the really large scale exodus occurred during the first millennium C.E. It was in this period that most of the ancestors of the present populations of Burma, Vietnam, Malaysia, Indonesia and Thailand migrated under Chinese political and military pressures. Although China dominated most of Southeast Asia politically and exacted tribute from its rulers as a sign of subordination, all of Southeast Asia, with the exception of Vietnam, came under Indian cultural influence.

According to D.R. SarDesai [Ref.89:16], China did not participate in religious evangelism to save souls. It was Indian Hinduism and Buddhism that provided the first main thrust of religion into the area. Although there were many other non-religious aspects of the rich Chinese culture which Southeast Asia could have adopted, it was still Indian culture that most of Southeast Asia adopted. Due to the “absorptive, syncretic quality of Indian culture” [Ref. 89:16] and the lack of political and military ambition shown in the area, the Southeast Asian nations felt they could adopt the Indian cultural patterns without giving up their identity and independence. This was further encouraged by mutual trade and geographical commonality associated with the monsoons and it was this seasonal pattern that affected the religious beliefs, communications and way of life throughout the whole Southeast Asian area over a long period of time.

SarDesai [Ref.89:16] suggests that the initiative for Indianizing Southeast Asia most certainly came from the region’s local ruling classes who invited Brahmans (the ruling priestly class from India) to serve at their courts as priests, astrologers and advisers. The Brahmans introduced Indian court customs and ensured their proper observance. They also underlined the divine nature of monarchy, thereby enhancing the prestige and power of the Southeast Asian rulers in the eyes of their subjects, who naturally enough promoted Indianization, a process that included the use of the alphabetical basis for local scripts, the use of Sanskrit as a common language, the introduction of the great Indian epics Ramayana and Mahabharata into cultural education, and the provision of Indian treatises on philosophy, law, astrology, medicine, mathematics, the arts and religious lore, both Hindu and Buddhist. The final religious make-up of the area evolved into the following: Malaysia and Indonesia (except Bali which is Hindu) are overwhelmingly Muslim (following large-scale conversions in India itself); Burma, Laos, Kampuchea and Thailand follow Theravada (or Hinayana) Buddhism; Vietnam follows Mahayana Buddhism (as did many people in China) and the Philippines is predominantly Catholic.
As mentioned earlier in this portrait, there was an indigenous substratum of civilisation in the various Southeast Asian countries on which was erected a cultural superstructure mainly based on Indian cultural patterns. Yet the individual societies in the various nations have always maintained differences based on their original substructure even as they have developed a family resemblance based on their common borrowings, mainly from India.

For a more detailed account of this important region, see Southeast Asia, a book by Professor D.R. SarDesai [Ref. 89].
PORTRAIT No. 2

EAST and SOUTH ASIA: Religion and Philosophy

c.4000 B.C.E.
Religion in India before Hinduism.
Continuous migrations into the Indian peninsula occurred before 4000 B.C.E. At least three separate groups have been identified:-

1) Indo-Negroids related to the ancient peoples of Africa and Melanesia.
2) The Veddids, whose descendants still live as tribes in India and Sri Lanka.
3) The Dravidians, the so-called "brown people" from the Eastern Mediterranean.

The Dravidians founded the Indus Civilisation from about 4000 B.C.E. Their divinities appear to have originated in Mesopotamia in Western Asia where the first of all civilisations appeared. Being an agricultural people, like the old Mesopotamians, Dravidian deities were mainly associated with fertility, leading to phallic worship and/or the cult of the Mother Goddess. [Ref.53:Vol.6:336; 30:7-9; 50/1:4; 51:8]

c.1300 B.C.E.
Hinduism: Origins.

Hinduism, often regarded as the earliest of the world's four greatest religions, had its origins in India where it is still practiced by the majority of its inhabitants as well as many people (mainly of Indian origin) in Africa, Southeast Asia and other countries throughout the world. Hinduism currently has over 700 million followers. [Ref.30:5; 50/1:3]

The word Hindu is derived from the Sanskrit word sindu ("river", meaning the Indus River). Hinduism, unlike other religions, has no founder, no ecclesiastical hierarchy, no mission to convert people to one point of view, does not rely on belief and maintains that all peoples of the world are children of God and that there are many different paths to him.

About 1300 B.C.E. the Indus Civilisation around Harappa and Mohenjo-Daro disappeared under the influx of a great migration of Indo-European Aryans who brought with them their own religion. The Aryan deities such as Varuna, god of the heavens, and Indra, the warrior god, were not associated with the narrow worship of fertility symbols such as the earth mother but with a more universal emphasis which by 800 B.C.E. had become a Greek-like hierarchical pantheon of gods and goddesses. Our knowledge of these gods comes from the Vedas which are the subject of the next snapshot (see c.1300-800 B.C.E. below).

When the Aryans arrived in India, the Dravidians were already a civilised people, although regarded by the Aryans as inferior, along with the pre-Dravidian peoples who included aborigines, nomads and forest tribes. Out of the interaction and conflict between these five groups was born the social phenomenon of India's caste system. However, as everything affecting an Indian is related to his/her religion, the caste divisions became associated with religion as well. It had been customary in ancient times for conquerors to exterminate or enslave the conquered. The pattern of social
organisation set up by the Aryans in India, which developed into the caste system, avoided this. Initially there were four castes: a warrior-aristocracy, the priestly Brahmins, the ordinary peasant-farmers and the non-Aryans who were referred to as shadras or "unclean" who might not study or hear the Vedic hymns. Over the years, the caste system became increasingly rigid and incredibly complex and eventually led to the degradation and misery of millions of people in the lower castes.

In India, as in China, learning has always been highly esteemed. The ruler and the warrior both bowed before the learned person. The thinkers and philosophers in India were mainly supplied by the priestly class, members of the Brahman caste, many of whom became a powerfully entrenched priesthood intent on preserving their own vested interests. It was they who probably originated and encouraged the idea that you would be reborn into a higher or lower caste depending on how well you carried out your castely duty, irrespective of how degrading that might be. Even Nehru, when Prime Minister of India, although himself a Brahman, said that the Brahman class had shown all the vices of a privileged and entrenched class and that large numbers of them possessed neither learning nor virtue.

The essential function of the Brahman priests was to offer up sacrifices. Consequently, as the power of the Brahmins grew, the sacrifice itself grew to become the main object of religious worship, becoming increasingly stereotyped through repetition and indeed supplanting the actual worship of the god himself. [Ref:30:10; 53:Vol.6:336-337; 50:6]

c.1300-800 B.C.E. Hinduism: The Vedas.

The book called the Vedas is the ultimate authoritative canon for present day Hindus and is divided into four component books:

1) The Rig-Veda contains 1028 hymns. It is the oldest of the Vedas, and is possibly the oldest book in the world, having been composed in an ancient form of the Sanskrit language in north-western India around 1300 to 1000 B.C.E. Its sources are even more ancient, as indicated by a dedication acknowledging the contributions of earlier civilisations. Even though now available in printed form the text is often still memorised syllable by syllable.

2) The Yajur-Veda is the textbook for sacrifices.

3) The Sama-Veda is the hymnal.

4) The Atharva-Veda is a collection of magic spells, probably added about 900 B.C.E.

Around 1000 B.C.E. the Brahmanas, lengthy Sanskrit texts expounding myths and priestly ritual, were also composed. These supported the hardening of the institutional ritualising of religion which exalted the power of the Brahmans. (It was against this that Buddha rose in revolt, much as Luther did against Catholicism in 1517 C.E.). [Ref:46:15-19; 53:Vol.6:337-339; 30:8-12; 50:7-8]

c.600 B.C.E. Hinduism: The Upanishads.

The Upanishads were commentaries on the Vedas and were added from about 600 B.C.E. As no further additions were made to the Vedas themselves but were added as Upanishads, the Upanishads were regarded as philosophies which ended the composition of the Vedas and so the Upanishad philosophy was called Vedanta philosophy (anta meaning "end"). The philosophers who wrote the Upanishads were called rishis.
The *rishis* observed that the whole world appeared to be in a continual state of change (e.g. the winds, the moon, growth and decay, life and death and so on) but there was one unchanging being which they named *Brahman* ("God"). The *rishis* also looked at themselves and found that there was continual change within oneself (e.g. sensations, emotions and so on). However, again there was one thing that did not change and to this they gave the name *Atman* ("self"). Even inanimate objects were regarded as having *Atman*.

Next, the *rishis* began to think that *Atman* and *Brahman* were one and the same. Thus the *rishis* discovered the idea that one's innermost being or *Atman* was *Brahman*. In other words, "God" dwelt within each person.

Finally, the *rishis* preached that the ultimate realisation of God is achieved by meditating and leading a moral life. [Ref.46:20-23; 30:12-14; 50:6-8; 53:Vol.6:341-342]

**Hinduism: The Four Ends of Life.**

"The Four Ends of Life", according to the distinguished Hindu scholar, Radhakrishnan [Ref.46:12], are:

1) **Moksa** - The chief end of man is the development of the individual, that is, his individual spirit.

2) **Karma** - The aim for perfection must be consistent with one’s emotions, feelings and desires. It affirms the responsibility of each individual for his own life.

3) **Artha** - Material well-being. Spiritual life finds full scope in communities free from sordidness. Although some Indians, because of circumstances not of their making, live in poverty or squalor, this has never been regarded as an ideal.

4) **Dharma** - Everything must be achieved by the rule of right practice which may be different for different individuals. Each person must live right with God who is within oneself.

These so-called "four ends of life" point to the different sides of human nature: the instinctive and the emotional, the economic, the intellectual and the ethical, and the spiritual”.

A person’s moral character, which is the cumulative product of all past deeds in this and previous lives, is his *Karma*. If, at death, a man’s *karma* is good, two possible paths are open to him: (a) he may go straight to heaven, to *Brahman* and not return; or (b) he may go to heaven where he enjoys the fruits of his deeds but has to return to earth, reborn to a new and higher level of being. If his *karma* is bad, he goes through a period of suffering and then has to return to earth, reborn to a form appropriate to his evil deeds. In all cases, earth is where a man determines his own spiritual destiny. The other places are where he is given his reward of either pleasure or suffering. There is no eternal damnation and an individual will eventually achieve liberation, although it may be a long haul for some, requiring many rebirths.

The *Vedas*, the *Brahmanas* and the *Upanishads* are regarded by many *Hindus* as direct revelations and consequently most Hindus agree that not a syllable may be changed.

The early Aryans seemed to possess such a zest for life that they did not pay much attention to the soul. Nevertheless in the *Vedas* there is the gradual growth in the concept of God, leading ultimately to the belief in a single pervasive Supreme Being. Also there is the idea of a heaven and a hell. One of the preoccupations of the post-*Vedic* period
was the search for the identity of the Supreme Lord who suffused all creation and all other gods. [Ref:46:12 et seq.; 53:Vol:6:345; 30:13] (See also 300 B.C.E. above for "Hinduism: The Popularisation of the Message").

**c.604 B.C.E.**

**Taoism.**

"Tao is the fundamental metaphysical concept of the Chinese people and, as its name would suggest, the centre of the way of life known as Taoism" (or Daoism) [Ref:40:242].

Traditionally, **Taoism** was founded by Lao Tse (or Lao Tsu) who was born in approximately 604 B.C.E. and who was the author of the main text referred to by Taoists, entitled **Tao Te Ching**. The actual translation of the expression "Lao Tse" is "Old Master" and so there is some doubt as to whether anyone of that name ever lived or whether **Tao Te Ching** was written by a person of that name. However, as Eastman [Ref:40:242 et seq.] argues, "It is typical of the spirit of Taoism that it doesn't really matter whether he was the author or not or even whether he was a historical figure or not. In the world of Taoism nothing should be fussed about, much less an academic question of authorship or a distant detail of history".

According to legend, when Lao Tse tried to leave China he was told he would need an export licence for his possessions. When he replied that his only possession was his wisdom, he was informed that he would have to leave it in China. Consequently, he sat down, wrote all his wisdom in a composition called the **Tao Te Ching** and left it in China. It has become the most translated book in the Chinese language and has had an enormous influence on succeeding generations. It mainly deals with the important Chinese concept of **Tao**.

**Tao**, meaning "the way", is a difficult word to translate, especially into Western languages. In fact, Lao Tse said that it was best not to translate tao, just as Buddha felt that the concept of **Nirvana** could not be described in writing. [Ref:46:201-208]

One of the main parables used by Lao Tse to explain tao involved a comparison with water. Water benefited all things but occupied, without effort, the lowest place it could find, something which men did not like doing. However, even though water is soft, it is one of the most powerful agents on earth. As water flows over rocks, it takes the shape of the rocks but eventually the rocks take the shape of the water. Hence, water has some of the characteristics associated with tao. [Ref:46:204]

The **Taoist** way of life is governed by a concept called wu-wei. This is also difficult to translate. It means something like "yielding to win". However, it does not mean "inaction". One should act humbly in such a way that one's actions in trying to achieve a goal are not noticeable. One should also act in an unselfish way, behaving as an instrument of the divine force (or, as we might describe it, "the will of God"). All actions should be appropriate and unostentatious. **Tao** is the course of nature or the natural way. [Ref:46:205]

Eastman [Ref:46:203 et seq.] quotes Lao Tse as saying, "Man takes his law from the Earth; the Earth takes its law from Heaven; Heaven takes its law from the Tao".

In later years, the original concept of **Taoism** as a way of life became distorted by some followers such as priests who developed magical or mystical rites which were far removed from the original teachings in the **Tao Te Ching**. [Ref:46:201-234; 37:296-300]. (Refer also to "Chuang Tzu Taoism" below in the fourth century B.C.E.)
Buddhism: The Founder.

B.C.E.

Siddhartha Gautama, who became the Buddha after his enlightenment, was born in 563 B.C.E. in Kapilavastu near the present Nepal-Indian border and was the son of a ruler of the Sakya people. The young prince was raised in sheltered luxury, married to a cousin and had a son. At about 29 years of age he realised how empty his life had really been and, renouncing all family attachments, embarked on a quest for peace, enlightenment and release from the cycle of rebirths which he would have to undergo according to his Hindu religion. For the next few years he practised yoga and adopted a life of radical asceticism. Eventually he adopted a middle path between a life of indulgence and self-denial.

Seated under a bo or bodhi tree, Gautama meditated, rising through a series of states of higher consciousness until he attained the enlightenment for which he had been searching. After undergoing a period of intense inner struggle and achieving what he saw as salvation for himself, he felt it his duty to demonstrate the way to others. To accomplish this aim he gathered together a body of disciples, organised them into a monastic community known as the sangha and spent the rest of his life preaching. Gautama was an oral teacher and so left no written body of thought. As with Jesus, the Buddha’s teachings were later written down by his followers. After preaching for about 40 years, he died when nearly 80 years of age. [Ref.70:Vol.1:176-178; 8:29-43; 53:Vol.2:335; 31:4]

Buddhism: The Religion.

B.C.E.

The Buddha was born a Hindu. However he rejected the power of the Brahman priests and their over-emphasis on ritual which was largely used to maintain their own power and which had taken over from the simple principles of Hinduism.

At the core of the Buddha’s enlightenment was the realisation of the Four Noble Truths:

1) Life is suffering, from beginning to end.
2) All suffering is caused by ignorance of the true nature of reality, and the craving and grasping that results from that ignorance.
3) Suffering can be ended by overcoming this ignorance and wrong craving.

The path to the suppression of suffering is referred to as The Noble Eightfold Path and comprises right views; right intention; right speech; right action; right livelihood; right effort; right-mindedness and right contemplation.

These eight precepts, in turn, are usually divided into three categories which form the cornerstone of the Buddhist faith:

(1) Morality;
(2) Wisdom; and
(3) Concentration (samadhi).

Human beings are thought of as composed of five aggregates, i.e the material body, feelings, perceptions, predispositions and consciousness. A person is only a temporary combination of these aggregates and they are subject to continual change.

The Buddhists deny any permanence whatsoever in a person’s makeup i.e. no permanent soul or atman (as believed by the Hindus). The Buddha held that any idea of a permanent self would only lead to egoism, craving and hence suffering. Thus he taught
the doctrine of *anatman* i.e., selflessness, the denial of a permanent soul. This doctrine is characterised by three factors of: no soul, impermanence and suffering. Consequently, instead of the Hindu principle of reincarnation, the Buddha taught the principle of a series of renewed existences, the quality of which are dependant on one's personal behaviour.

The ultimate goal of the Buddhist faith is *nirvana* i.e. the release from the round of existences, with its consequent suffering, to an enlightened state in which the fires of greed, hatred and ignorance have been quenched. After this, the enlightened individual may continue to live, burning up any remaining *karma*, until a state of *parinirvana* (final *nirvana*) at the moment of death. Although, in theory, *nirvana* is attainable by anyone, in practice it is only a realistic goal for the monks. For lay people, the lesser option is to try and achieve a better rebirth in the hope of being able to pursue enlightenment as a member of the monastic group after rebirth. The ethic leading to *nirvana* involves the cultivation of loving-kindness, compassion, sympathetic joy and equanimity. The ethic that leads to rebirth involves fulfilling one's duties to society. These include acts of charity, especially towards the monastic group, together with the five basic precepts in the moral code of Buddhism i.e. no killing; no stealing; no harmful language; no sexual misbehaviour and no intoxicants. By observing these precepts, the three roots of evil, which are lust, hatred and delusion, may be overcome.

The above precepts were not commandments but guidelines set forth by the Buddha for the social and personal well-being of his followers and intended to be followed in that spirit. However, disregard of these precepts could have a damaging effect on *karma* which could invoke severe negative sanctions in this and future lives.

Buddhist ethics in general emphasise the rooting out of vices and the cultivation of virtues. It is also believed that the moral character of human action is closely associated with the intention that constitutes it i.e. good intentions lead to good results and vice versa.

Buddhist communities form a hierarchy of different levels based on ethical attainment; the closer to enlightenment you are the higher you are in the scheme of things [Ref.53:Vol.2:498 et seq.; 46:61 et seq.; 31:5-9]

**Buddhism: Development.**

The concept of “Buddhism” was created in the West, only about three centuries ago, as a definition to cover the grouping of thoughts, practices, institutions and values that have become associated with the name of the Buddha. However, scholars point out that Buddhism, more than the other great religions, has had the capacity to transcend the boundaries of culture, politics and nationality.

Buddhism emerged in a small, poor community in northeastern India and became a universal religion. Its ideas spread across diverse civilisations and cultures within Asia and even spread to the so-called modern civilisations in the West. The resulting dialogue and process of enrichment in human faith crossed the East-West divide to integrate themes from Eastern and Western countries and provide a good example of interactive pluralism.

Buddhism could probably be regarded as merely a sect until the time of King Asoka in the third century B.C.E. when it became a 'civilising' religion. Asoka, who established the first pan-Indian empire, became a Buddhist and gave the religion his full sponsorship.
This, and the legends about him which persisted long after his death, lead to a great expansion of Buddhism in India. This growth included greater participation by the elite and the laity together with the growth of a significant Buddhist architecture, art, symbolism and ritual, the institution of pilgrimages to sacred sites and the development of philosophies which attempted to explain truth in a coherent and reasoned manner.

Between 200 B.C.E. and 100 C.E. Buddhism became an influential religion across India, Sri Lanka and Central Asia. Based on Asoka’s use of Buddhism to seek and secure control over culturally plural areas, it became an imperial religion.

After 500 C.E., Buddhism became the preeminent religion in a newly unified Chinese empire. It continued spreading in South East Asia, and was established in Tibet and Japan. However, by the middle of the ninth century the pan-Asian nature of Buddhism was rapidly drawing to a close. Sadly, in its home country, India, a resurgence of Hinduism coupled with Muslim invasions led to the effective disappearance of Buddhism throughout the country by the thirteenth century.

By now, the era when Buddhism focussed on the development of philosophies and systems of thought was replaced by a new era dominated by practice, with a special emphasis on discipline and meditation. This shift was exemplified by the emergence of Chan Buddhism in China and Zen Buddhism in Japan. All across Asia, as ritual became predominant, Buddhism expressed itself as a cultural religion using different kinds of ritual at different levels of society. It was through these ritual forms, more than any other way, that Buddhism became an integral component in the life of diverse Asian peoples and it was these rituals that enabled it to maintain its position and influence into the modern era. [Ref.53:Vol.2:335 et seq.; 31:4-36]

Buddhism: Major Branches.

Today Buddhism is practised by over 300 million followers and is divided into two major branches which, while both are practised in India itself, have had varying influences in other Asian countries.

1) Theravada has been dominant in Sri Lanka, Thailand, Cambodia, Burma and Laos.
2) Mahayana has had its greatest impact in China, Japan Taiwan, Tibet, Nepal, Mongolia, Korea, and Vietnam.

One writer suggests that a fairly accurate way of representing the two branches of Buddhism is in the form of two concentric circles, the Theravada forming the compact and well-defined inner circle clustered around the teachings of the Buddha, and the Mahayana as a more nebulous ring around it. Mahayana not so much a School as a collection of Schools, all of which, compared with the older teaching, are adventurous, positive and boldly speculative. The Theravada says of the Mahayana that it is heretical and degenerate, while the Mahayana says of the Theravada that it is right and adequate for beginners but inadequate for the developed mind. The essence of Theravada doctrine, distinguishing it from Mahayana, is the belief that salvation and spiritual progress can only be achieved through individual effort. Thus, in Theravada, an individual’s life, actions and mental exertions are the important factors rather than the rituals, or the intervention of priests, gods and other spiritual beings. The Buddha should not be worshipped as a god, but merely venerated as a teacher and the fount of wisdom. Relics and images of the Buddha and symbols such as the bodhi tree may be used as objects of veneration and respect for him and as aids to meditation. There are no priests, only monks, in Theravada.
One important ethical activity prescribed for the laity in Theravada Buddhism was the giving of alms to monks. This enabled the laity to carry out one of its major roles in Theravada society, namely the "reciprocal interaction between the laity and the sangha or monastic order", by which the primary Buddhist virtue of giving could be expressed and cultivated and which would lead as a consequence to improved karma with its rewards. This also implied that neglect of almsgiving could be disastrous to one's future. The monks, on the other hand, were expected to justify the alms given to them by adhering to the 227 rules formally governing their behaviour in the Vinaya Pitaka. However, the obligations of the monks to the laity extended well beyond this and included an important teaching role and even secular community services as well.

The origins of Mahayana are obscure. Its formative years were from the second century B.C.E. to the first century C.E. As Buddhism developed in the early years after the Buddha's death conflicting interpretations of the master's teachings appeared. The early classic schools were accused of being too fundamentalist and too literal in their attachment to Buddha's message. While the more conservative monks continued to honour the Buddha as a perfectly enlightened human teacher, a liberal group called the Mahasanghikas, broke away in 383 B.C.E. and developed a new concept of the Buddha. They considered that the Buddha was an eternal being who is always with us (like the Christian idea of Christ). They speculated that the human Buddha was but an apparition of this transcendental Buddha who was created for the benefit of humankind in all ages. Such thinking became the prototype of Mahayana philosophy. Speculation about the eternal Buddha continued well after the beginning of the Christian era and culminated in the Mahayana doctrine of his threefold nature or trikaya, (1) The Body of Essence, his spiritual body, unchanging, without form, spoken of as consciousness; (2) The Body of Communal Bliss, his heavenly body, sitting in godlike splendour, preaching in the heavens; and (3) The Body of Transformation, where he is transformed into human form to convert mankind. The Buddha has taken on this human form many times, the historical Buddha, Siddhartha Gautama, being only one example of the transformation. The new Mahayana concept of the Buddha made possible concepts of divine grace and ongoing revelation that are lacking in Theravada. However, belief in the Buddha's heavenly manifestations led to some development of actual "worship" in Mahayana.

Another new concept in Mahayana was that of the bodhisattva. This is the term given to a saintly person who has attained enlightenment but delays entry into nirvana in order to make possible the salvation of others. The bodhisattva whose key attributes are compassion and loving-kindness transfers merit built up over many lifetimes to less fortunate creatures. Some bodhisattvas have even become objects of devotion in Mahayana.

After the death of the Buddha, several major councils between 480 B.C.E and 100 C.E. formulated details of the continuing Buddhist religion. For several centuries the scriptural traditions were transmitted orally until written down in the first century B.C.E. to form the Buddhist canon or Tripiṭaka (meaning "three baskets") consisting of three bodies of writings: (1) the Sutra Pitaka – a collection of discourses, mainly between the Buddha and other people; (2) the Vinaya Pitaka - over 225 rules governing Buddhist monks and nuns; and (3) the Abhidharma Pitaka – seven works including detailed classifications of psychological phenomena, metaphysical analysis, and a technical thesaurus. The complete canon, now much expanded, also exists in Tibetan and Chinese versions.
Theravada Buddhists have traditionally considered the Tripitaka to be the remembered words of Siddhartha Gautama. Mahayana Buddhists have never bound themselves to any canon of scriptures. A number of different scriptures have been important to Mahayana at different times.

[Ref.53:Vol.2:499 et seq.; 46:61-111] (See also "Zen or Chan Buddhism in China", 520 C.E. below).

500 B.C.E. to 200 C.E.

Religious Adaptation to Urbanization.

William McNeill [Ref.33:334-354] suggests that between 500 B.C.E. and 200 C.E. cultural borrowings across civilisations did not result in mechanical copying but rather in a "metamorphosis", as alien ideas were incorporated into new cultural environments. Often, through the symbiosis, meanings and values emerged that were different from those of the original place of origin. This occurred at a time when large numbers of people gathered together from many diverse regions and cultural backgrounds. By 200 C.E., Hinduism, Mahayana Buddhism and Christianity were adjusting to meet the psychological needs of human beings as they met the anonymity and indifference of urbanisation. Because of the increased feeling of isolation which they felt in these greatly expanded communities, people turned to religion for support and the provision of a personal saviour.

551-479 B.C.E.

Confucius and Confucianism.

The life of Confucius seems, at least to the Westerner, one of the great enigmas of history. He never seemed to amount to anything; considering himself a failure, and never achieved a position of importance. He appears to have been a minor government official, who lived from approximately 551 to 479 B.C.E. What little is known of his life history has been overlaid with myths created by his followers to accentuate his image. Even the name Confucius is the Latinisation of the Chinese word Kongfuzi, meaning "venerable master Kung". Nevertheless, Confucianism, the philosophy founded by Confucius, provided the distinctive and political character which dominated most of the history of imperial China.

Any student of Asia must not fail to try and understand Confucianism, because Confucianism developed during one of the most turbulent periods of Chinese history and provided the framework in which all non-Buddhist philosophical meditation and thought took place from the tenth century up to the present day. A study of Confucianism will help to explain some of the key features of Asian, and especially Chinese, culture and society. Confucianism may thus be said to have influenced the course of history by enabling the East to remain dominant in so many fields for such a long time. Paradoxically the incorrect use of Confucianism probably led to the East bogging down and falling behind the West in developing modern scientific thinking and political science. According to T'ien Ju-k'ang, Professor of History in the Fudan University, Shanghai, [Ref.35:14], "the slackened development of Chinese science and technology in modern times has its cause in the traditional bureaucratic apparatus which for over a millennium has played a negative, restrictive roll in Chinese society".

The success of Confucius as a teacher appears to have been in his quiet but steadfast belief in what he thought was the right way to go. By age sixty, not having attained to any significant office, he embarked on a teaching journey throughout China. As a result of his travels he managed to convince enough disciples (probably as many as 72) of his philosophy and they founded a school to carry on his work for posterity.
Confucius believed that his mission in life was to restore the “Way” (Dao) of the ancients by reviving the ancient values governing human feelings and integrity and restoring harmony to society by preserving the practice of the ancient rituals (or Li) which he felt were absolutely essential to maintain these values. [Ref.46:1-3]

The Analects, or Lunyu, are the main source of Confucian teachings. The general theme is one of moral conduct as the basis of social and political harmony. Confucius even shows a reluctance to define, what for him was the cardinal virtue of Ren which can be translated as “love”, or even goodness, humanity or benevolence. Above all he is concerned more than anything with human relationships and love for one’s fellow man. He also lays great store on the values of loyalty, dutifulness, filial and brotherly love, courtesy, friendship and good faith. While not claiming to be religious, Confucius stands in awe of what he refers to as “the great spirit”.

Confucius believed that it was particularly necessary for people in positions of authority, even more than the common man, to cultivate this type of character. He envisaged a social order guided by his precepts, and not by inherited power. He believed in a social conscience as well as a private one. He encouraged cultural activities and especially history, political science, sociology, music and etiquette. He believed in the continuing education of the individual, the family, the community and the nation, in the cardinal virtues of humanity, justice, courtesy and wisdom. Humanity, or humaneness, was defined by him as to “love people”. Justice, he defined as “duty”. Confucius felt that rulers who put on a pretence of justice and duty, but who were really motivated by profit and greed, were destroying the fabric of society. Unfortunately Confucius’ idea of duty was often used by later rulers as a means of subjecting people to a dictatorship, something abhorrent to Confucius himself. The virtue of Courtesy was regarded by him as an indication of national morality. Etiquette was based on deference, not just the ritual, but the “spirit” of true deference and courtesy to others. Finally Confucius emphasised education and Knowledge brought about by continually striving for mental as well as moral development. The key aim of Confucianism was “to know people”, which in its final form became Wisdom. Binding all of these cardinal virtues together was Trustworthiness. The leaders were seen to be the holders of a “trust” and would only be successful in proportion to how well individuals felt that they had maintained that trust. On the other hand, every individual must regard adherence to the cardinal virtues as a “trust”.

Many of the texts used by Confucius have become Confucian classics. Supreme among these was the Book of Odes or Shi Jing (referred to as the Shi). A thorough knowledge of the Shi was an essential part of the culture of the official class. The poems of the Shi provided the essence of allegorical references in diplomatic exchanges between states.

During the Han dynasty (202 B.C.E.-220 C.E.), Confucianism became the orthodox state ideology primarily to satisfy the growing scholarly class in society. A version of Confucianism based on a belief in the supernatural was preached by Dong Zhongshu (179-104 B.C.E.) who became adviser to the emperor. “Subject the people to the ruler, and subject the ruler to Heaven”, declared Dong [Ref.37-303]. However, in exchange for their assistance in controlling the people, the Confucian advisers expected the emperor to accept not only their counsel but also their rebukes. In 59 C.E., the Han emperor virtually canonised Confucius, by decreeing that sacrifice should be made to Confucius in schools throughout the empire, a practice continued to some extent until modern times. To top this off, the Tang emperors in the seventh century even established temples to Confucius, some of which existed until the present century. Like other great teachers in
history (e.g. Jesus), Confucius was deified and his original simple powerful message became overwhelmed by the interpretations of later lesser men with their own agendas.

Mencius (370-290 B.C.E.), whose doctrine of Confucian philosophy became accepted as the orthodox version from the Song dynasty (420-479 C.E.) onwards, set forth two theories which became central to Confucian thought [Ref.46:167-173]:

a) The “Mandate of Heaven” which in essence asserts that as long a sovereign rules well he enjoys the Mandate of Heaven but should he rule badly he forfeits the mandate and then it becomes legitimate for the people to overthrow him and install another sovereign in his place.

b) All human beings have a predisposition to goodness.

From the fifth to eleventh centuries, Confucianism was to a large extent eclipsed by Mahayana Buddhism and to a lesser extent by Taoism, in the minds of the ruling elite. However, during the eleventh and twelfth centuries Confucianism underwent a revival and readjustment and its reinterpretation became known a Neo-Confucianism. [Ref.37:301-304; 43:1-6; 109:7-19; 46:145-166] (Refer also the Snapshot under the heading “Neo-Confucianism” in the eleventh century below).

Chuang Tzu Taoism.

Roger Eastman [Ref.40:261] explains, “Chuang Tzu is used to refer to the book by that title or the man, but of the man nothing is known except that he was a contemporary of Mencius [see Confucianism above] in the fourth century B.C.E. Chuang Tzu was not the author of the book (which probably dates from the third century B.C.E.) but it bears his name because he was the subject of and inspiration for many of its stories. The Chuang Tzu pursues further the mystical themes of the Tao te Ching... (But) the Chuang Tzu Taoist is a delightfully light-hearted non-conformist who finds his free and easy way in the Way of Nature and who laughs at pomp and circumstance and other foolishness”. Zen Buddhism in China owed much to Taoism in general and to Chuang Tzu in particular.

Confucianism and Taoism Compared.

Confucianism and Taoism can be regarded as the yang and yin of Chinese personality. They are complimentary in Chinese culture, they are not rival religions. They are, as Watson has written (1964), “complementary ethical and political doctrines for the conduct of public and family life and a mystical philosophy for the spiritual nourishment of the individual. Every Chinese, if tutored at all, cannot help being Confucian, more or less and every Chinese is likewise a Taoist”. Whilst Taoism and Confucianism represent contrasting views of life, the two are nevertheless compatible. Confucianism is a practical, prosaic affair in which society is strictly governed by accepted rules and expressed through a code of decorum. By contrast, Taoism represents a spirit of freedom, including the freedom to behave as one pleases irrespective of what society may say. [Ref.40:267; 37:296]


The Vedas, Brahmanas and Upanishads were often abstract and too difficult for the masses to understand. Gradually a body of literature developed that included the Epics, Puranas, Smiriti and Tantra, which illustrated the main messages in a simpler way.
The most popular epics were the *Ramayana* and the *Mahabharata*. The latter contains the most widely read literature of Hinduism: the *Bhagavad Gita* or *Gita*. These have been recited for centuries by trained story-tellers, and have had such an effect on high and low classes alike, that they have become part of the universal psyche of the Hindus. [Ref.30:22-27; 50:7-8; 46:15-51]

**Hinduism: The Trinity.**

Hinduism had little historical wisdom to guide it and no founder. In the beginning there was no idea of a single Supreme Being or god-head. The concept of the Hindu Trinity or *Trimurti* arose during the late *Vedic* period. In the *Puranas*, auxiliary scriptures written to popularise the message of the *Vedas* and the *Upnishads*, the concept of the Hindu Trinity became stabilised. In it there were three manifestations of *Brahman*, the Supreme Being. These three deities were *Brahma* the creator; *Vishnu* the preserver; and *Shiva* the destroyer. The Lord God operates in these three forms as *Brahma*, God creates the world and humankind; as *Vishnu*, the spirit of God comes down to earth in human form to teach people the laws of life and guide them in ways to purify themselves when in need of help, and as *Shiva*, God destroys old rituals and forms to prepare for new ideas and developments in human behaviour. [Ref.53:Vol.6:348-349; 50:5-6; 8:11-15] (Hinduism is continued below, see 320 C.E.)

**Christianity in India.**

Stephen C. Neill [Ref.53:Vol.3:422], writes: "A number of scholars support the view that churches did exist in India not later than the second century, but even the most skeptical accept a date in the fourth century as almost certain". Over the centuries the Christian Church in India received its Bishops from Mesopotamia and maintained its uniqueness by keeping Syriac as the language of worship. When the West finally arrived in India in 1498 in the person of the Portuguese navigators, the Church was still flourishing in southwestern India and was accepted and respected in Indian society. It did not, however, try to convert the rest of the population.

After the Portuguese occupied Goa in 1510, preference was given to Christians in commercial transactions and this may have been the main motivation for people to join the Church. By the end of the sixteenth century the great majority of the population in the Portuguese territories had embraced the Roman Catholic religion. In 1599 the local Christians were persuaded to renounce the authority of the Patriarch of Baghdad and to accept the authority of the Patriarch of Rome. Half a century later about a third of these Christians rebelled against the autocracy of the Jesuits and set up their own Syriac Church which still exists.

Protestant churches began to make an impact in India from 1706, commencing in the small Danish territory of Tranquebar. One of their most effective missionaries was Christian Friedrich Schwartz who served from 1750 to 1798, leaving a permanent impression on both the Europeans and the Indians.

In 1758, the British Government took over rule in India and in the following half century, due to the work of Christians from many nations, Christianity spread to almost every corner of India. This resulted in a large educated and professional Christian middle class which paved the way for independent Indian churches. At the same time the underprivileged lower castes, seeing no hope under Hinduism, tried to move into the Christian churches. Such initiatives did not please the middle class at all. Similarly many of the aboriginal peoples, not wishing to become incorporated into the Hindu caste
system, joined the Christian churches.

The first local Anglican bishop was consecrated in 1912, followed in 1923 by a Roman Catholic bishop, and finally a cardinal in 1953.

Christian teaching has had an influence on Indian ethical thought well beyond the proportion of Christians in the population might suggest. Even Mahatma Gandhi acknowledged that he had been influenced by the teachings of Christ more than any other in his non-violent fight for independence and for the rights of the "untouchables".

Following independence in 1947, no Christian missionaries were displaced. However, although the new constitution supported religious freedom, Christians found life less privileged than before. Later, when Pakistan broke off as a separate Muslim state, Christians in that area became a minority religion with little influence. [Ref.53, Vol.3:423]

Hinduism: Classical, Medieval and later.

Under the Gupta Empire, around 320-480 C.E., when most of northern India was under a single power, classical Hinduism became stabilised but not static, the great temples began to be built and the myths and rituals were preserved in the Puranas.

In the post-Gupta period, we see the beginning of the rise of diverse devotional movements and changes initiated by different gurus over many centuries that resulted in many sects which are still active in India and other countries, such as the United States, today. [Ref.53: Vol.6:347 et seq.; 50:9] (Continued, see nineteenth century below).

520 C.E.

Zen or Chan Buddhism in China.

Zen and Chan are the Japanese and Chinese ways of pronouncing the Sanskrit term dhyana. Dhyana designates the state of consciousness of a Buddha whose mind has renounced the assumption that the individual self represents true reality. It is a state of mind, roughly equivalent to contemplation or meditation but not passive or static as these words might suggest.

This distinctively Chinese type of Buddhism, usually referred to by Westerners as Zen, developed in China about 520 C.E. from a fusion of Chinese Taoism (q.v.) with a form of Mahayana Buddhism introduced from India by the monk, Bodhidharma. Zen is the Chinese way of accomplishing the Buddhist goal of seeing the world "just as it is" but without any avaricious thoughts or feelings. Unlike other forms of Buddhism, Zen holds that this freedom of thought cannot be achieved by continual practice or theorising but must come from direct or immediate insight. Zen students prepare themselves by sitting in meditation while they simply observe, without mental comment, whatever may be happening.

Zen's point of view is based on the direct vision of nature or action without any theorising or interpretation to interfere with this simple direct vision. Thus Zen has influenced art in Eastern Asia by concentrating on natural forms such as birds, rocks, mountains and such like, presented purely as images, using a maximum of technique combined with a minimum of composition or planning. Thus Zen is not committed to any system of doctrine or belief and is very close to the original teaching of Gautama Buddha that the mind and feelings frustrate their own proper functioning when they cling to the world of experience which can initiate feelings of worldly or grasping desire that lead to
suffering.

Zen is normally studied in semi-monastic communities where lay people are admitted for limited periods. These schools combine meditation with manual labour. Special attention is given to arts and crafts, calligraphy, architecture, gardening and ceremonial tea drinking.

The two main sects of Zen are Soto Zen and Rinzai Zen. Soto Zen emphasises the discipline of sitting in meditation, while Rinzai Zen relies on dialogues with a master. [Ref.70:Vol.1:178 et seq.]

From 538 C.E.

Buddhism in Japan.

The official date for the entry of Buddhism into Japan was 538 C.E. [Ref.70:Vol.1:178]. In the Nara period (710-794), Buddhism became the state religion of Japan. At least six major sects developed but they mainly had an intellectual appeal for the learned and aristocratic classes. The two main sects of Zen Buddhism (described above under "Zen Buddhism in China") were introduced into Japan by Japanese monks who had studied in China: Rinzai Zen (1191) and Soto Zen (1227). These were favoured by the dominant military class and both sects continue to flourish today alongside several other sects.

Outstanding Japanese painters have elegantly expressed the Zen view of nature in their works. Another manifestation of Zen has been the high level of refinement the tea ceremony has reached in Japan. Also, a distinctive form of brief verse poetry called "haiku" was developed. In the monasteries, the Japanese added archery, fencing and jujitsu to the other arts learnt from the Buddhist monks in China.

Japanese Buddhism has several uniquely Japanese characteristics [Ref.70:Vol.1:179]. Whereas Indian and Chinese Buddhism tend to be reclusive Japanese Buddhism is involved at all levels of society and national organisation. Japanese Buddhists tend to favour emotional and intuitive responses to Buddhism's offer of salvation rather than the creation of a rational doctrine. They tend to accept things as they are and try to equate the world around them and the individual self with the ultimate. They also show a remarkable tolerance of ancient practices of Shinto and shamanism.

Today six-sevenths of the Japanese people claim to be Buddhists.

Japanese Buddhism has also had a far-reaching effect on the expansion of the religion into Western countries such as Europe, the United States and Australia. This tendency was accelerated by the occupation of Japan after World War II by Western nations. [Ref.70:Vol.1:176-204]

7th Century C.E.

Tantric Buddhism.

By the seventh century a new form of Buddhism called Tantrism or Vajrayana had developed in northern India from a blend of Mahayana with popular folk beliefs and magic. It involved initiation into a select group and then the use of gestures and chants as an aid to meditation. It became the main form of Buddhism in Tibet (see below) and was also transmitted through China to Japan where it still practiced by the Shingon sect [Ref.53:Vol.2:138-139].

7th Century C.E.

Buddhism in Tibet.

Beginning in the seventh century C.E., Tantric Buddhism was introduced into Tibet by
foreign wives of the king and, following the arrival of an influential Indian monk in 747, became the dominant form of Buddhism in Tibet and a significant force in the local culture, especially following the expulsion of the Chinese monks a few years later. In the fourteenth century, the leaders of the great monasteries came to be regarded as reincarnations of famous bodhisattvas (saintly people in Mahayana Buddhism, as explained above). The chief among these is called the Dalai Lama who ruled Tibet as a theocracy from the seventeenth century until the Chinese seizure of the country in 1950. The Dalai Lama now lives in exile. [Ref.53:Vol.2:341,404-413]

From Christianity in Far East Asia.

The countries of Far East Asia, including China, Taiwan, Japan, Korea, Cambodia, Burma, Tibet and Thailand, have been profoundly influenced by the teachings of Confucius and Buddha. In recent centuries, Christian influence has been retarded by resentment of some of the worst aspects of European colonialism and the Western attitude of superiority demonstrated in many dealings with Asia. Thus, to a large extent, the acceptance of Christianity in the different East Asian countries has depended on the political climate at the particular time.

In 635 C.E., Nestorian Christians made their way from Iraq (Mesopotamia) as far east as western China, where they set up a Church in Ch’ang-an which lasted for about two centuries. After that, it was not until 1294 that Franciscans tried to set up a mission in Peking, hoping to convert Khubilai Khan, but their efforts were frustrated by the rapid spread of Islam through central Asia and within half a century Christianity had again failed to get a foothold. In the sixteenth century, Matteo Ricci and his colleagues, by adopting many Chinese ways and by demonstrating European astronomical and mechanical knowledge, attempted to introduce Christian teachings but were only marginally successful. In 1744, the Pope forbade any accommodation of Chinese non-Roman ways and in another fifty years this mission was virtually extinct.

The fourth missionary incursion into China, by both Catholics and Protestants, came at a most inappropriate time, following the opium wars forced on China by the West in 1840-41. Relying largely on European power and protection, missionaries penetrated almost the whole of China. However, despite all of the efforts just described, there has never been a mass Christian movement in China. [Ref.53:Vol.3:418]

One rather accidental result of Christian evangelism in China that had a retarding effect on the spread of Christianity was the Taiping Rebellion in 1850-1864. The rebellion began as a peasant revolt lead by Hung Hsiu-ch’um, a Chinese southerner, who was disgruntled at having failed more than once in the Canton examinations required to enter the Public Service bureaucracy. Hung was an unstable character who, following probable hallucinations during an illness, came to believe that he was a new Messiah, an idea he picked up by studying certain Christian tracts. He constructed his own religion based on the millitant teachings of the Old Testament rather than the teachings of Jesus. Initially the rebels had some remarkable successes but the war then dragged on for many years. Over twenty million people lost their lives, dwarfing the loss of life in the American Civil War, until finally the rebellion was suppressed by government forces. Hung’s movement was at first strongly supported by the Christian missionary groups because they thought that the whole of China might be converted to Christianity as a result. The eventual result for Christianity was the reverse, as authorities clamped down on the religion which was blamed for the disastrous conflagration. [Ref.66:158] Christian missionary effort in China and Japan was typified by “vigorous pioneering and modest results, of great effort and much frustration” [Ref.66:362].

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Following the Boxer Rebellion at the end of the nineteenth century, many young Chinese were attracted to Christianity as a source of moral support for the restoration of their country and many of these later distinguished themselves in Chinese public life [Ref.53, Vol.3:418 et seq.]. When the Communists took over in 1949, it looked like the end for Christianity but the Christian church in China is still alive and well.

In Taiwan from the eighteenth century, there has existed a Presbyterian mission which maintained popular support. During the period of Japanese colonial occupation when Christianity experienced absolute opposition, the mountain people defied their overlords by strengthening their commitment to Christianity. The defeat of the Kuomintang by the Communists on the Chinese mainland led to the invasion of Taiwan by Chiang Kai-shek in 1949 against the wishes of the local Taiwanese people. Since this time there has been a proliferation of Christian churches and sects throughout the country. For political reasons, these have often experienced strong American support.

Japan was unknown to the West until Francis Xavier and his Jesuits arrived in 1549 and managed to convert its rulers and their subjects to Christianity. Within fifty years there were approximately 300,000 converts. Then followed a dreadful period when the religion was proscribed and many Christians were martyred. After 1638, Christianity was thought to be extinct but, in 1858 when missionaries were allowed to return, they were amazed to find Christians still maintaining their faith. As in China, there has never been a popular Christian movement in Japan. Nevertheless, although the number of Christians in Japan has always been small, Christian influence has been strong. Japanese Christians generally base their religious beliefs on thoughtful conviction rather than emotion and prefer to maintain independence rather than be subject to Western control or influence. However, it has been said that Japanese churches may be a catalyst for wider developments between the growing churches of Asia and the older churches in the West.

In Korea, since World War II and especially since The Korean War, the expansion of the Christian community in South Korea has been particularly rapid. This is somewhat remarkable given that the country remained entirely closed to foreign influences until the second half of the nineteenth century. The missionaries following that period have mainly been American Protestants.

Little is known of Christian movements in communist North Korea. However, occasionally relatives, who make infrequent visits across the border, bring news of Christians practicing their religion there under extreme difficulties.

As Stephen C. Neill wrote in [Ref.53, Vol.3:421], "Buddhism, wherever it exists, has proved very resistant to Christian evangelism; Christians who are present in Buddhist countries in many cases have come from non-Buddhist peoples or communities". This applies in Thailand, Burma and Sri Lanka. In Thailand, Christianity has a small but influential presence although most of the Christians are amongst the ethnic Chinese. Similarly in Burma, Christianity has made its greatest advances amongst the sections of the populace who are neither Burmese nor Buddhist and yet have inhabited parts of the country for centuries. The first great Baptist missionary to Burma was Adoniram Judson (1788-1850), who became a Burmese scholar and translated the Bible into Burmese but suffered dreadful persecution during his evangelism. Baptists still represent the majority of Christians in that country. When Burma declared its independence from Britain in 1947, Buddhism was declared the national religion. Recent restrictions by the military on residence by foreigners has led to the withdrawal of Christian workers from Burma and left the local churches to fend for themselves. In Sri Lanka, the politically powerful
Buddhists have endeavoured to make the country a Buddhist nation but are opposed by people, such as the Tamils, who include a good many Christians. During the Portuguese period, many Sri Lankans became Roman Catholics and, under the Dutch, Protestantism gained a strong foothold. Under the British, a large number of Protestants reverted to Roman Catholicism which now embraces about eighty percent of Christians on the island. Stephen C. Neill (1987) was impressed by the excellence of the scholarship amongst the Buddhist teachers in Sri Lanka and considered that inter-religious dialogue was perhaps more active here than in any other part of the world.

In the seventeenth and eighteenth centuries, Roman Catholic missionaries achieved a high number of converts in Vietnam. When the Marxists took over in North Vietnam many Christians fled to the south. When the south collapsed at the end of the Vietnam war, Christians had the stark alternatives of embracing Communism or again becoming refugees.

Cambodia was singularly neglected by missionaries and consequently the Christian community is very small with Buddhism remaining the main religion.

Indonesia is the largest Muslim country in the world but it is also the only country in the world in which there is a steady drift of Muslims into the Christian Church. One reason suggested by Stephen C. Neill is the reaction by many present day Muslims against the vengeance taken by some Muslims in the Indonesian community against suspected Communists at the time of the attempted Communist coup in 1965. The Dutch, during their rule, carried out much successful missionary work but current Indonesian government controls have made the emergence of a strong indigenous Christian movement impossible.

The only predominantly Christian nation in Asia is the Philippine Republic. As a result of three centuries of Spanish rule from 1538, Roman Catholicism became the dominant religion with the Muslims forming only a small minority. Although remaining staunchly Roman Catholic after the Americans took over in 1898, there was resistance to the rigidity of Catholicism and this fact, aided by the arrival of American Protestant missionaries, led to the founding of the Philippine Independent Church which has close links with the American Episcopal Church and claims up to three million members. However, recent history has seen closer cooperation between the various Christian denominations in the Philippines. [Ref:53:Vol 3:418 et seq.; 66:158,362]

10th Century C.E.

Zoroastrianism in India.

The Parsis and their importance in India: refer portrait No.5. [Ref:65:81]

11th Century C.E.

Neo-Confucianism.

In the eleventh century in China, a determined effort was made to renew, revitalise and reassert which had faced philosophical infiltration and challenges from Buddhism. Ian McMorran of Oxford University, writing in *The Cambridge Encyclopedia of China* [Ref:37:304], concludes that “the Neo-Confucian movement was characterised by a reaffirmation and a revitalisation of classical Confucian ethics, the advocacy of political and social reforms, a new historical consciousness, and a heightened awareness of the political role of the bureaucracy and its moral responsibilities”.

The Neo-Confucians of the eleventh and twelfth centuries incorporated Buddhist and Taoist concerns about the metaphysical world into their framework. Their hope was to
capture the original vision of Confucius but in ways that were compatible with other philosophies prevalent during the time. Eventually the Neo-Confucianists de-emphasised those concerns that were not part of Confucian thought, particularly scientific priorities, and returned to the stress on historical scholarship and its political institutions both past and present. In the revitalisation of classical Confucian ethics, science was downgraded.

Neo-Confucianism tended to take one of two philosophical directions. The first of these was The Rationalist School. This followed the interpretations of Cheng Yi (1033-1107) and Zhu Xi (1130-1200) who sought the unifying principle or li (identified with the Way) which they believed was inherent as both a natural phenomenon and a moral principle in the external world around them. This belief inspired re-examination of the great Confucian classics and initiated a renewed interest in historical scholarship and in past and present political institutions. The Confucian bureaucracy saw its political role as a "contemporary counterpart to that of Confucius and Mencius, providing the moral counsel and the check on the ruler’s actions necessary to good government [Ref.37:304]. In effect, Neo-Confucianism became the accepted ideology of the powerful scholar-official class. The examination system, which came to control all official appointments in China, reinforced this trend and, from 1315, the philosophical doctrines of the Rationalist School were officially recognised as the assessment procedures of civil service candidates. The doctrines were extremely conservative and paternalistic. The individual’s duty and fulfilment lay in harmonious conformity with, and honest service of the pyramidal socio-political structure over which the emperor presided [Ref.37:304].

The second branch of Neo-Confucianism, known as The School of Mind, stressed that the one “great principle” lay in oneself and was similar to Mencius’ principle that “all men have an innate predisposition to goodness”. Lu Xiangshan (1139-1192), the leading exponent of this school proclaimed “The universe is my mind and my mind is the universe” [Ref.37:304]. The doctrines of this school were developed further by several great thinkers and culminated in the work of Wang Yangming (1472-1529). Wang endorsed the teachings of Lu but emphasised that they should not mean “a retreat into quiescent subjectivity”. He emphasised that effort was essential in the development of one’s innate moral wisdom and taught the unity of knowledge and action “conceived of as one process beginning with intention and only completed in the realisation of that intention” [Ref.37:304].

Before European philosophical ideas were introduced into China, sages in China had adopted an intermediate position between the teachings of the two abovementioned schools. However, by the end of the Qing dynasty in 1911, scholars such as Tan Sitong (1865-1898) and Kang Youwei (1858-1927) were trying to adapt Confucianism to fit in with the new foreign religious and philosophical ideas.

From 16th Century C.E. Buddhism in the Modern World.

European colonialism and imperialism, beginning in the sixteenth century, initiated events which both challenged and threatened traditional Buddhist cultural patterns. New patterns emerged which linked individual Buddhist societies to a global community and opened up channels for dialogue with the West. The events that accelerated this process included the arrival of Christian missionaries who presented themselves in Buddhist communities with their Bibles, printing presses, schools and crusading zeal. Colonialism in various degrees was imposed, sometimes as a full takeover (e.g. Sri Lanka, Burma and Indo-china) and sometimes as partial control (e.g. Thailand, China and Japan). With Christianity’s presence came the acceptance of Western-style ideologies of capitalism and communism, the latter probably posing the greater threat. Some Buddhist communities
attempted to isolate themselves while others borrowed methods from the Christians themselves such as the printing press, schools and ideological militancy. Some Buddhist communities, as in Tibet, now face extinction. Other communities, challenged by the new ideas, moved to respond with more mature reflection and development of Buddhist doctrine to emphasise the Buddha's humanity and rational approach to the problem of human suffering. The reorientation now stresses the relevance of Buddha's teachings to modern social and ethical issues. As modern technology and transport have seen improved communication and visitation between various sections of the Buddhist world there has been an engagement with fundamental issues which has resulted in a contribution to the East/West dialogue that has had a profound influence on global thinking. Some Buddhist apologists suggest that since Buddhism is a non-theistic religion it could become a basis for world peace and unity. Soka Gakkai, a Japanese "new religion", stemming from Nichiren Buddhism, presents Buddhism as the 'Third Civilisation' which can overcome the opposition of idealism and materialism and, when applied to the economy, bring about a synthesis of capitalism and socialism. Nevertheless, there is also a view that "Buddhism as a whole has not yet developed a distinctive character in the modern period [Ref.53;Vol.2:349]."

A modern Buddhist, D.Wijewardena [Ref.53;Vol.2:350], contends that "Buddhists must pursue 'not a will-o'-the-wisp' Nirvana secluded in the cells of their monasteries but a Nirvana attained here and now by a life of self-forgetful activity". Buddhist doctrine is subject to development and what is emerging is an ideal of international understanding and tolerance through serious conversation with other complex doctrines.

J.J.Clarke explains in *Oriental Enlightenment* [Ref.75:181-209], that Buddhist engagement with the West was forced on Asia by the West which sought to control religious thought based on Christianity. However, the resultant encounter exerted a profound influence on both Eastern and Western thought. The entry of Buddhist ideas into European consciousness built bridges with the West as Western scholars sought to know more about Buddhism and were surprised by the sophistication of the Buddhist religion and learned Sanskrit to read the source documents.

Debate about beliefs and practices provided an avenue of dialogue with people who possessed an alternate world view. The Buddhist response to its engagement with the West was to further mature its doctrine to emphasise an ideal of international understanding, tolerance and serious conversation with other complex and rich doctrines, in an atmosphere of cultural pluralism that reoriented it to exhibit a global consciousness. [Ref.53:Vol.2:334-350; 75:181-209] (See also "Buddhism in the West" in *portrait No.8*.)

**Hinduism in the Nineteenth and Twentieth Centuries.**

In the nineteenth century, reformers attempted to reconcile traditional Hinduism with the social reforms and political ideals of the day. Nationalist leaders in the late nineteenth and twentieth centuries drew from Hinduism the elements that best suited their political and social aims. For example, Mahatma Gandhi used *ahisma* (non-violence) in his campaign against untouchability and to bring about the withdrawal of the British from India. In more recent times, considerable numbers of Europeans and Americans have been inspired by religious gurus of Hindu origin. Sects such as Hare Krishna claim to base themselves on Hindu practice.

In India itself, Hinduism sustained the nation through centuries of foreign occupation and internal disruption and continues to serve a vital function as it changes to suit the current situation in the country. As S. Radhakrishnan wrote [Ref.46:3], "Hinduism is a
movement, not a position; a process, not a result; a growing tradition, not a revelation". [Ref.46:3-14; 53:Vol.6:356-359; 50:3]

The Hindu View of Life.

To the average Western mind, Hinduism is extremely complex and difficult to understand. As the noted scholar S. Radhakrishnan explains: "Indian philosophy has an extremely long and complex development, and probably a longer history of continuous development than any other philosophical tradition. Accordingly, it is very difficult to cite any specific doctrines or methods as characteristic of Indian philosophy as a whole" [Ref.46:3].

The central focus of Indian philosophy is spiritual and believes in the intimate relationship between philosophy and life and this makes the practical application of philosophy to life possible. Thus it is not enough to know the truth, the truth must be lived. Philosophy is thought of as knowledge of self. Physical science was never considered the road to ultimate truth. Rather, truth is to be sought and found within oneself. Intuition is accepted as the only method through which the ultimate truth can be known. Reason is not useless or fallacious but it is insufficient. "One does not merely know the truth in Indian philosophy, one realises it...the most apt word is to see" [Ref.46:11]. The practice of Yoga is a means of achieving these difficult spiritual ends. Yoga refers to various methods of self-discipline, training, meditation, devotion and concentration that are designed to lead one to a realisation of or contact with the Divine. In Indian philosophy there is also a long tradition of the acceptance of "authority"; i.e. reference is made to precedent, so much so that basic tenets refer back as far as the ancient seers. This reverence for authority has provided continuity of thought over a very long period and made philosophy so significant in Indian life. In India, a tradition as old as the Rig Veda exists in which the sages realised that true religion contains and understands all religion and accepts that "God" is one but is called by many names across diverse cultures. In Indian philosophy, religion and philosophy, knowledge and conduct and humans and nature all converge and are harmoniously synthesised [Ref 46:3-14].

Shinto.

Shinto is the indigenous religion of Japan. It has been influenced by external religions such as Buddhism and Taoism but it has never actually succumbed to any of these influences and indeed has modified them for its own ends. Yet Shinto has not gained a following outside Japan.

The word shinto is written with two characters: shin meaning "kami", and to meaning "way". Thus shinto means "the way of the kami". To has virtually the same meaning as tao in the Chinese religion of Taoism, i.e. the true way. The word kami refers to a "divinity". The Shinto pantheon of divinities comprises what tradition calls "the eight-hundred myriads of divinities". The presence of these kami is overwhelming and pervades all aspects of life because natural objects, such as the sun, wind, moon, mountains, trees and so on, are all kami and also because certain kami specialise in overseeing human activities and may dwell in man-made objects such as a sword or a mirror. Some kami are sanctified ancestors or great persons. For example, the emperors have been regarded as divine. Each kami has a tama, which means life-force or spirit. During the medieval period there was even speculation regarding an ultimate kami at the head of the pantheon, although at the same time, it began to be thought that the true abode of the kami was internal, in the heart-mind. Shinto's many facets are extremely complex and may involve individuals, families, communities, clans or even the nation as a
whole. There are many beautiful Shinto shrines throughout Japan that are all rated according to their power and fame. Shinto can especially be termed a religion of ceremony. Shinto ceremonies involve a huge range of activities governed by rules developed over many years. The activities include processions, wrestling, dancing, music, the sale of lucky charms and many more. However, the two rituals that dominate are food offerings and purification. Shinto has also developed its own architecture, literature, poetry, painting and other forms of art. It has no founder, no revelations, no official dogma and no sacred scriptures. Consequently, Shinto relies on elaborate rites, believing that the continuance of rites in their original form make manifest the power and dignity of the gods.

The beginnings of Shinto are lost in antiquity but there is some evidence that in its initial form it was closely involved with the worship of fertility gods.

In Japan, the period c.300-700 C.E. was marked by heavy Korean influence on Shintoism while the introduction of Confucianism and the yin-yang philosophy from China were also to have lasting effects.

From around 540 C.E., the influence of Shinto on the Japanese people was eroded by Buddhism which began to infiltrate the upper classes. Although Buddhism spread slowly to the lower echelons of society, it encountered opposition from firmly entrenched local divine figures who were intricately connected with everyday life and who defied dislocation. Consequently, Buddhism had to co-exist with Shinto and interacted with it at all social levels to provide a new unifying force. This Shinto-Buddhist syncretism, the mutual recognition of each other’s tenets and practices, was to be the dominant religious factor in Japan during the following centuries and resulted in many cults, schools, the construction of many shrines during the medieval period and the production of a vast syncretic literature. This syncretism remained grounded in the activities of the many local communities thereby retaining original Shinto characteristics.

One theory introduced by Buddhism was that the Shinto kami were manifestations of members of the Buddhist pantheon and consequently worshipping a kami was equivalent to worshipping a Buddha in its kami form. However, some of the later Japanese religious schools taught that Shinto was the basis of absolutely everything including Confucianism, Taoism and Buddhism. This heralded a complete reaction against Buddhism and, in the Edo period (1600-1868), there was a dramatic shift of Shinto away from Buddhism with a rekindling of interest in the national tradition and a redefining of Japanese identity. Neo-Confucianism tended to replace Buddhism as the major outside influence. This was more so in the national or political sphere rather than in the local communities where the ancient Shinto rites and ceremonies were still revered. The culmination of support for Neo-Confucianism instead of Buddhism came under the Meiji government (1868-1912) and its policy of separating Shinto and Buddhism to reinforce the Shinto-based divine status of the emperor. The Confucian influence was seen as supporting the imperial institution, the rituals connected with the imperial family and the welfare of the state itself. As such it also tended to legitimise the authority of the leading class. Two books, the Kojiki (composed in 712 C.E.) and Nihon shoki (720 C.E.), expressed the myths that characterised the origins and history of Japan and were used as part of this legitimisation process and in defining the national identity. The nation turned to these books in times of international threat or other national crisis. By the time of World War II, the religion was divided into State Shinto, Shrine Shinto and Sect Shinto. After Japan’s defeat in the war, State Shinto was dismantled and certain other rites modified or banned because they were unacceptable in Japan’s new post-war pacifist constitution.
Although many homes throughout Japan have family altars or "god-shelves", on which are placed small offerings to the kami, the number of homes using them is declining. It therefore remains to be seen what will be the future of the ancient Shinto religion in a Japan that is changing and rapidly modernising. "The increasing mobility of society, the movement away from the villages and into the big cities, industrialisation, and fundamental social changes are now confronting Shinto with what may be its biggest challenge yet" [Ref.70:Vol.7:129]. [Ref.70:Vol.7:125-132]
PORTRAIT No. 3

EAST and SOUTH ASIA: Science and Technology (including mathematics and astronomy)

14th Century B.C.E.

The Decimal System.

The decimal system, now fundamental to modern science, certainly came to the West from East and South Asia. A.L. Basham, in his history of India [Ref.80:485], makes the statement, "India has conferred many blessings on the world at large, most important of all, the decimal system of numeral notation, the invention of an unknown Indian mathematician early in the Christian era". He does not, however, provide any convincing evidence to support this, whereas Dr. Joseph Needham in his monumental "History of Science and Civilisation in China" [Ref.24:Vol.III:82-90] gives a very detailed and scholarly treatment of the subject and his investigation concludes that: "the use of the decimal notation was extremely ancient among the Chinese, going back to the 14th century B.C.E. In this they were unique among early civilisations. But the little symbol [the decimal point] which alone permitted its revolutionising all mathematical computations had to await the Renaissance in the West" [Ref.24:Vol.III:89]. See also [Ref.23:57,61; 36:142].

Basham [Ref.80:496] is probably correct when he says that for a long time Europeans thought the decimal system was invented by the Arabs but that this is not the case. The Arabs referred to mathematics as hindisat, meaning "the Indian art", and there is now no doubt that the Arabs of Islam learnt a good deal about mathematics from India including, probably, decimal notation. The Western world, which learnt most of its mathematics from Islam, therefore also owes a great debt to India. However this does not prove that the decimal system was actually invented in India.

13th Century B.C.E.

Chinese Lacquer - The First Use of Plastics.

Most Westerners these days are familiar with beautiful Chinese lacquerware. Lacquer is obtained by tapping the indigenous Chinese lacquer tree (Rhus Verniciflua). The remarkable thing is that as long ago as the thirteenth century B.C.E., the Chinese discovered the properties of this natural plastic which is not only beautiful and easily worked but, when set, will withstand cooking temperatures of 400-500 degrees Fahrenheit; is acid and alkali proof, resists bacteria and is not attacked by most solvents including water.

Wood, bamboo, cloth and other materials were formed into the required shape and coated with up to one hundred layers of lacquer which was then allowed to set. Often the object was carved or inlaid with precious metals or tortoiseshell. Lacquer objects were frequently used instead of bronze and were valued more highly. It was used for making every conceivable type of object, including cooking and eating utensils, shoes, parts of weapons, chairs, coffins, thrones and many more.

The modern synthetic lacquer industry began with bakelite in 1907, but was preceded by
highly inflammable plastic celluloid invented in 1869. Prior to that, Western manufacturers did not realise the advantages of plastics over metals for many applications. Even today, when innumerable products are made from plastics, many of them do not even measure up to the properties of Chinese lacquer. [Ref.36:75; 23:202-212]

From 1300 B.C.E. Chinese Observations of Novae and Supernovae.

Cataclysmic stellar explosions called novae (or if exceptionally bright, supernovae) occur when a star is born. The earliest records found of these occurrences, engraved on Chinese oracle bones, date from 1300 B.C.E. and are followed by many later recordings. Supernovae occur on average about every 100 to 200 years. Perhaps the most famous one, in 1054 C.E., which produced the famous Crab Nebula, was probably only recorded by the Chinese. From their records it appears to have been several hundred million times brighter than our sun. Chinese records of these events are invaluable to present day scientists in the study of the origin of the cosmos. Western records up to the sixteenth century C.E. are practically non-existent due to the pervasiveness of the European and Arabian idea that the heavens are perfect and cannot change - a view not shared by the Chinese. It was not until Tycho Brahe in 1572 C.E., proved that the supernova of that year occurred far beyond the moon that Europeans became aware of the value of such observations. Tycho's conclusion about the event was of enormous importance to world science and from then on Chinese records became indispensable to later scientists in studying the birth of stars. [Ref.2B:204; 23:5-13]

From 13th Century B.C.E. Meteorological Records from China.

Although early Chinese meteorology never rose beyond popular weather lore, this fact is not a matter for criticism because meteorology remained at a similarly unsophisticated level in the West even up until the time of the Renaissance in the fifteenth century C.E. However, as with so many other phenomena, the Chinese were systematic and accurate recorders. The meteorological phenomena covered in their records included winds, floods, droughts and especially tides which the Chinese understood much better than people in the Mediterranean nations where the tides were so much lower and of less consequence than in China. [Ref.2B:222 et seq]

From 13th Century B.C.E. Place Value in Mathematics.

Place value in mathematics refers to the fact that a numeral such as "1" may mean 1, 10, 100, 1000 and so on depending on its place in a number.

The first record of the use of place value in China was in the Shang numeral system in the thirteenth century B.C.E. It was more advanced than contemporary numeral systems in Babylon or Egypt because only the Shang were able to express any number, however large, using no more than nine numerals and a counting board, a system that represented a huge advance in mathematical thinking. The West had to wait for Arabic numerals to arrive from Western Asia two thousand years later before they could express similar numbers in similar place value terms. [Ref.2B:5; 23:57-65]

From 1300 B.C.E. Early Geography in China.

The earliest geography in China covered the development of useful statistical publications from lists of accurate observations. Some examples of this work are: publications based on the meteorological records, mentioned above, from 1300 B.C.E.; a survey of the
resources and products of all the different Chinese provinces from the fifth century B.C.E.; and the world’s first census from 2 B.C.E.

According to Joseph Needham [Ref.24:Vol.III:500], the earliest known, truly geographical work that has come down to us is the Yu Kung chapter of the the Shu Ching, the ancient Chinese classic of the fifth century B.C.E. This chapter was essentially a physical geography of the Chou empire and was approximately contemporary with the earliest map making in the West. However, Needham [Ref.24:Vol.III:503] concludes that the Chinese document was “much more detailed and elaborate” than any geographical record that has come down to us from the West at that time and “throughout Chinese history the influence of the Yu Kung was enormous; all Chinese geographers worked under its aegis, drew the titles of their books from it, and tried unceasingly to reconstruct the topography which it contained”.

The Shang Hai Ching (“Classic of Mountains and Rivers”), published in China in about the fourth century B.C.E., is probably the earliest “travel guide” in the world.

Scientific geographical studies were also carried out on natural processes. For example, the Chinese had studied and understood the hydrological cycle by about the fourth century B.C.E. and by 1070 C.E., about the time Avicenna, the Muslim geographer in Arabia was recording his research on the erosion of mountains by water, the Chinese scholar, Shen Kua, was presenting the same ideas in China. [Ref.2B:238; 73:54; 23:21-23]

The diversity of early Chinese geographical writings is shown in Joseph Needham’s classification of them into the following eight categories [Ref.24:Vol.III:508]:

1) The study of people – human geography,
2) Descriptions of Chinese regions,
3) Literature describing countries foreign to China of which an enormous volume still survives despite so much having been lost,
4) Numerous accounts of travels,
5) Descriptions of the Chinese coasts which were of inestimable use to ships’ captains,
6) Some 220 topographies - especially of famous places,
7) Geographical encyclopedias dating from the third century C.E.,
8) Books about no less than 137 Chinese rivers.

The books on Chinese rivers commenced with publications from the first century B.C.E. and culminated in a book of the first order of importance called Shui Ching Chu in the sixth century C.E. Needham comments that in 19th century Europe there was no comparable literature. [Ref.24:Vol.III:497-590; 23:250-257]

**From 1000 B.C.E.**

**Chinese Exploration.**

Much has been written about the discovery of Asian countries by Westerners. However, the discovery of the rest of the world, including Europe, by Chinese explorers is often overlooked in Western writings [Ref.73:57].

The earliest record of Chinese exploration is *The Travels of Emperor Mu* who ruled from 1000 to 945 B.C.E. This is as exciting as the travels of Ulysses and, although probably embellished from the imagination, records distinctly recognisable travels outside the normally known regions of China. The actual discovery of the Mediterranean civilisations in Europe and Western Asia is credited to Chang Ch’ien, a Chinese
geographer in 128 B.C.E., although Chinese traders appear to have made the discovery unofficially much earlier. Already products travelling west included stone fruits, silks and later, silkworms. Peaches originated in northwest China [Ref.23:323-324]. Sericulture spread from China to Arabia and Egypt in the seventh century C.E., to Spain in the tenth century and Italy in the eleventh century. Silk moth eggs were carried to France in the fifteenth century to begin the French silk industry which later spread to England[Ref.23:314]. By the second century C.E., goods moving east included lucerne, grapes and grapevines.

Hsuan-Tsang, a Chinese Buddhist monk, crossed the world’s highest mountains in the seventh century C.E. to reach India, where he studied for several years before returning to China with Indian Buddhist relics. In 671 C.E., another Buddhist monk, I-Ching, reached India by sea after he had stopped off in Sumatra for eight months. He brought back to China some 10,000 Sanskrit scriptures,

In 1220, Ch’ang Ch’un travelled from Cambulac (Peking) to Samarkand in Central Asia, enduring monumental difficulties, before making contact with Genghis Khan, the Mongol emperor. During the journey his secretary, Li Chih-Ch’ang made accurate and detailed records of topography, climate, clothing, diet, vegetation, birds, insects and even an eclipse. However, a much longer journey was undertaken by a Chinese Nestorian Christian monk, Rabban Bar Sauma who in 1287-88 reached Rome and finally Paris and Bordeaux. During this epic journey he met the kings of both France and England. Imagine the surprise in thirteenth century France at being ‘discovered’ by a Chinese Christian, especially when we remember that this was prior to the publication of the travels of the Italian, Marco Polo.

Probably of more scientific interest were the explorations made from the seventh century onwards to determine the sources of the great Chinese rivers.

Early Chinese mariners regularly travelled around Eastern Asia in huge, multi-masted, ocean-going junks. The greatest Chinese maritime expeditions were those of the eunuch emperor, Cheng Ho who in 1404-1433 C.E. took seven separate fleets and opened up regular trade routes with Java, Sumatra, Malaya, Ceylon, India, Taiwan, East Africa and the Red Sea coast. Cheng brought back ambassadors from more than ten countries but, just as importantly, his fleets brought back a huge variety of zoological and anthropological data which lead to the publication of the celebrated book I Yu Thu Chih (“Illustrated Record of Strange Countries”) in 1430 C.E.

In comparing the geographical achievements of East and West, Needham concludes that the Chinese had no contemporary descriptive geographers comparable with Herodotus (c.484-c.424 B.C.E.) or even Strabo (first century B.C.E.). However, in the period from the third to the thirteenth centuries, when European learning sank very low, "the Chinese were more advanced and still progressing" [Ref.24:Vol.III:512-514]. By the tenth to twelfth centuries C.E., the Arabs in Western Asia began to lay the foundations on which modern geography was built [Ref.24:Vol.III:512-514] and it was not until the Renaissance that “the West was beginning to follow the path of objective criticism which the Chinese had been treading for the previous millennium and a half”. Needham’s comments could equally be applied to scientific map making. See also [Ref.73:23].

From 720 B.C.E.

Eclipses.

Although from long experience the Chinese were able to predict eclipses like the Greeks could, they could not predict them theoretically. Consequently, one reason why the Jesuits
were welcome at the Chinese court was that they brought the new methods of eclipse prediction from Europe. Nevertheless, the practical Chinese records taken over a long period of time are invaluable to modern astronomers. In fact, thirty-seven eclipses were recorded systematically from 720 B.C.E. on. Indeed, much earlier eclipses were recorded on oracle bones: for the moon, 1361, 1347, 1328, 1311, 1304, 1217, 1137 B.C.E. and for the sun, 1217 B.C.E. [Ref. 2B:194; 23:40-44]

6th Century B.C.E.

Agriculture (China): Row Cultivation and Intensive Hoeing.

As Joseph Needham argues [Ref. 24:Vol. VI/2:581], "Until the 17th century productivity in European agriculture was severely limited by the inefficiency of ploughing, sowing and hoeing methods".

In 1731 C.E., Jethro Tull, in England, tried to persuade farmers to grow crops in rows and hoe them thoroughly. Yet as Robert Temple points out [Ref. 36:15], Tull did not know that the Chinese had been carrying out both these practices on an extensive scale since before the sixth century B.C.E. Initially the Chinese sowed seed by hand in single rows along ridges. By the first century B.C.E., they had developed the multi-tube seed drill which greatly increased the rate of sowing in rows. In association with this sowing technique, they developed intensive methods of hoeing. About the sixth century B.C.E., cast iron hoes came into general use in China as a result of the unique advances Chinese technicians made in the working of metals. By the third century B.C.E., they began using hoes made from the much more durable material called "malleable iron". A further Chinese technological advance was the use of a "swan neck" hoe that was capable of weeding around plants without damaging them. There was an old Chinese proverb: "There are three inches of moisture on the end of a hoe" [Ref. 36:15], meaning that careful hoeing conserves moisture in the soil, which was especially important in northern China where it was generally windy and dry and where the main crops were wheat and millet that, unlike rice, required dry soil cultivation.

As Needham comments [Ref. 24:Vol. VI/2:581], "The transformation of European agriculture coincided with a growing awareness among Western intellectuals of the civilisation of the Far East and of China in particular...and a great deal of specific technical information on Chinese and Southeast Asian implements, including copies of agricultural treatises, was brought back to Europe by missionaries, scientists and merchants". See also [Ref. 23:292-304].

6th Century B.C.E.

Agriculture (China): The Iron Plough.

Joseph Needham writes in [Ref. 24:Vol. VI/2:582], "The Agricultural Revolution (in Europe) probably owed one of its most fundamental elements, the efficient mould-board plough, to China...There is strong evidence to show that the modern European plough with its light frame and curved iron mould-board was directly influenced by the Chinese plough".

In Robert Temple's excellent book, China, Land of Discovery and Invention [Ref. 36:16], he writes: "Of all the advantages that China had for centuries over the rest of the world the greatest was perhaps the superiority of its ploughs. Nothing underlines the backwardness of the West more than the fact that for thousands of years millions of human beings ploughed the earth in a manner that was so inefficient, so wasteful of effort, and so utterly exhausting, that this deficiency of sensible ploughing may rank as mankind's single greatest waste of time and energy". The Chinese were the first people in the world to improve the design of ploughs and it was the eventual adoption of these Chinese plough
designs, together with the two other Chinese inventions of the row cultivation of crops and the seed drill for sowing, which were major factors in bringing about the so-called Industrial Revolution that made Europe so powerful so that it was able to exert its dominance over the rest of the world including China.

Following on from the practice of intensive hoeing, the more prosperous farmers in China adopted various types of animal-driven hoes. The first type seems to have been a kind of plough, without a mouldboard but with two sharp pointed shares, that was dragged along with the shares going on each side of the planting ridge, cutting away the weeds, deepening the irrigation furrows and further banking up the soil around the plants [Ref.36:16 et seq.].

The most basic form of plough was the ard which had a shallow ploughshare that made only a slight furrow. Pictorial representations of ards date from about the third millennium B.C.E. in Uruk (now Iraq), where they were often made entirely of wood.

Chinese writings dating from the fourteenth century B.C.E. give the earliest written descriptions of ploughing in China but triangular stone ploughshares for ards have been found in China dating from the fourth or even early fifth millennium B.C.E. Ox-drawn ards therefore appear to have been used in China from Neolithic times. Some sixteenth century B.C.E. bronze ploughshares, designed to actually turn the soil over, have been excavated in Vietnam, a region with which China had close trade contacts at that time. Most contemporary Chinese ploughshares of that era appear to have been made of wood and have not survived.

By the sixth century B.C.E., iron ploughshares became available in China. The first ones were made in the form of iron laid on a wooden base but others have been found which were made completely of solid iron. These were the first iron ploughs in the world. The shares were also attached much more securely than contemporary and even later ard shares used in the West. For example, Greek and Roman ard shares were simply tied on to the bottom of a sole plate.

Improved iron supplies and casting techniques, available in China by the third century B.C.E., led to the design of improved ploughshares called kuan. These were of advanced design with a central ridge ending in a sharp point to cut the soil and wings that sloped gently up towards the centre to throw the soil off the plough and reduce friction [Ref.36:18]. Also about this time, the Chinese began using a malleable (non-brittle) cast iron that was sturdier and longer wearing for use in agriculture. The old ard plough was therefore superseded by the kuan in most locations except where soils were very light and windy conditions demanded a very shallow furrow. The kuan ploughs made possible the working of many virgin heavy soils, reduced the numbers of animals required to pull them and enabled much heavier machines to be designed.

By the fourth century B.C.E., new sturdy frames; strong, heavy, well designed shares; new mouldboards and especially the use of an adjustable strut to precisely regulate the ploughing depth, all contributed to make Chinese ploughs greatly superior to any other plough in the world. Temple emphasises that it was like going from the bow and arrow to the gun. In Europe all through the Middle Ages the clumsy Roman type ploughs persisted. These required the ploughman to lean more or less heavily on the beam to adjust the depth of the furrow, which was a clumsy, inaccurate and exhausting task.

By the second century B.C.E., many private foundries for casting iron agricultural
implements operated all over China and by 100 C.E., large state foundries had been established by the imperial government in most provinces. This wise policy enabled even poor farmers to possess the new advanced iron ploughs. In stark contrast, during the first two centuries of their use in Europe, the early seed drills could only be afforded by the rich.

The Chinese knew that the extra weight of an iron ploughshare with a heavy mouldboard to throw the ploughed soil aside, was more than compensated for by the reduction in friction brought about by the soil flowing smoothly off the ploughshare and over the curved mouldboard.

In 1784 C.E. James Small, the Scottish pioneer of scientific plough design, described the correct design of a ploughshare and mouldboard, unaware that almost identical designs were in use in China 2200 years earlier. In Europe, mouldboards were completely unknown until late medieval times and the curved mouldboard, adopted from the outset in China, did not appear in Europe until the eighteenth century. Temple argues [Ref. 36:20], “There was simply no comparison between the primitive and hopeless agriculture of Europe before the eighteenth century and the advanced agriculture of China after the fourth century B.C.E”.

Chinese mouldboard ploughs were brought to Holland in the seventeenth century by Dutch sailors and because the Dutch were hired to use them to drain wetlands in East Anglia and Somerset, the ploughs began to be used for agriculture in England even on ordinary land. From England they spread to Scotland and from Holland to France and America. In the 1770s they were the cheapest and best ploughs available. Improvements were made in the West and, by the time steel frames were introduced in the nineteenth century, the modern plough had arrived.

Temple concludes [Ref.(36) 20]: “When we reflect that only 200 years have elapsed since Europe suddenly began to catch up with and surpass Chinese agriculture, we can see what a thin temporal veneer overlies our assumed Western superiority in the production of food”. [See also Ref.23:292-304, 419-421].

4th Century B.C.E.

Double Acting Pumps: China.

Although in the West single acting pumps were known from the second century B.C.E. these, by their definition, only ejected air, water or other fluid on the forward stroke of the piston and so when the principle was used in an air bellows to blow air into a forge fire the air was blown into the fire in intermittent spurts.

In China, however, in the fourth century B.C.E. two valves were used rather than only one, thereby enabling the air to blow continuously during both the forward and backward strokes of the piston. This continuous blast of air kept the fire glowing and enabled Chinese metallurgy to remain in advance of the West for many centuries. Indeed the first record of a double acting pump in Europe, used for pumping water, was in 1716 C.E. [Ref.36:44]

c.4th Century B.C.E.

Efficient Horse Harness.

Robert Temple comments [Ref.36:20] that, in the West all through Greek and Roman times, horses could only pull the lightest of vehicles with the weight of no more than two
people. He goes on to conjecture that, with the type of harness used in Europe up till about the eighth century C.E., horses would not have been able to pull modern vehicles even if they were empty.

In about the fourth century B.C.E., the Chinese made a great breakthrough in harness design by putting a yoke across the horse's chest from which the harness to pull chariots was attached. Prior to this innovation the harness was attached directly to a tie around the horse's neck which virtually choked the animal if the load to be pulled was too heavy. This type of harness was called the throat and girth harness. Despite the fact that this method was absurd, all people using horses throughout the world used the throat and girth harness and its use persisted in Europe up until the eighth century C.E. One can only conjecture the restricting effects on the course of history over many centuries of this singular lack of human inventiveness.

Not long after inventing the yoke harness, the Chinese came up with even more efficient variations in harness design. First, the yoke was replaced by a breaststrap. This was commonly called the trace harness. The weight in this case was born by the horse's chest and collarbones. It is thought that the trace harness was introduced into Europe in 568 C.E. via Central Asia but did not spread right across Europe until around the eighth century.

The most efficient horse harness is the collar harness. In this version a padded collar instead of a simple breaststrap is placed around the animal's neck. This variation was invented in China by the first century B.C.E. Trials have shown that one horse with a collar harness can pull a ton and a half compared to a pair of horses pulling only half a ton with the throat and girth type of harness. Some time later the Chinese realised that the traces could be attached from the sides of the collar directly to the vehicle instead of to the shafts. This is still the form of harness used around the world. The collar harness was introduced into Europe probably around 700 C.E.

By the third century C.E. the Chinese also invented the "whippletree", a device used to evenly distribute the load between two horses when two are used together to pull a vehicle.

Although the use of animal horsepower has largely been superseded in many parts of the world the benefits and effects on history which the above Chinese inventions have had for the world in providing an efficient use of animal horsepower cannot be overestimated. [Ref.36:20-23; 24:Vol.IV/2:304-328; 41:76].

The Use Of Zero in Mathematics.

These days the symbol for zero is in such common use that it is taken for granted and most people do not realise that most of the billions of calculations used daily throughout the world in commerce and technology would be impossible without the zero.

The representation of zero came in two steps, i.e.

1) A blank space was left to indicate zero
2) A symbol was written in the blank space to formally indicate zero.

The first of these two steps was the more important and we know for certain that a blank space was left on Chinese counting boards from about the fourth century B.C.E. to indicate zero.
According to Needham [Ref.24:Vol.III:10], the symbol for zero may be seen “in inscriptions in Cambodia and Sumatra, both dated 683 C.E.”. These inscriptions antedate the use of the zero in India in about 870 C.E. and tend to indicate that the symbol for zero probably came to India from China via Indochina. However, no one knows exactly where the actual symbol was first used, or when.

Zero was not used in the West until about 1000 C.E. [Ref.36:140].

4th Century B.C.E.

Sunspots.

Sunspots, because of their size, would have been noticed by ancient people. However, the first written record of their existence appears to be remarks made in the fourth century B.C.E. by Chinese astronomer, Kan Te and associates, who recognised them as a solar phenomenon.

At that time, “in the West, the heavens were supposed to be so perfect that no such thing as a sunspot could be thought possible”. On the other hand, the Chinese suffered from no such preconceptions and so began to record their observations of sunspots. Joseph Needham has counted 112 official recordings in China between 28 B.C.E. and 1638 C.E.

It has been established by Western scientists that sunspots tend to occur in cycles and do have a major effect on the earth’s weather. Consequently, the unique records of sunspots made by the Chinese over such a long period have proved indispensable in predicting sunspot cycles.

The earliest reference to sunspots in Western literature appears to have been in 807 C.E., twelve centuries after Kan Te but eight centuries before Galileo who was generally credited with their first Western observation.

[Ref.36:29; 23:5-7]

4th Century B.C.E.

Cast Iron.

Although furnaces for making cast iron were known to have existed in Scandinavia from the eighth century C.E., cast iron was not widely available in Europe before the end of the fourteenth century. The Chinese, on the other hand, produced cast iron in quantity from the fourth century B.C.E. In the early days of their experiments Chinese foundrymen discovered that by adding a clay containing iron phosphate to the iron ore they could reduce its melting point from 1130 C. to a more achievable 950 C. However, by the sixth century C.E. improved furnaces made this unnecessary.

Coal was used as the fuel in Chinese furnaces from the fourth century C.E. and so it is of interest to note that England was still making unsuccessful attempts to smelt iron using coal as late as the seventeenth century.

By 119 C.E., casting iron implements in China became so widespread and profitable that the Han emperor nationalised and monopolised the industry. Ploughshares, cutting tools, weapons and astronomical instruments were only some of the multitude of products made. Thin walled cast iron pots became extremely important in making salt from the evaporation of brine and became another nationalised industrial monopoly. The Chinese became remarkably proficient at making iron castings with great complexity and precision. One huge composite object made of iron castings weighed 1325 tons.
In the third century B.C.E., Chinese engineers discovered how to make malleable iron by annealing cast iron for a long period. This product was almost as good as steel and is still used in the West. [Ref.36:42; 23:392-395]

214-204 B.C.E. The Great Wall of China.

The Great Wall or Ten Thousand Li Wall [Ref.23:436-444] is of such a scale that it boggles the imagination. The main wall is some 3440 kilometres long, i.e. more than the distance from Sydney to Perth. However, with its branches, it is 6300 kilometres long which is twice the distance from Sydney to Perth or three times the distance from Sydney to Auckland. It has been said that it is the only man-made object capable of being seen by Martian astronomers. Of course it is constructed over terrain far more rugged than any we have in Australia. It snakes along the tops of ridges, goes up and down mountains and is so steep in places that one has to hang on to the side to prevent sliding down the roadway on top of it that has been polished by the passage of innumerable feet. The wall itself is massive. A typical cross section is 7.6 metres thick by over nine metres high and the road on top is about five metres wide. The wall also used to have some forty thousand towers up to 12 metres square by 12 metres high with turreted tops spaced around 100 to 200 metres apart to enable arrows to be fired at anyone in between.

Although the wall probably did not have any great influence on the building of European walls, it certainly outdid them. To give one example, the longest Roman wall which ran from the Rhine to the Danube was a mere 560 kilometres long with only earthworks and timber forts for defence. The Chinese Wall did indeed stagger the imagination of Europeans. Dr. Johnson, of literary fame, berated his friend Boswell for not visiting the Wall, saying that if he had there would have been a lustre reflected upon his children for they would have been at all times regarded as the children of a man who had gone to view the Wall of China [Ref.24:Vol.IV/3:46].

Although the wall was constructed and rebuilt over many centuries, the period between 214 and 204 B.C.E. saw the most intensive construction. According to Joseph Needham [Ref.24: Vol.IV/3:52], the Shih Chi Historical Record states that Chin Shih Huang Ti built a wall in 214 B.C.E. along the north of the Yellow River and ordered General Meng Thien to set up a line of fortresses. The general was in charge of 300,000 men and built a Great Wall 10,000 li long which is equivalent to 4930 kilometres if taken literally. [Ref.24:Vol.IV/3:46 et seq.; 22:347]


The gimbal joint that is used for suspending modern gyroscopes and compasses so that they remain vertical irrespective of how much the ship or spaceship rolls, was invented in China some time before the second century B.C.E. Strangely enough one of the uses of the gimbal joint was in the beds of prostitutes to hold perfume burners upright at all times. The same principle was used to support lamps in carriages so they remained upright as the carriage travelled over rough roads and hills. Although, in the West, the suspension was always associated with the name of Cardan (1501-1576), he himself never claimed to have invented it but merely described it in a book he wrote in 1550. [Ref.36:46-49]

Before 2nd Century B.C.E. The Crank Handle: China.

Sometime before the second century B.C.E., it occurred to the Chinese that a wheel became easier to turn if you put a handle on the rim at right angles to the face of the
wheel. Currently throughout the world this simple principle of the crank handle is now used in billions of applications. The Chinese first used it in such machines as the rotary winnowing fan (see below) to facilitate turning the fan by hand. Simple as the principle is, no record of it is found in the West before the ninth century C.E. when it was used for turning a rotary grinding stone some eleven centuries after its invention in China. [Ref.36:46; 41:94-95].

Another use of the crank handle by the Chinese was in the fishing reel of which Needham found references going back as far as the third or fourth centuries B.C.E. An actual painting in the Smithsonian institute in Washington shows two fishermen in China using fishing reels in around 1300 C.E., whereas the first reference to the device in the West was in 1651 C.E. [Ref.36:88; 24:Vol.VII:2:583].

By 2nd Century B.C.E.

The Circulation of the Blood - Discovered in China.

Many Western texts give the credit for the discovery of the circulation of the blood exclusively to the Englishman, William Harvey in 1616. “The Macquarie History of ideas” [Ref.17:510] concedes that Michael Servetus discovered pulmonary circulation in 1546 but goes on to say that all the substantial advances in anatomy in the seventeenth century were overshadowed by Harvey’s articulation of the principle of blood circulation that “established the basis of modern physiology”.

Temple argues [Ref.36:123] that Harvey was anticipated in Europe by Realdo Colombo (1559), Andrea Cesalpino (1571) and Giordano Bruno (1590). He points out that all of these men, together with Michael Servetus, read about the circulation of the blood in the writings of al-Nafis, an Arab who died in 1288 and who, according to Temple, “seems to have obtained the idea from China”. In fact Temple quotes a number of instances of what he calls “indisputable and voluminous textual evidence that the circulation of the blood was an established doctrine in China by the second century B.C.E” [Ref.36:123]. The description in The Yellow Emperor’s Manual of Corporeal Medicine at that time was so specific that it was obviously the result of many years of research, study and experience to conceive of the heart as a blood pump. As the Dutch East India Physician, Willem ten Rhijne, stated in his book Mantissa Schematica de Acupuncture (1685), the circulation of the blood was one of the basic tenets of the whole of Chinese medicine” [Ref.36:124].

Also in 1685, the scholar, Isaac Vossius, wrote that the Chinese had known about the circulation of the blood for four thousand years. Needham disputes this but considers that “some two thousand years would be right enough”[Ref. 36:124].

2nd Century B.C.E.

The Rotary Winnowing Fan.

Winnowing is the process used for separating the husks and stalks from grain after harvesting and threshing.

The earliest method of winnowing predated the cultivation of crops and consisted of throwing the threshed grain up into the air (preferably in a strong wind) so that the chaff was blown away and the grain fell to the ground. Later, winnowing baskets were used. In the hands of a skilled operator, the heavy grain could be separated from the lighter chaff which gradually fell over the edge of the basket. A subsequent development was the use of a sieve. All of these methods were painfully slow.

By the second century B.C.E., the Chinese had invented the rotary winnowing fan. Grain was put into a hopper and fell through a continuous stream of air blowing through a duct
from a crank operated paddle type fan. The chaff was blown out through a vent while the grain fell down into a lower hopper. The early winnowing fans were operated by a hand crank or treadle [Ref.41:94].

The rotary winnowing fan was brought to Europe by Dutch sailors in about 1720 C.E. Before this, no winnowing fans existed in the West. Generally the basket was used. The introduction of this important Chinese invention, 2000 years after its initial use in China, provided one of the essential tools for the European Agricultural Revolution. Later on Western inventors used the fan as part of a complete threshing machine. [Ref.36:23; 24:Vol.VI/2:582; 41:94]

2nd Century B.C.E.

The “Modern” Multi-tube Seed Drill.

As Temple writes [Ref.36:25], “It may come as a surprise to those who are unfamiliar with the history of Western agriculture to learn that the West had no seed drills until the sixteenth century C.E.”. Before that time, broadcasting by hand was used and was apallingly wasteful.

The Sumerians of Western Asia had a primitive single seed drill about 3500 years ago but it was the invention of the multi-tube seed drill by the Chinese in the second century B.C.E. that enabled seed to be sown efficiently for the first time in history.

In a multi-tube seed drill, the seed from the hopper flows down two or more tubes and thence through small ploughshares deep into the soil where germination is good. The drill in the early days was drawn by an ox. This Chinese system not only resulted in the seed being sown more efficiently but also greatly increased the proportion of seeds which germinated. Moreover, the plants which germinated were in rows which made weeding, cultivation and harvesting more efficient.

The idea that led to the construction of the first Western seed drills came from China. However, as examples of the Chinese machines were not available to copy, early European drills were primitive and unreliable. Needham writes [Ref.24:582], “It cannot be fortuitous that European inventors suddenly started working on machines to sow several rows of corn simultaneously in straight lines, just like the Chinese machines, precisely at the period when information about Chinese agriculture was becoming freely available”. This appears to be an example of *stimulus diffusion*, meaning that, having learned about efficient north Chinese farming methods, Europeans set about designing equipment to perform similar operations even though the Europeans did not have access to Chinese designs at that time. Although Jethro Tull designed a reasonable working seed drill in England about 1700 C.E., it was not until the mid nineteenth century that effective and economical seed drills were available in Europe. [Ref.36:25-27; 24:Vol.VI/2:571-582,254 et seq.]

From c.200 B.C.E.

Early Mathematical Texts from China.

The earliest mathematical text composed in China was almost certainly the *Chou Pei Suan Ching* which was probably compiled before 200 B.C.E. It mentioned what was later called “Pythagoras’ Theorem”, which states that the square on the hypotenuse of a right angled triangle is equal to the sum of the squares on the other two sides. The text also referred to the multiplication and division of fractions, the calculation of common denominators, and the extraction of square roots. Also it described the *gnomon*, a basic
sundial consisting of a vertical stake that enabled quite a lot of astronomical information to be gleaned from a study of the length and direction of the sun’s shadow.

The second classic text was the Chiu Chang Suan Shu, composed in China in about 200 C.E. It was a most influential book containing 246 problems using both algebra and geometry to solve problems associated with fractions, arithmetic and geometric progressions, simple simultaneous equations, proportions, the calculation of areas and volumes, surveying and engineering computations [Ref.23:50-51]. Many other mathematical texts were published in China over the following centuries. [Ref.2B:7-9]

2nd Century B.C.E.

Negative Numbers.

To the average non-mathematician, negative numbers are not a great concern. However, a bank balance of minus $10 (-$10) means you owe the bank $10 and that is a real number. Although China was using negative numbers by the second century B.C.E., it was 630 C.E. when Brahmagupta in India began using them and 1545 C.E. before the West started using them following the publication by Jerome Cardan of his book on algebra entitled The Great Art.

In China, negative numbers were recognised on the counting boards by using black rods instead of the usual red rods. [Ref.36:141]

2nd Century B.C.E.

Steel and Wrought Iron in China.

By the second century B.C.E., some two hundred years after inventing cast iron, the Chinese discovered how to improve it. As they were the only people to have cast iron for over twelve hundred years they were, of course, the only people who could improve it.

As cast iron is brittle, it is not useful for some applications, such as the making of swords. Brittleness in iron is caused by inclusions of carbon in the metal which make for a weak internal structure. If you remove some of the carbon you get a metal with lower carbon content called "steel". The properties of the steel, such as hardness, are dependent on the percentage of carbon therein. If you remove more and more carbon you eventually end up with "wrought iron" that is malleable and does not break easily.

In the second century B.C.E., the Chinese actually produced steel by blowing air into molten cast iron. They also realised that the longer they blew air in the softer the steel became till finally they ended up with "wrought iron" as we know it. Because they understood the proper utilisation of metals of different properties, the Chinese produced items such as sabres which were in great demand because the blades were made from wrought iron, which did not break easily, but faced with steel which held its edge. To preserve its properties the steel was "quenched" by reducing its temperature suddenly with cold water, just as we do today. The Chinese also found that by cooling steel slowly, a process today called "annealing", the steel developed properties useful for other applications. This advanced metallurgy demonstrated the remarkable powers of observation and inventiveness of the Chinese over the centuries which should not be judged inferior to the achievements of people like the Greeks in other fields [Ref.23:395-401].

The above process for making steel utilised the decarburisation of cast iron by blowing in air or oxygen and was the basis of the "Bessemer process" invented in England in 1856. Actually the "Bessemer process" was anticipated by William Kelly of Kentucky who, in 1845, brought over four steelmakers from China and learned from them the methods that
had been used by their countrymen for over 2000 years.

Another method of making steel, invented by the Chinese in the fifth century C.E., was by mixing cast iron and wrought iron together in various proportions and melting the two together to produce steel of various carbon contents. This old Chinese method has been repeated in recent times with complete success. The so-called co-fusion process of Martin and Siemens in 1863 in Europe was basically the same system used fourteen hundred years after the Chinese invented it. [Ref.36:49,68]

1st Century B.C.E.

The Wheelbarrow: China.

It is surprising to note that the first image of the humble wheelbarrow in the West was in a stained glass window in Chartres Cathedral in 1220 C.E. When one considers that the use of wheelbarrows on a job can cut the labour cost by half, the waste of labour in Europe until then was quite staggering. Yet several pictures of wheelbarrows in China date from the first century C.E. Tradition has it that the wheelbarrow was invented in south-western China in the first century B.C.E. Even some of the many modifications to the wheelbarrow are still not used in the West, such as the design with the load directly over the wheels which can carry up to two tons. [Ref.36:84; 2A:75; 23:429-430].

1st Century B.C.E.

Deep Drilling in China for Brine and Natural Gas.

One would think that the sight of an oil field with its hundreds of derricks would be the ultimate symbol of modern Western industrial might. And yet such a sight was not uncommon in China many centuries ago.

The Chinese originated deep drilling in the first century B.C.E. and were soon able to drill wells to a depth of 1500 metres. The general method was to dig a shaft with spades down to bedrock, line the hole with stone to produce an accurate shaft, then pound the bedrock with a cast iron bit weighing 100 kilograms and finally open it up with one weighing 700 kilograms. The pounding was achieved by a number of men jumping on and off a long lever attached by bamboo ropes to the bit. The bit was also rotated slowly at the same time.

The first use of these wells was in the essential salt industry to tap deep deposits of brine. Often as the well went deeper deposits of inflamable natural gas were tapped and this was reticulated through gas proof bamboo pipes joined with gas tight male and female joints and used to heat massive evaporating pans to produce salt.

By the second century C.E., searches were made for “fire wells”, i.e. those containing natural gas alone. The gas was then used for both heating and lighting, and was even carried about in bamboo tubes just like the modern butane cylinder. In some Szechuan towns, gas lighting was in use with carefully controlled natural gas flames, anticipating Victorian England by many centuries.

It was not until 1834 that Chinese deep drilling techniques were utilised in Europe in the salt industry or until 1859 the first oil well was commissioned in Pennsylvania and used Chinese drilling techniques. [Ref.36:51-78; 23:266-268]

1st century B.C.E.

The Mechanical Belt Drive: China.

Most people will be familiar these days with the belt drive used to transmit power from one pulley to another. Today, most power in factories is transmitted using V-belt drives from individual electric motors mounted directly on machines. By contrast, only a
generation ago, most power was transmitted from a large central steam engine via line shafts using often hundreds of flat belt drives to individual machines. Pictures of belt drives in factories during the European Industrial Revolution show this method of power transmission.

It is not generally known that the belt drive was invented in China and was described in Yang Hsiung's book, *Dictionary of Local Expressions*, in 15 B.C.E. The belt drive described therein was used to enable a large pulley to drive a small pulley at high speed to wind silk from cocoons. These *quilling machines* eventually found their way to Italy. The earliest reference to a belt drive in Europe was in 1430 C.E. where it was depicted turning a grindstone. Driving belts were not used to any great extent in Europe until the Industrial Revolution in the eighteenth and nineteenth centuries.

The Chinese found the belt drive was essential for driving the *spinning wheel* for silk, a machine that they invented several centuries later and which also was essential to the European Industrial Revolution. [Ref.36:54; 23:504-514]

1st Century B.C.E.


We are indebted to David S. Smith, the noted historian of mathematics, for research on this subject. He considered this to be China's unique contribution to mathematics, devised in China many centuries before similar work in Europe.

In the first century B.C.E., the Chinese mathematics classic, *Nine Chapters on the Mathematical Art*, was compiled. One of the algebraic problems given was to find the cube root of 1,860,867, the solution to which is 123. The method used was similar to "Horner's Method", an elegant process developed by W.G. Horner in Europe in 1819 C.E.

Cubic equations were first solved in China by Wang Hsiao-T'ung in the seventh century C.E. and in Europe in the thirteenth century by Leonardo Fibonacci who is thought to have been influenced by Chinese sources.

Numerical equations of higher degrees than the third (that is, involving powers higher than cubes) first appeared in China in the year 1245 C.E. in the *Mathematical Treatise on Nine Sections* by Ch'in Chiu-Shao. In Europe in the sixteenth century Nicolo Tartaglia and Jerome Cardan were able to solve cubic equations but both men considered any equation of a higher degree than cubes were not relevant to the real world and so did not pursue them. [Ref.36:141; 23:50-56]

1st Century B.C.E.

Decimal Fractions.

With the decimal system well established it was a logical step to express fractions as a tenth, hundredth or thousandth of a unit.

A surviving inscription by Liu Hsin on a standard volumetric measure dated 5 C.E., speaks of a length correct to 9.5 units. However the system of expressing such fractions probably existed for several centuries B.C.E. in China. In the mid third century C.E., Liu Hui expressed a diameter of 1.355 feet in his commentary on the classic mathematical text *Nine Chapters on the Mathematical Art* and stated that answers with fractions should be expressed as a series of decimal places. Unfortunately at this stage the Chinese were so adept at manipulating ordinary fractions they did not feel the need to change to decimal fractions which remained only of academic interest to mathematicians. In 635 C.E., in
the official history of the Sui Dynasty, the value for \( \pi \) is expressed in words as the decimal fraction 3.1415927. "The first person to drop the descriptive words and merely write the number as in modern decimal notation was apparently Han Yen at the end of the eighth century" [Ref.36:142 et seq.; 23:57-65].

By the thirteenth century, decimal fractions in China were in general use as a recognised system and continued to develop in complexity due to the work of mathematicians including Yang Hui and Ch'in Chiu-Shao. From China, the idea of decimal fractions spread to Arabia, where it was taken up by the director of the astronomical observatory at Samarkand, al-Kashi, who worked there till his death in 1436. The first man in Europe to comprehend the significance of decimal fractions appears to have been Christoph Rudolff whose Exempel-Buechlein appeared in Augsburg in 1530. Mathematical historian, D.E. Smith, argues that "the first to show by a special treatise that he understood the significance of the decimal fraction was (Simon) Stevin," who published a work on the subject in 1530. "Simon Stevin is known to have introduced other Chinese notions into Europe, so this is not surprising. But what is surprising is how late both the Arabs and the Europeans were in appreciating decimal fractions. Europe lagged behind China by over sixteen hundred years" [Ref.36:142 et seq.].

98
B.C.E.

Paper.

The oldest paper discovered by archaeologists was found in China lying near some pieces of wood with inscriptions dating from 98 B.C.E. but hints of the use of paper can be found in Chinese records considerably earlier than this. Up till about the fourth century C.E., wood and paper seem to have been used interchangeably as writing materials, but, after that, paper took over completely in China. In 105 C.E., the Chinese emperor HoTi heaped praise on a particular court official, Ts'ai Lun, for inventing paper by smashing rags, tree bark, old fishing nets, rope and other things into a fine pulp by using a mortar and pestle and then spreading it out on a frame to dry. The result, when pressed flat, was an excellent writing material that was less costly than silk and more convenient to handle than bamboo. Although Ts'ai Lun may have improved and simplified the process, it appears that paper was developed by many inventors making improvements over several centuries. Some of the finest papers were made entirely from bamboo fibres beaten into a pulp and spread out to dry in sheets. Other paper-making materials included mulberry or bichiscus bark; mixtures of bark, bamboo and rice stalks and many other combinations. Diverse methods were evolved for boiling and mashing the pulp and for drying it on the screens.

For centuries, the Chinese alone enjoyed the secret of paper making. It was a material that was ideally suited to their kind of writing which was done in bold flowing characters with a soft brush. The rest of the world had to do with papyrus, and later, parchment. Both of these materials were more expensive and of limited availability. The papyrus reed would only grow in very limited locations, mainly in Egypt and, as a result of this, Egypt had a virtual monopoly of papyrus and began to charge extortionate prices and set strict controls on the volume of supply. This led to the invention of parchment and vellum at Pergamum in Asia Minor (see "parchment" in portrait No.6). However, the raw materials for parchment, consisting of specially prepared young animal skins, were also more expensive and in shorter supply than the materials for paper making.

As a result of the plentiful supply of paper in China, the widespread recording and dissemination of knowledge and ideas was facilitated and this undoubtedly helped the Chinese to outstrip the West in education and scientific progress.
In 751 C.E., an Arab army invaded Turkestan, a region that had been under the rule of the Chinese Tang dynasty and captured a number of skilled paper makers. The Arabs then set up a paper factory at Samarkand, in East Asia, and manufacturing techniques rapidly spread to other sections of the Arab Empire. By 793 C.E., paper was being manufactured in Baghdad and, by 900 C.E., in Cairo. The Arabs had neither bamboo nor mulberry trees but were able to make a satisfactory paper out of linen rags. The Arabs eventually conquered Egypt and took over the production of papyrus but, realising the superior advantages of paper, they phased out the processing of papyrus by the tenth century.

As had been the case in China, paper greatly facilitated the spread of scholarship, science and culture in all Arab countries from the eighth to the thirteenth centuries. This was to be of incalculable benefit to later Western civilisation by facilitating the storage and transfer by Islam to the West of Greek, Indian, Chinese and Arabian knowledge.

Paper first entered Europe through Greece. The Greeks, who bordered on Arab lands, sold it to Europe, where it became known as Greek Parchment. Even in those days, neither the Chinese nor the Arabs were given credit for their part in developing this outstanding invention that proved to be one of the greatest of all influences of Asia on Western civilisation. The first European paper factories were set up by the Arabs in Spain in about 1150, and then in Sicily, after conquering these two countries. When the power of Islam was broken in those two places, the paper factories fell into the hands of the European Christians.

By the thirteenth century, paper was coming into general use in Europe although vellum were still widely used. By the fourteenth century, however, paper was employed for everything except legal documents, which were still on vellum, but by the fifteenth century paper had almost completely replaced vellum and was in universal use. This was at least 1600 years after paper was beginning to be used in China, and 800 years after it came into general use in the Arab Empire. [Ref.6:73-77; 23:178-183]

Accurate Measuring Instruments: China.

So-called “vernier calipers” or sliding scale calipers were introduced into Europe in 1631 C.E. by Pierre Vernier. Seven years later the micrometer was invented by William Gascoigne. However, an accurately graduated sliding scale caliper is in existence with its date of manufacture in China shown as 9 C.E. To have reached the standard of this remarkable instrument it has been estimated that it would have had to have begun development in the first century B.C.E. [Ref.36:84].

The Suspension Bridge, from China.

Perhaps the most awe inspiring of modern bridge building marvels is the suspension bridge with its relatively flat deck, suspended from long ropes hanging in the form of catenaries across gaping spans of up to hundreds of metres. The first one to be actually built in the West capable of carrying traffic was constructed with a span of just 74 metres in the U.S.A. And yet the Chinese had true suspension bridges (not just catenary bridges) constructed, according to Joseph Needham, from about the first century C.E.

The true suspension bridge, which means a horizontal deck suspended from catenary ropes, really dates from the period when it became possible for the deck to be suspended from iron chains hanging between massive stone abutments on each bank. In China the greatest span achieved was a very creditable 131 metres and the longest that still survives is 110 metres.
Many centuries earlier there were catenary bridges. In China in the which the deck is not horizontal but actually follows the catenary and is usually supported directly on top of the actual catenary ropes. The earliest catenary bridges were suspended on bamboo ropes that rivalled steel in strength, while in the later ones the deck was supported on top of several wrought iron chain catenaries. Sometimes handrails were fitted and it seems possible that the development of improved vertical handrailng led to the idea of suspending a horizontal deck below the catenaries with vertical cables varied in length to allow the deck to be horizontal across the whole span, thereby producing a true suspension bridge.

It seems remarkable that China had literally dozens of suspension bridges of various designs dating well back into the centuries B.C.E. whereas the West only started to catch up in the nineteenth century C.E. Needham writes [Ref.24:Vol.IV/3:208], "One feels driven to the conclusion that there must have been a real series of stimuli from the Chinese iron chain suspension bridges to engineers of the Renaissance and later Europe" after descriptions of the bridges appeared in such publications as Kircher's China Illustrata (1667 C.E.) and Erlach's Historia Architectur (1725 C.E.). [Ref.24:IV/3:184 et seq; 36:58; 23:445-460]

4 C.E. Production Lines in China.

Most people think that manufacturing in ancient countries was carried out as a cottage industry and indeed it generally was up until the European Industrial Revolution. The assembly line and the production line are more associated with nineteenth and twentieth century advanced Western countries. It is therefore most interesting that a Chinese lacquered wooden wine cup dated 4 C.E. has been discovered with the inscription: "Priming by Yi, lacquering by Li, outer coat by Tang, gilding by Ku, painting by Ting, inscribing by Ping, cleaning and polishing by Chung" [Ref.36:76]. This shows a definite "division of labour" which is one of the essential features of the modern production line.

1st century C.E. The Use of Water Power for Increasing Efficiency in Heavy Industrial Processes in China.

Although waterwheels were probably used in very early agricultural civilisations, the credit for first using them in heavy industrial processes goes to the Chinese. In 31 C.E., a horizontal waterwheel was used to drive a large bellows for smelting and casting iron. Sounding very much like a modern production manager, the writer of the History of the Three Kingdoms in 290 C.E. even uses the modern unit of measurement, "horsepower", to assess the increase in efficiency achieved by this method. He states that with the old method, 130 lbs. of wrought iron required the power of 100 horses. Consequently, he adapted the furnace bellows to use the power of running water, whereby an efficiency three times greater than before was attained. It was this increased efficiency from using water power in the twelfth century C.E. for driving forge hammers and steam power much later, which formed the basis of the European Industrial Revolution. [Ref.36:55]

From 1st Century C.E. The Influence of Asian, and especially Chinese, Nautical Engineering on Western Practice.

Robert Temple [Ref.36:8] states: "It is no exaggeration to say that the superiority of the British navy was to a large extent due to its readiness to adopt Chinese inventions more rapidly than other European powers". He goes on to rub salt into the wound by arguing that "the Chinese were the greatest sailors in history. For nearly two millennia they had
ships and sailing techniques so far in advance of the rest of the world that comparisons are embarrassing”. This is probably unknown to most Australians and other Westerners.

Joseph Needham [Ref.2C:267] believes that the basic principle of Chinese ship construction was probably derived from bamboo, with its stems divided by partitions or septa. This probably led to the design of ships with hulls built with transverse partitions or bulkheads for strength and later for supporting the bases of multiple masts. The hulls were made with rectangular cross sections, fairly flat bottoms, no keels and no stemposts. Early in the piece bamboo rafts were used and these also would have approximated the shape of the hull described. Bulkhead construction was certainly in use in China before the second century C.E. but was not adopted in Europe until the era of iron and steel ships in the nineteenth century, along with the Chinese rectangular cross section.

After the second century, the Chinese began caulking the transverse partitions to form watertight compartments, a feature only adopted in Europe at the end of the eighteenth century and used later in steel ships such as the “Titanic”.

Surprisingly, nearly all of the features of the huge Chinese ocean-going junks were described by Marco Polo but even then no-one in the West did anything to adapt their design innovations.

Another design improvement made by the Chinese before the eighth century C.E. was to make the shape of the hull wider towards the back or stern which was the exact opposite of Western construction that featured the fishlike shape with a wider hull towards the front or bow. It was not until the end of the nineteenth century that the superiority of the Chinese system was fully realised.

Around about 1180 C.E., at about the time when they began using the magnetic compass from China to decide where to steer the ship, Europe learned how to steer the ship by adopting another Chinese invention: the rudder. Prior to that, different types of oars or “sweeps” had been used for steering. Oars had been replaced largely by the rudder in China from at least the first century C.E. It could be safely said that without these two inventions, namely the compass and the rudder, the so-called European Age of Discovery, involving long sea voyages, would have been impossible, which ironically would have saved China from Western colonization later on. Perhaps we should remind ourselves that Chinese navigators had sailed around the Cape of Good Hope long before Vasco da Gama and had traded all along the African coast and with India, Sri Lanka and the Philippines.

By the eleventh century C.E. the Chinese were using “balanced” rudders, with a vertical shaft in the centre, to make them easier to turn. One of the first Western ships to use this type of rudder was the “Great Britain” in 1843.

Finally, their invention of the “fenestrated” rudder, with small “windows” or holes cut in it, greatly increased the ease with which it could be turned in the water without significantly reducing its turning capacity. This invention was not taken up in Europe until the age of the iron and steel ships. Temple [Ref.36:186] notes that prior to this a British torpedo boat travelling at 30 knots could not be turned at speed.

Chinese ships used in waters where shallows might be encountered were fitted with rudders that could be raised by means of a windlass when required. This also was finally adopted in Europe, almost 2000 years after its invention in China.
In the field of ship propulsion, "Chinese seamanship had the lead of Europe for more than a millennium" [Ref.2C:267].

Following the invention of the self-feathering or sculling oar, came the invention of the treadmill operated paddle-wheel boat between the fifth and eighth centuries and, in the twelfth century, multiple paddle-wheel warships. This feature was adopted to some extent by Spain in the sixteenth century.

With regard to sails and rigging, ships of the Chinese cultural area were fitted with multiple masts attached to the strong bulkheads mentioned above. Europeans greatly admired the huge size and multiple masts of the sea-going junks that they saw in the thirteenth century. From this was adopted the European design of three masts, leading eventually to the full-rigged sailing ship.

The Chinese adopted the practice of staggering the masts rather than placing them along the centre-line of the hull as in European practice. This prevented the sails on one mast from becalming the sails behind it by stealing the wind.

In about the second or third century C.E., someone in the Chinese area made an incredible breakthrough by adopting fore and aft rigging (rather than square rigging as used in Europe) which enabled the ship to sail into the wind, a feature found on most modern yachts. With the invention of the lug sail (a quadrilateral shaped sail that could be swung around on the mast) the direction of the sail could be quickly changed, greatly improving the manoeuvrability of the vessel. Also the sails were made of bamboo battens with matting between, which enabled them to be raised and lowered from the deck like a venetian blind instead of the crew having to go aloft and furl the canvas as in Western practice. Present-day racing yachts have adopted many of the features of Chinese rigs.

One problem encountered with flat-bottomed boats is that they tend to drift away from the wind. This was overcome in the seventh century in China by lowering boards (now called centre boards or lee boards) into the water. This practice was adopted by Europe about a thousand years later.

Other miscellaneous East-Asian techniques that influenced Western practice at a much later date in history were armour-plating of warships with iron (from the twelfth century C.E.), non-fouling anchors, chain bilge pumps and advanced techniques of pearl-diving (Japanese vessels with lug sails, known as luggers, were used extensively in pearl mining off the northern coasts of Australia).

To sum up, Joseph Needham and Colin Ronan [Ref.2C:29] list the dates on which some of the most important Asian nautical innovations were transmitted to Europe, as follows:

2nd century C.E.: The sprit sail from India to the Roman Mediterranean.
8th century C.E.: The lateen (or triangular) sail from the Arabian area to Byzantium.
12th century C.E.: The mariner's compass and the sternpost rudder from China to Europe.
7th-15th centuries: Preconstructed rib frames in building hulls with heavy bulkheads.
15th century: Multiple masts and the lateen sail, first on all masts and then on the mizzen or front mast with square rigging on the others.
16th century: The protection of the hull with additional strake layers as used in China in the 11th century.
<table>
<thead>
<tr>
<th>Century</th>
<th>Feature</th>
</tr>
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<tbody>
<tr>
<td>16th</td>
<td>Leeboards</td>
</tr>
<tr>
<td>18th</td>
<td>Centreboards. Water-tight compartments.</td>
</tr>
<tr>
<td>19th</td>
<td>Flat bottoms; rectangular cross-sections; balanced rudders; fenestrated rudders; non-fouling anchors; aerodynamically efficient sails; staggered masts; multiple sheets; placing the widest part of the hull aft.</td>
</tr>
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<td>20th</td>
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It is almost certain that, apart from a very small number of specialists, very few people in the West realise the enormous contribution that Asia, and especially China, has made to global nautical engineering and technology and without which the history of Western dominance in the twentieth century may never have occurred. [Ref.36:8,185-191; 2C:29,267 and 23:479-493]

**Equatorial Astronomical Instruments.**

By 125 C.E., the mountings that allow our great modern telescopes to be oriented to any point in the sky had been constructed by the Chinese who used the principles of the so-called equatorial system of astronomy from as early as 2400 B.C.E. In the equatorial system, the equator is taken as the main horizontal circle while the point directly above the centre of this circle is the pole. Obviously as this concept may appear, it was not the system used by Europeans until Tycho Brahe adopted the Chinese system at the end of the sixteenth century C.E. Although they did not invent the optical telescope, the Chinese used sighting tubes that could be pointed to any celestial position using the same type of mountings called *armillary* rings that we use. Some of these, made of cast iron and bronze, were very large and accurate and by 132 C.E. they were even rotated by water power. These were used for demonstrating and computing the movements of the heavenly bodies. In 1270 C.E., an instrument six metres by four metres, that still exists, was constructed using a simplified but non-equatorial form invented by the Arabs, but altered by the Chinese to simplify it further on the equatorial system. As Needham [Ref.36:39] affirms, "This constitutes the precursor of all equatorial mountings of telescopes". There have been no essential advances in the principle of the equatorial mounting since the thirteenth century. [Ref.36:36-39; 23:26-29; 24:Vol. III:339-390]

**Cartography in China.**

Ronan and Needham [(2B):252] say that: "The history of scientific geography and map-making is usually presented as containing an unaccountable gap between the time of Ptolemy (second century C.E. Egyptian-Greek) and about 1400 C.E. Books on the subject contain what seem to be certain conventions about the participation of China - there are discussions of medieval European knowledge of China, what Arabs said about it, and the stimulus of visits made by merchants and diplomatic envoys in the thirteenth century C.E. - but never by any chance the story of Chinese map-making itself".

Eratosthenes, the librarian of the great library at Alexandria, had drawn maps with coordinates in about 200 B.C.E. Ptolemy, also from Egypt, drew reasonable maps with coordinates around 150 C.E. However, all these systems of coordinates were not mathematically accurate.

Following Ptolemy, the pronouncements of the Christian Church that only Holy Writ was to be used, drew down a curtain on all European science including map-making, for over a thousand years. All maps during these Dark Ages were ridiculous schematic representations of biblical themes. However, during the period when European maps reached the depths of absurdity, China was developing scientific map-making of a very
high order.

To see how far the Chinese were ahead of the Europeans in c.1100 C.E., one only needs to compare two extant maps. One of these is a map of China called the Yu Chi Thu, carved in stone in about 1100 C.E., with scientific coordinates and accurately plotted coastlines and rivers, very like a modern map. By comparison, the other is a so-called "world map" published in 1150 C.E. in Europe in which the world is represented by a simple circle. The top half of this circle is ruled off as a semi-circle representing Asia, and contains Paradise and Eden, complete with Adam and Eve. The bottom semi-circle is divided in two, the left being Europe and the right Africa but there are no coastlines or geographic features of any kind. Jerusalem is placed at the centre of the circle. And that is all!

Although maps are mentioned frequently in Chinese literature from 227 B.C.E. onwards, it was Chang Heng, the great scientific genius of the second century C.E., who is credited with inventing truly scientific cartography. His coordinates were so accurate that in fact actual maps did not need to be drawn, only place names with their coordinates. From these, distances between places could be calculated mathematically, just like on a modern computer. From then on Chinese map-making developed to a standard whereby it anticipated the modern era.

It was not until around 1300 C.E. when some intelligent navigators in the Mediterranean began to develop practical sailing charts that map-making in Europe was restarted after a thousand years of neglect. By this time of course, China had maritime charts of extensive areas of the world known to them and cartography, both terrestrial and celestial (star maps), was a millennium ahead of the West. Only after 1000 C.E., could the Arabs in Western Asia compete in any way with China in cartography and certainly by the thirteenth century China and Arabia were communicating and assisting each other's scientific advances well before the West took up the challenge. [Ref.2B:252 et seq; 36:30; 23:251,255-257]

Porcelain: Origin in China.

By c.3rd Century C.E.

Paul Atterbury is editor of a book "The History of Porcelain" [Ref.74:7] published with the help of Sothebys, arguably the most prestigious current dealer in porcelains. In his book, Atterbury acknowledges the great debt the West owes to China and states that porcelain was developed in China, Korea, Annam (North Vietnam) and Japan over many centuries. He also expresses his opinion that "the results achieved have never been matched in quality or originality and have never ceased to inspire imitations"[Ref.74:7 et seq]. He goes on to point out that the extremely rare pieces that reached Europe from China after careful transport across the long Silk Road were valued by princes like precious stones and that later the export of porcelain from China to the West numbered many millions of pieces by the eighteenth century. In his opinion, "the highly ornamental Oriental porcelains, with their rich decoration in underglaze blue or polychrome enamels, effectively determined future stylistic developments in the West" and also "subsequent developments were all dependent upon the Far East" and "developments in the West are trivial in comparison to the centuries of progress and innovation in the Far East. The European porcelain industry is still in its infancy, but it is unlikely ever to out-grown the influence of its Oriental parent. Ironically, the strength and influence of the Far East is probably greater than ever before" [Ref.74:8]. The present-day domination of the Western market by Japan is increasing steadily, China is a sleeping giant about to be awakened and as Atterbury concludes, "It is possible that by the end of this century there will be no effective Western porcelain industry. All porcelain production may be in the East, the wheel having turned full circle" [Ref.74:8].
The word *porcelain* has no equivalent translation in Chinese, it is a Western word that was coined to specifically describe the ceramic wares of South China fired at high temperatures up to almost 1300 degrees centigrade. The modern definition of porcelain is precise and refers to a hard whitish ware that is translucent and resonant [Ref.74:12]. It is composed of two specific ingredients: kaolin, a pure white clay named after a place in China where it is supposed to have been discovered, and *petuntse*, a type of feldspar rock that acts as a flux to fuse the clay at high temperature.

It was not appreciated by the Europeans when they first tried to copy the process, that impurities in the *petuntse* such as mica containing potash were important to ensure a plastic mix and assist firing.

The Chinese were fortunate in having superb raw materials and this fact stimulated the development of advanced pottery that was thousands of years ahead of the West. High temperature wares were successfully glazed in about 1500 B.C.E, three thousand years before Europeans made harden stoneware and glazed it. The Chinese were using the potters' wheel by 2500 B.C.E. and moulding techniques by around 700 B.C.E., both methods that were particularly suitable for use with the very plastic Chinese clays. Furthermore, by about 1700-1000 B.C.E., advanced kiln designs were achieved. In the Han period (206 B.C.E.-221 C.E.), kilns established in Zhejiang had become especially famous for high fired wares. With no suitable kilns porcelain makers in the West were not able to make true porcelain.

The actual date of manufacture of true “hard paste” porcelain in China, which inspired awe and admiration in the West, has not been specifically determined but seems to have occurred before the third century C.E.

It is not the purpose of this document to go into the history of Chinese styles, glazes, decorations and so forth and the eventual effect these had on European manufacture at their many famous potteries. Readers are referred to [Ref.74] that does this in great detail with beautiful illustrations. It also includes excellent Korean, Vietnamese, and Japanese porcelain that also stemmed from China.

The word *china* entered the English language well before the eighteenth century to describe imported porcelain from the land of China. It is now an unrestricted generic term for all types of earthenware and porcelain.

Marco Polo was the first to describe for the West, in around 1296 C.E., the manufacture of porcelain in China. However, it was not until well into the eighteenth century that anything approaching Chinese hard paste porcelain was produced in Europe at Meissen in Germany. [Ref.74:7-15; 23:192-201]

### 3rd Century C.E.

**Horsemen Using Stirrups.**

Johannes Stradanus in his series of engravings entitled *Nova Reperta* (New Discoveries) in 1585 C.E. lists the stirrup as one of the nine great new discoveries. Unfortunately the name of the inventor of the stirrup is not known but it appeared in China in the third century C.E. about three centuries before the Byzantine Emperor Maurice Tiberius specified the necessity for their use in equipping his cavalry in 580 C.E. This was brought about by the devastating effect of horsemen with stirrups attacking Byzantium from Central Asia in 560 C.E.
Robert Temple points out [Ref.36:89] that stirrups were unknown to all the great armies of antiquity in Europe and West Asia, including the Persians, Greeks, Egyptians, Assyrians, Babylonians and even the Romans.

Mounting, riding and manoeuvring a horse without using stirrups is extremely difficult, especially if the rider is carrying arms. Certainly the European Age of Chivalry with mounted knights clad in heavy armour would have been an impossibility without the use of stirrups. The early use of rope loops as stirrups was soon found to be dangerous because if the rider fell off without being able to get his foot out easily he could be dragged to his death. This situation was remedied by the Chinese in the third century C.E. by the use of their superior skills in casting metals to mass produce stirrups. As Joseph Needham writes [Ref.24:Vol.V/Part 7:17], "the foot-stirrup welded the horseman and the horse together, and applied animal power to shock combat". As soon as horsemen saw the huge advantage given by the use of stirrups their use was quickly adopted right across the steppes, especially by the Avars, and this consequently led to their forced adoption by the Byzantines, the Vikings and eventually by the whole of Europe. Due to the superior ability to control a horse brought about by this new invention, no cavalry without stirrups had much chance of succeeding in battle against an enemy so equipped. For the West, the quick adoption of this simple Asian device mass produced in quantity was just as important as the quick adoption of Asian weapons using gunpowder later.

Needham [Ref.36:90] concludes that Chinese gunpowder helped to shatter the aristocracy of feudal knights enveloped in metal armour which Chinese stirrups had originally set up some ten centuries earlier. [Ref.24:Vol.IV/2:7; 24:Vol.V/Part 7:17; 36:89-90]

3rd Century C.E.

Using Algebra in Geometry.

Without the use of algebraic expressions to define geometrical shapes and curves, modern technology would be impossible. For the construction of buildings, aeroplanes and many other products of modern industry not only are drawings essential but also sets of algebraic equations defining contours, surfaces and structures. The first people to do this sort of thing were the Chinese.

A Chinese book of the third century C.E., called the Sea Island Mathematical Manual, "gives a series of geometrical propositions in algebraic form and describes geometrical figures by algebraic equations" [Ref.36:143]. Subsequently this was done regularly in Chinese history. These techniques spread westward to the Arabs when the famous Arab mathematician, al-Khwarizmi was appointed as ambassador to Kharazia on the main trade route from China to the West in 842 C.E. The first European to adopt the methods appears to have been Leonardo Fibonacci in his Practica Geometriae in 1220. The Chinese did not go on to invent Analytical Geometry in which every geometrical operation can be referred to the realm of numbers. This branch of mathematics was eventually developed by Fermat and Descartes in Europe in the seventeenth century. According to Joseph Needham [Ref.36:143], "Nowhere did the Chinese come so close to achieving the basic idea of modern science, the mathematisation of the whole physical world. Perhaps nowhere was their failure to follow through more crucial in dooming them never to achieve modern science".

3rd Century C.E.

Refining the Value of $\pi$.

$\pi$ is the ratio of the circumference of a circle to its diameter. It was initially calculated by Archimedes to be between 3.142 and 3.140. In the third century C.E., Liu Hui, in China, was able to calculate the value of $\pi$ to 3.14159 by inscribing a polygon with 3072
sides in a circle. But in the fifth century, Tsu Ch'ung-Chih and Tsu Keng-Chih extended the calculation to 3.1415929203! It was not until the seventeenth century (1200 years later) that Europeans were able to surpass the accuracy of the Tsu family. [Ref.36:144; 23:90-98]

577 C.E.

Matches - an Idea from China.

According to Temple, the idea of the simple match did not appear in Europe before 1530 and the modern match was invented in Germany in 1830. However, the original idea of a match originated in China in 577 C.E. In that year, some ladies who were short of kindling during a military siege used small sticks of pine wood soaked in sulphur that could be stored and would burst into flames at the slightest touch of fire [Ref.36:98].

6th Century C.E.

Comets and the "Solar Wind".

The Chinese were the most noted observers of comets in history. Modern computations of the orbits of about forty comets that appeared before the year 1500 have been based almost entirely on Chinese records [Ref.36:33].

Halley's comet, the most famous of all because it was the first to be observed at regular intervals, was recorded definitely by the Chinese from 240 B.C.E. and its appearance predicted thereafter. Halley's first observation was in 1632 C.E.

According to Ronan and Needham [Ref.2B:208], from at least the seventh century C.E., Chinese observations of comet tails had been refined enough to establish that comet tails always point away from the sun, as though blown by a solar wind, but, in reality, by the radiation emanating from the sun acting on the very tenuous comet tails. See also [Ref.23:7-10].

598 C.E.

The Contribution of India to Mathematics.

The date 598 C.E. commemorates the birth of Brahmagupta, the most important Indian mathematician. During his lifetime Indian mathematics reached its highest point. He wrote a famous work, the Brāhma-sphuta-siddhanta, containing two chapters on mathematics.

The first, or Sūlvasūtra period of Indian mathematics, c.800 B.C.E. to 200 C.E., was mainly of a religious nature, relating to the construction of sacrificial altars and is completely ignored in the second period, the astronomical and mathematical period, that extended from approximately from 400-1200 C.E. and, apart from the work of Brahmagupta, also included the work of the noted Hindu astronomer Aryabhata who born in 476 C.E.

Indian society was fixed into castes and "the only castes enjoying the privilege and leisure for advanced study and thinking were the Brahmins, whose prime business was religion and philosophy, and the Kshatriyas who attended to war and government" [Ref.34:83].

There appears to have been considerable communication of thought between Indians and Alexandrians, and also between Indians and Chinese.

It is generally agreed that the greatest contribution of India to world mathematics was the so-called "Arabic Notation" which is the standard numerical system used in the West
today. However, even the Arabs acknowledge the fact that this numerical system came from India and even called mathematics *Hindisat* or “The Indian Art”. “The earliest known mention outside India of Hindu numerals was made in 662 C.E. by the Syrian writer, Severus Sebokht who speaks of Hindu computations done with nine symbols”. Certainly Indian mathematics provided the initial impetus for the great work Islam contributed to world science and technology, an area of knowledge discussed in more detail in portrait No. 6.

As Florian Cajori admits [Ref.34:83], “Of the development of Hindu mathematics we know very little. A few manuscripts bear testimony that the Indians had climbed to a lofty height, but their path of ascent is no longer traceable...Greek mathematics was studied for its own sake...Hindu mathematics remained the servant of astronomy. Furthermore, in Greece mathematics was a science of the people, free to be cultivated by all who had a liking for it; but, in India, as in Egypt, it was in the hands chiefly of the priests. Again the Indians were in the habit of putting into verse all mathematical results they obtained, and of clothing them in obscure and mystic language, that, though well adapted to aid the memory of him who already understood the subject, was often unintelligible to the uninstructed”. Despite this algebra attained in India far greater perfection than had previously been reached in Greece. On the other hand, Hindu geometry was merely mensuration, unaccompanied by demonstration (of proof)

It is rather unfortunate that some of the thinking in the first edition of Florian Cajori’s *History of Mathematics*, published in 1893, has not been updated in the 4th Edition (1985) [Ref.34].in which the following statement by Cajori tends to put mathematics into a pro-Aryan mould, “After the time of the ancient Greeks, the first people whose researches wielded a wide influence in the world march of mathematics, belonged, like the Greeks, to the Aryan race. It was, however, not a European, but an Asiatic nation and its seat was in far-off India”. Indian mathematics was part of the important Asian contribution and came historically between that of China and Islam with some input from Alexandria in Egypt.

**Mainly from 6th Century C.E.**

**The Game of Chess -- from China and India.**

Although chess appears to have reached Europe from India via Arabia and Spain in about 1010 C.E. it actually originated in China.

In its present form the game of chess is a test of strategies between two opposing armies as represented by the chessmen including the king, queen, knights and pawns. This form of game developed in India. However, as Needham has been able to establish, it actually originated in China as a form of divination to determine the balance of the opposing forces of *yin* and *yang* in the universe. The earliest relevant reference is in the fourth century B.C.E. However there appears to have been many versions over the centuries culminating in a game called “Image Chess” invented by the Emperor Wu and described by him in a manual published in 569 C.E. Finally, it should be noted that there is a game called “Chinese chess” that evolved after it was reintroduced to China from India. However, it is not the same as either the original Chinese game or the game known throughout the Western world. [Ref.36:99]

**7th Century C.E.**

**Printing.**

*Block printing* came into general use in China in about the seventh century C.E.

The invention of paper (see above) “was the necessary first stage in the revolution that made information readily available to all...but it took the invention of printing to bring
Seals, by which signatures could be applied to documents, have been used since very ancient times, first in Mesopotamia in West Asia, then India in South Asia, and finally China in East Asia. Seals were carved in various materials including stone, jade and metal and were either pressed into clay documents or inked and pressed or rolled onto materials such as wood or bamboo. About the fifth century B.C.E., China began making seals of wood which were cheap and easily carved. Some seals that came to be regarded as marks of status, were quite large and were intricately carved with attractive inscriptions and pictures.

Religious charms with prayers, magic spells and such like on small pieces of paper became extremely popular in China and there was a thriving market with Buddhist monks laboriously copying these manually by the hundreds for sale to the public. In the seventh century C.E., these charms began to be carved on blocks of wood and were printed by the thousands in much the same way that seals were printed. Thus began the industry of block printing that soon spread to many areas under Chinese influence. For example, the Chinese empress Shiyou-toku who ruled from 764 to 770 had a million charms printed on small paper rolls.

The next development was the block printing of texts longer than one page.

It appears that the block printing of books was initiated during the Sui dynasty in the early seventh century. However, the oldest printed book that has survived bears the inscription which, when translated, reads, “Printed on May 11, 868, for free general distribution”. This book consisted of seven large sheets of paper pasted together to form a scroll that was hidden in a cave just like the Dead Sea Scrolls were. Eventually, 15000 manuscripts and printed scrolls were found in the caves at Tun-huang but none were older than the one from 868 [Ref.6:78-86]

In the first century B.C.E., a more convenient form of manuscript called a codex began to be used in the Mediterranean areas of the West. This took the form of several sheets of papyrus or parchment sewn or glued together at one side to form a book. The codex gradually replaced scrolls altogether in Europe, especially after parchment replaced papyrus. However, this type of book construction did not appear in China until 949 C.E. when another document from Tun-huang shows the sheets folded accordion fashion with the folds at one side pasted together to form a type of book. In a later version, printing is done on one side of the paper and each two pages is folded into the form of a V to give a pattern like VVVV. The tops of all the VVVV are bound together with the bottoms of the VVVV left uncut to form a book with uncut pages with the side of the sheet inside each V unprinted. Scrolls in China are still often made into books in this way.

Block Printing permitted the mass production of books in China from the tenth century and consequently what had been rarities became common possessions at a time when printing was completely unknown.

Until this time, each printing block made in China was a unique unit that had to be carved by a skilled craftsman and could only be used to print one or a pair of specific pages of a book. In the eleventh century, a Chinese printer, Pi Sheng, according to Silverberg [Ref.6:78-81], invented movable type. The Chinese Academy of Sciences refers to the inventor of movable type as Bi Sheng and describes his outstanding invention as follows [Ref.23:387]:

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"Bi Sheng's feat is described in Meng Xi Bi Tan (Dream Stream Essays) by Sheng Kuo, an eminent scientist of the Song dynasty. In the years 1041-1048...Bi Sheng started making clay types, one for each character. These were fired for hardness. For type setting, a square sheet of iron was prepared with a layer of resin, wax and paper ashes, mixed and spread on it. The mixture was circumscribed with an iron frame. A plate was complete when the frame was full (of type). This was heated over a fire until the mixture melted. The types meanwhile were pressed down to the height of the frame with a wooden board and the plate was ready for printing. Several duplicate types were made for each character, the number depending on the frequency of its use. As for rarely used characters, they were carved and fired when necessary and used on the spot. Bi Sheng's method had great merit, when hundreds or thousands of copies were made.

By the Yuan dynasty (1271-1368) Wang Zhen succeeded in trial producing wooden type. He also invented the rotating type tray to speed up operations. Details of his method are found in his book Wang Zhen Nong Shu. The characters were chosen from officially sanctioned dictionaries, classified according to sound and then written on paper. These paper sheets were glued onto wooden plates, leaving spaces between the characters, which were then individually engraved and each character separately sawn off into small cubes. (These were trimmed to uniform height). The type setting was done in a wooden tray, the types being picked up by hand with bamboo tweezers. When the tray was full, the type was held in place by inserting wooden wedges and secured by a wooden bolt. Any difference in height was corrected by placing tiny slices of bamboo beneath the low types to build them up. The ink was applied with bristle brushes". One cannot but marvel at this incredibly practical and modern method of type setting at a time when nothing similar was available in the West [Ref.23:388].

In the thirteenth century, attempts had been made to produce tin type, the world's earliest metal printing type, but tin unfortunately did not 'catch the ink' satisfactorily [Ref.23:390].

Printing spread rapidly from China to other Asian countries and in particular Japan and Korea. The Koreans invented the world's first copper type which was a major contribution to the art of printing [Ref.23:391].

One difficulty with Pi Sheng's invention of movable type, so far as China itself was concerned, stemmed from the fact that China did not have an alphabet. Western languages can (in English, for example) represent all known words by using just twenty six characters, whereas the Chinese language requires many thousands of characters. Although this did inhibit the use of movable type printing in the East to some extent, when movable type was used in the West with a small alphabet the combination produced an enormous escalation in the spread of the printed word and consequently in the dissemination of information. The advantage of this to future world civilisation cannot be over estimated. [Ref.6:83; 23:383-391] (Refer also "Printing in the West" in portrait No.9)

From 7th Century C.E. The Segmented Arch Bridge: China.

Arguably the most beautiful bridge in China is the Great Stone Bridge across the Chiao Shui River at the foot of the Shansi Mountains. It is the world's oldest segmented arch bridge and was designed in 610 C.E. It is still used for traffic today.

Instead of being built as a full semicircle, the arch is the segment of a circle. Temple [Ref.36:69] visualises the shape as though most of the circle is buried in the ground with
only a small “segment” of it being visible above the surface. This is the shape of the bridge arch. Such a shallow arch not only uses less material but is actually stronger than a full arch. In the Great Stone Bridge the large amount of stonework normally used for supporting the roadway across the top of the arch is largely replaced by openings with arched tops under the roadway. This greatly reduced the weight of stone which in older designs caused settlement and cracking. It also reduced the resistance to floodwaters giving the bridge greater longevity. The arch in this bridge has a free span of 37.5 metres. The largest surviving Roman semicircular arch bridge is 36 metres whereas the average span was 21 metres.

Marco Polo described an eleven span segmental arch bridge that is still in use across the Yung-ting River, West of Beijing, built in 1189. This bridge became known as the Marco Polo Bridge in Europe and probably led to this design becoming widely used in the West from 1400 C.E. onwards. [Ref.36:69; 23:448-451]

724 C.E. An Early Chinese Astronomical Expedition to the South Seas.

In 724 C.E., an expedition was sent to the South Seas to observe Canopus, one of the brightest of all stars, at high altitude, because from China it appeared very low down on the southern horizon. During this expedition, many brilliant stars in the southern hemisphere down to 20 degrees from the south celestial pole, were observed for the first time by any civilised nation. Some southern constellations known to China were not named in Europe until the seventeenth and eighteenth centuries. Until this knowledge was brought to Europe by the Jesuits in the sixteenth century, the West had assumed that the Chinese had no knowledge of southern constellations. [Ref.2B:119]

725 C.E. The Mechanical Clock – Invented in China.

The first clock with an “escapement”, the device that allows a wheel to progress one tooth at a time at certain fixed intervals, was invented in China by I-Hsing in 725 C.E. This was superseded by a superior one built by Su Sung in 1092 and described by Robert Temple [Ref.36:110] as “possibly the greatest mechanical achievement of the Middle Ages anywhere on the globe”. When the idea spread to Europe, it led to the development of the first mechanical clock in the West in 1310.

Both I-Hsing’s and Su Sung’s clocks had escapements and driving power provided by water instead of using springs or falling weights but the principle of the escapement was the same and that was the great breakthrough. [Ref.36:103-110]

9th Century C.E. Paper Money - China.

Paper money was one of the important Chinese inventions that flourished in the areas of Chinese influence during the European “Dark Ages” but which fell into disuse even before they were adopted in the West.

Robert Temple [Ref.36:119] quotes Marco Polo, who was so impressed by paper money in China that he wrote a whole chapter about it in 1296 C.E., in which he stated, “All these pieces of paper money are issued with much solemnity and authority as if they were pure gold or silver. Anyone forging it would be punished by death”.

Towards the end of the eighth century, Chinese businessmen set up a simple banking system whereby a merchant depositing money in the capital would be issued with a type
of bank draft that could be cashed in the provinces. This enterprise was taken over by the government in 812 C.E. Real paper money, a regular medium of exchange backed by cash deposits, was introduced by private enterprise in the early tenth century in the Chinese province of Szechuan. In 1023, the government set up its own official agency to issue actual banknotes of various denominations just as our modern Reserve Bank does.

Unfortunately by the end of the seventeenth century paper money had become discredited by such factors as malpractice, governmental printing of banknotes without cash backing that led to ruinous inflation, and governmental bungling by reducing the number of denominations to only one. As a result, transactions reverted to hard cash only and paper money ceased to exist in China.

When the original successful ideas of the paper money system became known in the West they were eagerly adopted. The result was that paper money was introduced first of all in Sweden in 1661, followed by America 1690, France 1720, England 1797 and Germany as late as 1806.

Ref.36:117 et seq

**Mercator “Map Projection” in China.**

Large school maps are generally in “cylindrical projection” as though the spherical globe were projected onto a cylinder and this is generally called Mercator’s projection after Gerardus Mercator, a Flemish geographer who published a navigation map in this projection in 1568. Although this projection makes countries towards the extreme north or south exaggeratedly large compared to those near the equator, the projection has the valuable property that a navigational course drawn on it comes out as a straight line whereas on other maps such courses appear as arcs of a circle. It is, however, interesting to note that the Chinese were using this type of projection to draw star maps six centuries before Mercator. The maps in the book, 

Hsin i Hsiang Fa Yao, begun in 1028 C.E. and finished in 1092 C.E., were in Mercator’s projection and are the oldest star maps in the world. Ref.36:35; 2B:123

**The Chain Drive for Power Transmission: China.**

Although the automobile is becoming more numerous in China, only a few years ago they were a rarity and millions of people there, as well as in other parts of East Asia, used bicycles as their mode of transport. Probably only a handful of Chinese people would have known that the chain drive from the pedals to the back wheel was a unique Chinese invention. Nowadays chain drives are used throughout the entire world in all kinds of machines from tiny instruments to massive mining equipment.

The first genuine chain drive in Europe was used by Jaques de Vaucanson in 1770. The first bicycle was produced by J.F.Tretz in 1869. This was nine hundred years after the invention of this type of power transmission in China by Chang Su-Hsun in 976 C.E., who used it to transmit power to a large and complex astronomical clock. Chang probably got the idea from the “chain pump” (described above under “Chain Conveyors”) also invented there in the first century C.E. and in use all over China in large numbers by his day.

The first extant illustration of a chain drive was that of a dual chain drive six metres long shown in a Chinese book by Su Sung in 1094. Ref.36:71; 23:21,52,58
Vaccination Against Smallpox in China.

"The Macquarie History of Ideas" [Ref.17:881] tells us that vaccination against smallpox was first introduced into Europe in 1718 by Lady Mary Wortley Montagu (the wife of the British Ambassador to Constantinople). Actually all the good lady did was to become scared that her family might contract the dreadul scourge that afflicted people throughout the world and, being in Turkey where vaccination against the disease was practised, had her family vaccinated. As she was a prominent British aristocrat other British ladies took heart and did likewise. Obviously vaccination cannot be practised unless extensive research and development has occurred. The important question to ask is surely: "Where did this occur?" The answer: "In China".

Robert Temple [Ref.36:135 et seq.] explains the development of the process in China from where it first came into prominence following the death of smallpox of the eldest son of the Prime Minister, WangTan (957-1017). From their observations, physicians in China began to realise that if you inoculated someone with material from a person who had the disease you merely passed on the disease but, if you took the poxy material from a person who had only developed a few scabs and blew it into the nostril of a healthy person then that person would not contract the disease in its full severity. They also came to recognise two types of smallpox (now called variola major and variola minor), the latter being less virulent. So they used this latter material. This idea was not unlike the technique used by Edward Jenner in England in 1797, who is usually credited with the discovery of vaccination. Jenner used cowpox as a vaccine against the more virulent smallpox. He noticed in 1796 that people who had contracted cowpox were immune to smallpox itself but it took him till 1802 to convince the British government. It was not until almost one hundred years later that Louis Pasteur isolated the bacteria causing the disease. Meanwhile in China, several centuries earlier, physicians proved the value of using material from people who had gone through "several-generations attenuation of the virus through multiple inoculations", a truly remarkable achievement. The great sinologist, Dr. Joseph Needham, himself a biologist, points out that, as the vaccine was also kept cool in winter for a month, 80 per cent of the viruses would have been dead ones that would not have caused smallpox but the vaccine would have produced in the vaccinated person antibodies as well as interferons that would have stimulated the immune system. Thus vaccination was about as safe and effective as it could possibly be made.

Temple writes [Ref.36:137]: "Vivid descriptions of the practice are recorded by Yu Ch'ang in China in his book Miscellaneous Ideas in Medicine (1643), and during the seventeenth century the practice spread to the Turkish region", where it was noticed by Europeans, including undoubtedly the veritable Lady Mary Wortley Montagu.

Gunpowder and Its Uses, including Rockets: China.

According to Francis Bacon writing in 1620 C.E. [Ref.24:Vol.I:19], gunpowder, the compass and paper/printing constitute the three most important innovations that have influenced the course of civilisation. However, he did not realise that all three were Chinese inventions.

Gunpowder is a mixture of powdered carbon, saltpetre and sulphur. Essentially the higher the proportion of saltpetre the more explosive the mixture is. Saltpetre is an oxidising agent and so provides oxygen for the chemical reaction that can take place inside a closed vessel, such as a bomb casing, even though the vessel is hermetically sealed. Saltpetre was the most difficult ingredient to obtain. It normally occurs naturally in hot dry places.
where it has not been leached out by the weather and, consequently, the Chinese were fortunate in having readily available deposits of it whereas in Europe it was virtually unobtainable. This may have contributed to the fact that the Chinese developed gunpowder many centuries before the West. In fact, by the twelfth century, when gunpowder first became known in the West, the Chinese had already developed it in all its forms from slow burning to highly explosive and had invented devices to use it in weapons such as guns and cannons.

Gunpowder was accidentally discovered by Chinese alchemists who wrote a warning for other alchemists to beware of the dangerous nature of the mixture. Salt petre had been used since about the fourth century B.C. to dissolve metallic ores but it was not until the twelfth century that it became known to the Arab alchemists and eventually to the Europeans. The oldest Arabian text mentioning salt petre was published in 1240 and was entitled *The Book of Assembly of Medical Samples* by al-Baitar. It was another century before the Arabs came to know the formula for gunpowder itself and it was not until sources of salt petre were discovered by the British in India in the eighteenth century that reliable manufacture of gunpowder in Europe was possible.

Sulphur, another ingredient of gunpowder, was also purified by Chinese alchemists as early as the second century C.E. by distilling it. This process was carried out by mixing iron pyrites and pieces of coal, burning it and condensing the vapours. In 1067, the emperor put a ban on the export of both sulphur and salt petre.

With the regular use of carbon, sulphur and salt petre by alchemists, it was only a matter of time before they accidentally discovered the rather frightening properties of the mix. The first true gunpowder formulas in history were published in 1040 by Tseng Kung-Liang. These formulas produced a sudden whooshing type of combustion and were used as both fire bombs and poison smoke bombs. However, well before the formula became known in the West, higher and higher proportions of salt petre were used producing firstly explosions and, as the proportion was increased further, detonation.

The Chinese people have always loved fireworks. Even as early as 200 B.C.E. pieces of bamboo would be thrown onto bonfires at celebrations to produce loud bangs. However, when the properties of gunpowder became known, they invented every conceivable type of firework from catherine wheels to bungers and rockets with ingredients that produced all the colours of the rainbow.

By the tenth century, incendiary bombs and arrows were used in wars and sieges. In the first half of the eleventh century an explosive "thunderclap" bomb with a bamboo casing, which made a thunderous noise, was in use. However, this bomb was more useful for setting fires and frightening men and horses than for its destructive effect. These bombs were usually projected by using large catapults but soon small grenades for hand throwing were manufactured. At about the same time coloured flares were invented and used for signalling across battlefields.

In 1221, highly explosive bombs in cast metal canisters came into use in China and not only produced major damage to property but the shrapnel from the metal casing had a dreadful antipersonnel effect. For the first time, in 1232, it was reported that iron armour had been completely pierced, heralding the close of the Age of Chivalry with armoured knights. Again in China in 1257, we hear of "several hundred thousand iron bomb shells" being required for a battle. As Temple writes [Ref.36:235], the earliest record of the definite use of a cast iron bomb in Europe was in 1467, nearly 250 years later than their earliest recorded use in China.
By 1277, landmines were in use in China, even with multiple type fuses to prevent misfires. The Fire Drake Artillery Manual (1412) gave complete instructions for making both land and sea mines and included methods for connecting several of these together to fire as cluster. These could even be triggered automatically by an enemy tripping a flint and steel device, the forerunner of the popular flintlock mechanism used in European muskets from 1547. Landmines were first used in Europe in 1403 but remote triggers were not available till 1573.

By 905, the Chinese had invented what might be regarded as the first gun. It was called a “fire lance” but it was not a true gun in that it did not fire a bullet from a barrel of constant bore diameter. These “fire lances” started off as large “Roman candles” that spewed fire and smoke from the mouth of the barrel at the enemy. Later they grew to become large and powerful and would fire for five minutes at a loading. Soon projectiles of all sorts were added to be hurled with great force at the foe. Fire lances have remained popular with the Chinese up until the twentieth century. Huge batteries of multiple lances were even developed. Also nautical variations were employed against boarding pirates. One type of lance fired two cannon balls joined by a chain which created havoc with the spars and rigging of sailing ships. Temple states that the earliest use of the fire lance in Europe was in 1396, 450 years after its first use in China. The first true gun was developed in China in the thirteenth century and reached Europe by the early fourteenth century. Needham describes constant visitations between China and Europe in Mongol times in the thirteenth century and states that it was inevitable that the Chinese gun would be taken up by the Europeans without delay as soon as they saw its obvious potential and the impossibility of ignoring such a revolutionary weapon. Temple argues that the first European cannons were so similar to the earlier Chinese cannons that it seems fairly obvious some were brought from China and copied. True guns, firing smooth projectiles from constant bore barrels, were made in China by 1280 and had reached Europe by 1320. “Perfectly cast iron cannons were being produced (in China) before Europe had even learned how to make cast iron”. [Ref.36:246].

Further developments in China proceeded at a fast rate and included guns, cannons, field artillery, multiple firing guns, fortifications with fixed batteries of guns and so on. The number of gunpowder weapons produced was vast and consequently the death toll in Chinese wars exceeded that in European battles many times over, giving a glimpse of things to come.

Temple concludes [Ref.36:248], “No nation in the world could match the Chinese expertise in warfare for two millennia”.

No doubt Chinese soldiers using fire lances would have experienced the recoil as the hot gases from the gunpowder ejected from the end of the barrel. In other words they would have realised the propulsive power of gunpowder and were soon using it in simple rockets. These were eventually developed to a high degree of sophistication. They soon discovered that if the gunpowder in the rocket had a uniform diameter hole bored into it from the back it would burn at a fairly constant rate and keep burning for a considerable length of time. The result was that the rocket would continue travelling for a long distance. To enable the rocket to remain aloft and in a definite trajectory several other innovations were made including the use of feathers or wings to stabilise its flight and a weight near the back to keep the nose up. Rockets were built that would travel for over a mile across water. Then a further important breakthrough was made. A number of small rockets or “fire arrows” were attached to the front of the long range rocket and fitted with fuses designed to be automatically ignited just as the gunpowder in the main rocket burned out. Thus multi-stage rockets had arrived.
For use in war, multiple rocket launchers were built, either mounted on wheels or later made portable for carrying by a soldier, not unlike the “bazooka” of World War II. Of course rockets were also used as fireworks.

According to Needham [Ref.24:Vol.V, Pt.7:516], the first use of rockets by the Chinese can safely be placed in the second half of the twelfth century. In Europe, rockets are first mentioned in connection with the Battle of Chioggia in Italy in 1380 C.E.

Rockets were adopted by the Indians for war and to a minor extent by European nations, but they certainly did not exert the same effect on armaments as did the gun and the cannon. In fact it was not until the fearsome German V1 and V2 rockets began falling on Britain during World War II that the public and military began to appreciate the enormous potential of this Chinese invention. The modification of rockets to run on liquid or gaseous fuels led to the beginning of the “Space Age” after the war. As Needham wrote [Ref.24:Vol.V, Pt.7:525]: “The rocket motor could be the means of the preservation of the human race itself... It might turn out that the rocket was the greatest single invention ever made by man” and, regarding the transmission of gunpowder technology from China to the West, he concludes [Ref.24:Vol.V, Pt.7:579]: “By the beginning of the fourteenth century the bell had rung and the Western world was set upon the fateful road to all the techniques of managing explosions. Hence, all later small arms and artillery, but not only that, all heat engines too, and all space travel”.

Needham concludes [Ref.24:Vol.V, Pt.7:568]: “All the long preparations and tentative experiments were made in China (for gunpowder), and everything came to Islam and the West fully fledged, whether it was the fire-lance or the explosive bomb, the rocket or the metal-barrel hand-gun and bombard. It reminds one of the old rhyme:

\[
\text{The bible and Puritans, hops and beer,  
Come into England all in one year.}
\]


Before 1086 C.E.

The Magnetic Compass: Development in China.

The only really great Chinese contribution to physics was their discovery and development of the magnetic compass and their evolution of it into the mariners' compass. It is well-known that Francis Bacon considered it one of the three greatest inventions to have an effect on the course of civilisation [Ref.24:Vol.1:19].

The attractive power of a natural magnetic mineral called lodestone appears in the literature of both China and the West from the middle of the first millennium B.C.E. However, the enormous breakthrough that the Chinese made was to discover that if a piece of lodestone was mounted in such a way that it could rotate, either on a thread or a round bulbous bottom (like a short spoon), it had the remarkable property to always point north-south. It was this direction seeking property that led the Chinese to develop the compass. Scholars have found nothing of it in European literature before 1190 C.E. or in Arabic literature before 1232 C.E. Some time between the first and sixth centuries C.E., the Chinese found that the direction seeking properties of lodestone could be transferred to a strip of iron. The first clear description of the true magnetic needle compass in Chinese literature according to Needham is “undeniably” at least a century earlier in c.1080 C.E. in an article entitled Meng Chi Pi Than [Ref.2B:9]. The compass described at that time had obviously undergone long development from the original rotating lodestone. In fact, Ronan and Needham [Ref.2B:10-27] point to earlier and earlier Chinese references going
back prior to 17 C.E. One article dated c.1080 C.E. states that “if you rub the point of a needle with lodestone then it is able to point to the south. It is then best to suspend it by a single cocoon fibre of new silk”. The military encyclopedia of Wu Ching Tsing Yao, in 1044 C.E., described the method of cutting a thin leaf of iron in the shape of a fish with pointed head and tail to produce a “needle” or pointer, heating it in a charcoal fire to red heat, taking it out of the fire with tongs and placing it so its tail points due north and then quenching it with water to cool it suddenly. If this fish is then floated on a bowl of water its head will always point south. So, by 1044 C.E., the Chinese had already found how to magnetise a compass needle (by what we now call thermo-remanence) without using lodestone at all. Sometimes the fish was balanced on an upward pointing pin. It is interesting to note, that this was also the ancestor of all the dial and pointer instruments used today.

The article from c.1080 C.E. mentioned above also shows an even deeper knowledge of the compass by explaining that the needle does not point exactly to the true geographic south but slightly to the east of south. It is amazing to realise that the Chinese had discovered at this very early stage the declination between magnetic south and geographic south and made corrections for it just as we do today. Needham concludes that this discovery was probably made between the seventh and tenth centuries and the measurement of such a small declination was only made possible by their invention also in that period of the precision pointing magnetic needle. The discovery of magnetic declination used to be wrongly attributed to Christopher Columbus in 1492.

In reference to the mariners’ compass, Needham refers to an article Phing-Chou Kho Than written in approximately 1111 C.E., referring to events dating from 1086 C.E., in which maritime merchants on long sea voyages looked at “the south pointing needle” to steer by during dull weather.

Ronan and Needham [Ref.2B:58] conclude, very conservatively, that “the first clear and accurately dateable descriptions of the magnetic compass with needle antedate European knowledge of it by one or two centuries” and probably by up to six hundred years and that “by the eighth or ninth centuries the declination, as well as the polarity, of the magnet had been discovered”. [Ref.2B:9-27,58; 3B:1-9; 23:152-165]

**Modern Underwater Salvage Methods, Invented in China.**

People these days still remember that when the Italian ocean liner, “Andrea Doria” sank in the 1950s in 70 metres of water it was raised by filling a group of deep ore ships with water, attaching them to the wreck by chains, pumping the water out of the ore ships which raised the huge hulk by buoyancy, moving to shallower water and repeating the process until the vessel was near enough to shore to be completely salvaged.

In about 1066 C.E., exactly the same method had been used by Huai-Ping for lifting eight enormous cast iron figures that had been used to anchor an important pontoon bridge over the Yellow River near P‘uchow. These had been swept away with the bridge by floodwaters. The only difference in the operation was that soil was used to fill the salvage vessels and slowly emptied, instead of using water. [Ref.36:72]

**“Pascal’s Triangle” Initiated in China.**

Blaise Pascal (1623-1662), the noted European mathematician, gave his name to a famous triangular arrangement of numbers that gives the numerical coefficients of binomial equations of higher and higher degrees. Although this triangle is obviously only of
interest to mathematicians, it is fascinating to note here that the triangle was invented in China and appears in the book of 1303 by Chu Shih-Chieh, entitled Precious Mirror of Four Elements. [Ref.36:146]

Later Chinese Mathematics and Science.

The thirteenth century C.E. saw China reach the pinnacle of its mathematics, which was algebraic rather than geometric but this was not sustained and it was eventually eclipsed by the Renaissance in Europe with its new mathematics and science. The major focus of Chinese mathematics during its long history was the calendar. It was utilitarian rather than theoretical. Needham considers it was more allied to the practical genius of a Leonardo da Vinci rather than the scientific genius of a Galileo. Unfortunately it was the Galilean direction that had the potential to lead to modern science.

In [Ref.2B:66] Joseph Needham writes, "Interest in nature was not enough, controlled experimentation was not enough, empirical induction was not enough, eclipse prediction and calendar calculation was not enough. All of these China had. Apparently mercantile culture (in the West) alone was able to do what agrarian bureaucratic civilisation (in China) could not - bring to fusion point the formerly separated disciplines of mathematics and nature-knowledge". Despite this, in pre-Renaissance history, Chinese mathematics could stand comparison with the other medieval civilisations. Certainly far more came out of China to the West than went in. Greek mathematics was by its nature abstract and systematic, but although it was strong on geometry it was weak in algebra, the reverse of Chinese mathematics.

As Needham concludes [Ref.2B:62], "Historians of science are beginning to question whether the predilection of Greek science and mathematics for the abstract, the deduction and the pure, over the concrete, the empirical and the 'applied' was wholly a gain". The practicality of Chinese genius had produced technological marvels well beyond the achievements of the Greeks and the world today is a much richer and more advanced place than it would have been without their wonderful contribution. [Ref.2B:13 et seq. including 62-66]

Chinese Mechanical Aids to Mathematics.

In this age of computer aids for mathematics, it is interesting to note that the Chinese were the most important early innovators in providing mechanical aids to mathematical calculations. Undoubtedly, the most important of these was the abacus, first mentioned in China in a book in 1436 C.E. Although a device with moving balls for arithmetical calculation is mentioned as early as 190 C.E. in China, Mei Rongzhao [Ref.23:64] states, "We may conclude that the abacus is a product of the 14th century" and that "the abacus and bead arithmetic were early transmitted to Korea and Japan and played a certain role in the development of calculation techniques in those countries". It does appear that there may have been independent inventions of the abacus in other parts of Asia, notably in India. This may have involved early cross fertilisation of ideas around Asia.

Prior to the abacus, Chinese mathematicians used counting rods and later counting rods marked with numbers to assist them in arithmetic calculations. [Ref.23:64; 2B: 28]

The Jesuits and East-West Relations in Astronomy.

At the end of the sixteenth century, there occurred one of the greatest of all examples of encounters between Asian and Western scientific thinking. The Jesuits, led by the
outstanding linguist, mathematician, geographer and all-round scientist, Matteo Ricci, reached Macau in 1582 C.E. and Peking in 1601 where they assimilated themselves into Chinese society in the cause of Christianity and began the greatest-ever intercultural relationship in East-West intellectual activities. However, this led to negative as well as positive effects on the subsequent history of world science and Chinese science in particular.

Ricci brought to China some of the important advances in astronomy from Europe and Western Asia, such as new and improved methods of predicting eclipses, geometrical methods for analysing planetary motions, the doctrine of a spherical earth, the use of coordinates to divide this sphere up into meridians of longitude and latitude, new European algebraic methods, the slide rule, improved methods of instrument making and the optical telescope to replace the sighting tube.

As Needham wrote [Ref.2B:213], it was unfortunate that Ricci completely misconstrued or misunderstood some of the greatest advances made by Chinese astronomers. For example, with an air of typical European superiority, he treated as "absurd" the concept of space in which heavenly bodies floated instead of being fixed in several concentric "crystal spheres" as the Europeans believed at that time and he scoffed: "They believe there is one sky and not ten skies. They believe that stars move in a void, instead of being attached to the firmament. They do not know what air is, where we say there is air between the spheres they affirm that there is a void".

Following the condemnation of Galileo by church theologians in Europe after Ricci's death, the Jesuits deliberately obstructed the spread in China of the Copernican idea that the sun is the centre of the universe and not the earth. They completely misunderstood the Chinese equatorial concept of astronomy (now used throughout the world) and, despite the fact that Tycho Brahe in Europe had just adopted this system, they tried to impose the less satisfactory and far more complex Greek system of ecliptic coordinates.

Another Chinese idea, that was ridiculed by consigning it to science fiction writings, was that of the plurality of worlds in which the Chinese considered the possibility of people inhabiting other heavenly bodies in the universe.

Despite the Western scientific and religious prejudice, the transmission of some of the Chinese ideas to Europe at this time did have a far-reaching effect on the future of modern science.

Having succeeded in completely confusing the Chinese and imposing on them the European idea of solid celestial spheres, the final irony came in 1848 when Wells Williams reproached the Chinese "for their belief in solid celestial spheres" under the impression that this was a primitive Chinese doctrine still persisting.

By 1640, it is interesting to note, the Chinese authorities were becoming tired of the superior attitude of the Jesuits in trying to actually impose Western knowledge on the Chinese with, of course, the hidden agenda of advertising the superiority of Christendom and by inference, Christianity itself. In 1666, the Khang-Hsi emperor ordered that the new encyclopedia of mathematics and astronomy would bear the title Hsin Fa ("according to new methods") and not the designation Hsi Yang ("Western").

Perhaps unexpectedly, as Needham says, "The Jesuit intervention led in due course to a rediscovery on the part of the Chinese themselves of the achievements of their own civilisation before the Ming decadence". However, he goes on to affirm that, despite its chequered record, the Jesuit collaboration with the Chinese "stands for all time
nevertheless as an example of cultural relations at the highest level between two
civilisations hitherto sundered” [Ref.2B:212 et seq.] See also [Ref.23:2].

Chinese Astronomical Contributions to World Knowledge.

Ronan and Needham [Ref.2B:219] conclude, in summarising Chinese contributions to
astronomical science, that they were “very remarkable” and include the polar and
equatorial system of astronomy, the concept of an infinite universe with stars floating in
space, the innovation of quantitative positional astronomy and the compilation of star
catalogues (from 350 B.C.E.) and star maps (from 310 C.E.), the use in these catalogues
of equatorial coordinates such as we use today and their continuous use over two
thousand years, the invention of numerous astronomical instruments and especially the
equatorial mounting as used in modern instruments, the invention of the clock drive for
their sitting tubes which were the forerunners of the telescope, the maintenance of
accurate records over an enormous period of time (more than any other civilisation)
covering many celestial phenomena, including comets (from the sixth century B.C.E.),
eclipses (from the fourteenth century B.C.E.), sun-spots (from 28 B.C.E.), novae and
super-novae.

The Chinese never developed Greek style geometrical schemes for the motion of planets
and other heavenly bodies nor did they ever feel the need to. Although they never
developed the important theorising that came from Greek colonists in West Asia and
Africa, on the other hand they were never confined in the Greek strait jacket of stars
being stuck in separate spherical firmaments. Nor were they tied to the European
obsession with the circle being considered the perfect figure whilst most moving
celestial bodies moved in elliptical paths.

Needham considers that Chinese astronomy “requires a much more important place in
the history of science as a whole than historians have been wont to give it” [Ref.2B:221].
c.7000 B.C.E.  Western Asia: The Beginning of the Evolution of Civilisation.

Professor Olmstead writes [Ref.12:3], "True man is first discovered in the Near East. Before the period of intense rainfall and glaciation, he had begun to chip flints. By these flint implements, we may trace his progress through the second, third, and last of these wide swings of climate, each of enormous duration counted in our years. At the close he was still at the palaeolithic, or Old Stone Age, level of culture. During these long ages he had done more than improve his stone and bone technique: he had evolved the family which he supported by hunting; he had made a cave home; he propitiated or averted the dangerous powers of magic and he hoped for life beyond the grave". During this period, he also domesticated cattle, sheep, goats and pigs and cultivated barley, wheat and flax. Some tribes became nomadic, others settled in villages where they developed a form of urbanisation and put up walls against the nomads and the less fortunate. A king or other leader was chosen to lead them in war. To encourage the powers of nature to increase production from the soil he began to worship fertility gods. Such as Mother Earth in her various manifestations. Society thus commenced to become more complex and began its long evolution into what we refer to as civilisation.

As can be seen below, civilisation began in Western Asia in Mesopotamia, as early as c.7000 B.C.E. in places such as Catal Huyuk and Jericho [Ref.72:50]. By 3200 B.C.E., the Egyptian civilisation was well under way in North Africa on the border of and influenced by, Western Asia. Later the early civilisations of India at Harappa and Mohenjo-Daro began in South Asia and the Chinese civilisation grew up in East Asia. Although it had been thought that these civilisations grew up independently because of the vast geographical distances involved, more and more discoveries are being made which show very early communication between them.

The characteristic feature or criterion of a civilisation appears to be urbanisation or the building of towns and cities. However, urbanisation is not synonymous with civilisation. Cities came to possess a structure of social classes, division of labour, literacy, political and religious hierarchies, a kingship or other form of leadership that was often regarded as involving a god-given power over other men and women and a military organisation for the protection and control of the populace. Distinctively designed public buildings were constructed to maintain the high power profile of the leaders. Later on, writing and the accumulation of knowledge became a feature of city life and sometimes became the eagerly sought-after monopoly of the rich and powerful. Laws began to evolve. Manufacturing of large quantities of artifacts, such as pottery, tools and weapons required concentrated centres of population. The earth's mineral resources were exploited and utilised in such a way that exclusively agricultural societies could not hope to compete and so agriculture tended to be carried out by peasant classes and/or slaves under the religious, military and political control of the city. Soon a permanent bureaucracy grew up and in some instances, such as China, eventually produced a stifling effect on future progress.

Trade and other forms of communication between regions within each civilised area and ultimately between the different civilisations, became a necessity and a benefit. Building
and trade led to the greater use of writing and to the invention of mathematics. Studies of
the behaviour of the heavenly bodies, for both religious and agricultural purposes, led to
more advanced mathematics for astronomy. Centres of learning with libraries evolved
and led to the study of thinking itself and the development of philosophies.

Finally, the strength of cities led to conflict and the growth of empires.

Catal Huyuk.

Excavations are in progress at the site of Catal Huyuk which vies with Jericho as the
oldest known city in the world. It is situated in modern south west Turkey, fifty two
kilometres south-east of Konya. Already twelve levels have been dated ranging from the
most recent c.5720 B.C.E. to c.6500 B.C.E., and lower levels are still being excavated. Exhibits from Catal Huyuk are to be seen in the Anatolian Civilisations Museum in Ankara.

Although excavations are still incomplete, James Mellaar, one of the main archaeologists,
asserts [Ref.13:52], “Already Catal Huyuk ranks with Jericho as one of man's first known
effects in the development of town-life. Before 6000 B.C.E. Catal Huyuk was a town, or
even a city, of a remarkable and developed kind”.

In his conclusion [Ref.13:227], Mellaar goes on to say that “It was the agricultural
development of Neolithic Anatolia that was responsible for the spread of agriculture into
Europe, preparing the way for the beginning of European civilisation which is our
common heritage... Seen in this light, the Neolithic civilisation of Catal Huyuk represents
something unique in the long history of human endeavours: a link between the remote
hunters of the Upper Palaeolithic and the new order of food-production that was the basis
of all our civilisation”.

It must be pointed out that intensive archaeological work is being carried on throughout
the West Asian countries and carbon dating is continually changing the known picture of
the chronology of this very early period of history. Consequently, although this book
gives the best estimate of dates, these are subject to change as new discoveries are made in
this exciting search.

The Aryans.

From about 4000 B.C.E., parts of a large tribal community in Central Asia in the region
of the steppes of southern Russia split off and began migrating in several directions from
their homeland. These people were originally nomadic pastoralists and called themselves
Aryans, meaning “noble ones”. Some tribes migrated westward into the region now
occupied by Europe and became known as Indo-Europeans. Other tribes moved
southward into the Middle East around the Iranian Plateau and then into South Asia and
especially India. These were called Indo-Aryans.

By 4000 B.C.E., when the major migrations began, the Aryans already rode and harnessed
horses. According to Lopez [Ref.30:7], they had also invented the chariot and their
copper and bronze fabricated weapons gave them military superiority. They imposed
their culture and particularly their language on the indigenous peoples in the countries
they invaded. This language formed the basis for several important later languages
including Persian, Greek, Latin, German and English as well as Sanskrit and most of the
modern languages of Northern India.
The Indo-Aryans who migrated into the Indian sub-continent were responsible for the development of the Hindu civilisation and religion in India. By 2000 B.C.E. these Indo-Aryans gradually moved into the Indus River Valley and by 600 B.C.E. occupied the Gangetic Plain and so by this time dominated the whole of northern India both politically and socially. [Refs.30:7-8; 52:11].

From c.4000 B.C.E.

The Sumerians.

It is amazing to note that only a century ago modern scholars did not even know that the Sumerians ever existed [Ref.85:10].

The Sumerians inhabited the southern part of the land that came to be called Mesopotamia in the beginning of the fourth millennium B.C.E. which was between the Tigris and Euphrates Rivers near where they ran into the Persian Gulf in what is now modern Iraq. No-one knows where these people came from but here they established the oldest literate and urban culture in the world [Ref.85:9 et seq.].

Each Sumerian city was independent and ruled over by its priest-king or patesi. The temple, which was the highest and most important of many fine public buildings in each city, was topped with a huge tower called a ziggurat which was surrounded by a winding stairway. Work, law and education, as well as religion, were controlled from the temple. The people were hardworking and believed that mankind was created to work and provide for their own personal gods. This religious philosophy combined with general control from the temple resulted in what must be one of the most socially cohesive societies the world has ever seen and the fact that this occurred at such a very early period in recorded human history is truly remarkable. They were responsible for inventing not only urbanisation but also, and much more importantly, civilisation.

The majority of people were farmers, fishermen, merchants, scribes, craftspeople or homemakers. Farms were irrigated from the rivers by using reservoirs, weirs, dykes and canals. As the rainfall in Sumeria was so low and the temperature so high farmers were forced to invent complete systems of irrigation to use water from the two mighty rivers. This also involved the invention of methods of surveying, mapping, measuring and levelling. The earliest crops grown were barley and wheat together with a range of vegetables. Beer was made from barley. Clay tablets have been discovered showing detailed methods of field preparation, cultivation and harvesting. Oxen were used to draw simple ploughs, harrows and even simple seeders. Harvesting was carried out using sickles and sheaves were bound before being threshed and winnowed later using fairly crude methods.

The Sumerians kept a range of domesticated animals including oxen, bulls, cows, sheep for wool, goats for milk, meat and hides, and pigs for meat, fat and skin. The earliest domesticated pigs were kept in 6750 B.C.E. in a village in Jarmo. Hunting and fishing were also still carried on.

The Sumerians were responsible for several major innovations which have influenced the advance of world civilisation since. These included irrigation and farming methods (see above), writing (see below), the wheel, the technical use of clay, time-keeping instruments and mathematical notation. These are described more fully in portrait No.6: Science and Technology.
There were two other important innovations, i.e.

1) **Legal Codes**: One of the first things recorded in their new cuneiform writing were codes of laws that citizens were expected to obey.

2) **Religious Traditions**: Many Sumerian religious traditions were absorbed by the later Babylonians and appear in the Hebrew and Christian bibles, such as the creation, the flood, the Tower of Babel (thought to have been a Sumerian ziggurat), the organisation of the earth and the concept of a personal god.

**Important Dates in Sumerian History.**

To provide a time-frame for the evolution of early civilisation in ancient Mesopotamia, the following section provides some important dates for each of the major peoples who inhabited the area around the two great rivers, Tigris and Euphrates [Ref.84]:

- **3500 B.C.E.**
  - The Sumerians settled the marshy area between the Tigris and Euphrates Rivers near the point where they emptied into the Persian Gulf. This area became known as Sumer.

- **By 3000 B.C.E.**
  - Sumer was made up of more than a dozen independent city-states including Ur, Eridu, Larsa, Isin, Adab, Nippur, Kish and Erech.

- **2600 B.C.E.**
  - Gilgamesh, an epic figure in Sumerian legend, ruled the city-state of Erech.

- **2400 B.C.E.**
  - The Akkadians, a Semitic race from the north, under Sargon I, conquered most of the Sumerian city-states and thus began the Akkadian empire.

- **c.2200 B.C.E.**
  - The Sumerians regained control of their lands and their king took the title King of Sumer and Akkad.

- **2094 B.C.E.**
  - Shulgi, who ruled for more than forty years, presided over a period of great advance in Sumerian art, technology and law-making.

- **c.2006 B.C.E.**
  - Sumer was invaded on all sides and ceased to be a distinct power. The most successful of the conquerors were another Semitic people from the north called the Babylonians.

**From 3200 B.C.E.**

French-American archaeologist Schmandt-Besserat has “marshalled impressive evidence that writing emerged in about 3200 B.C.E. - more than a thousand years before the rise of Babylon and Assyria” [81:12]. This occurred when Sumerian revenue officials, who had long used small, fired-clay tokens as counters to keep track of commodities such as sheep, grain, and oil, began to maintain records by pressing distinctively shaped tokens into wet clay and firing it in a kiln.

Over the period 3000 B.C.E to 650 B.C.E., the pictographic clay markings went through a long period of evolution into a large number of formalised signs, unrecognisable from the original pictures which they represented but which could be rendered relatively quickly by a scribe using a wedge-shaped stylus. This was the first true writing and was called *cuneiform*, meaning "wedge-shaped". In its final, developed form it was called the *Akkadian script*. This was one of the really great inventions and had inescapable effects on future global civilisation especially when it evolved further into the alphabet, not far from the original area in Western Asia where it all began. Fortunately, for the great benefit of all later civilisations, the Assyrians were thus able to "leave unparallelled records of their richly complex societies" [Ref.81:12].

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c.2000 B.C.E.  
Mesopotamia.

Mesopotamia means "land between the two rivers" (Tigris and Euphrates). Tigris means "toward the tigers", i.e. towards India or the east [Ref.81:8].

Mesopotamia was really two lands i.e. an upper green hilly region of high rainfall and cool temperatures in the north, called Assyria after its capital Assur, and a lower flat arid land in the south near the mouth of the rivers, with low rainfall and high temperatures. We have already seen the need which the earlier Sumerians found for irrigation in this area. It is strange that the more intensive and earlier civilisations grew up in the southern dry region - first the Sumerians and later the Babylonians, who claimed descent from the Sumerians.

By 2000 B.C.E., a "rich and complex lifestyle had been flourishing for over a thousand years in the many compact, densely populated cities" in the south [Ref.81:8]. Established irrigation systems made Babylonia's fields highly productive. By contrast the northern Assyrian fields were well watered by natural rainfall and their cities tended to be large and sprawling and more sparsely populated than their Babylonian counterparts. Much of the culture in Assyria came from the older Babylonian realm.

From 1792 B.C.E.  
Mesopotamian History.

The following section shows some important dates classified into the four periods used by archaeologists [Refs.82; 83; 81:9].

The Old Babylonian and Old Assyrian Period (2000-1600):
1792-1750 B.C.E. - Hammurabi, the Babylonian ruler, brought most of Mesopotamia under his control. Assyria continued to be dominated by foreign powers on and off throughout its history.

The Middle Assyrian Period (1600-1000):
1600-1124 B.C.E.  Babylon was invaded first by the Hittites in 1600, by the Kassites from the Zagros mountains in the East in 1595 and later on by the Elamites in 1157 who threw out the Kassites.

1124 B.C.E.  Nebuchadnezzar I drove the Elamites out of Babylon.

1115 B.C.E.  In Assria, Tiglath-Pileser I restored many of the great buildings destroyed six hundred years before by the Babylonians and instituted an era of greatness. In 1100, an assault on the Assyrian capital was repulsed.

1077 B.C.E.  Much of the Assyrian territory was invaded by foreigners and the country again entered a period of decline.

The Neo-Assyrian Period (1000-605):
884 B.C.E.  Assurnasirpal II stopped the decline, restored Assyria's possessions and added lucrative trade routes to the Mediterranean.

858 B.C.E.  During the reign of Shalmaneser III, unrest and rebellion became the order of the day in Assyria and the country lapsed into another period of decline.

745 B.C.E.  The Assyrian King Tiglath-Pileser III overthrew the Babylonian king, imposed his will over Mesopotamia in general and returned power and splendour to Assyria which lasted for nearly one hundred years.

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689 B.C.E. The Assyrian King Sennacherib destroyed even the city of Babylon itself.
612 B.C.E. The final swing of the pendulum occurred for Assyria. The Iranian Medes and the Chaldeans of Babylonia joined forces and, with the sack of Nineveh, finally destroyed the power of Assyria forever.

The Neo-Babylonian Period (605-539):
605-562 B.C.E. - After the fall of Assyria, the Babylonian king Nebuchadnezzar II defeated those who rushed in to take over the territory including the Medes in the north and the Egyptians in the south and, as J.M.Roberts says [Ref.14:113], “gave Mesopotamian civilization an Indian summer of grandeur and the last Babylonian empire which more than any other captured the imagination of posterity”. Roberts calls Nebuchadnezzar “the greatest king of his time, perhaps of any time until his own” [Ref.14:113]. His hanging gardens of Babylon were one of the Seven Wonders of the ancient world. To further bolster the absolute monarchy of Nebuchadnezzar, all of the lesser Mesopotamian gods came down the rivers and canals at New Year to visit the Babylonian god, Marduk, to acknowledge his supremacy.

Following the death of Nebuchadnezzar in 562 B.C.E., the empire began to fall apart and, in 539 B.C.E., Cyrus, king of Persia, conquered Babylon and made it part of his Persian empire.

c.2000 B.C.E. “Early Mesopotamian traders journeyed as far east as India” [Ref.22:3].

c.1900 B.C.E. The oldest known school house found by archaeologists was used in Babylon. It was complete with clay tablets of scholars’ lessons [Ref.28:9].

1792-1750 B.C.E. Hammurabi, the Great Babylonian Law-Giver.

Hammurabi ruled from 1792 to c.1750 B.C.E. and is justly famous for his Code of Laws which consisted of 282 laws plus a prologue and an epilogue. The laws, which covered just about every aspect of everyday life, “each took the form of a conditional sentence” [Ref.81:26] i.e. if someone commits this act, then the offending party can expect this punishment. Many of the punishments were based on the “eye for an eye principle” and were very exacting [Ref.81:26].

“Archaeologists have been struck by the similarity of the Code of Hammurabi to the laws of Moses” [Ref.81:28] (much later in the thirteenth century B.C.E.) and scholars have suggested that each set of laws had its roots in a common tradition that can be traced back to the laws of Eshnunna just prior to his time and even further back to the Sumerian laws of Ur-Nammu around 2100 B.C.E. which also make the punishment fit the crime.

Unfortunately, little survives of the Babylon of the great Hammurabi because the new city of Nebuchadnezzar II, conqueror of Jerusalem, was built on top of the waterlogged ruins twelve centuries later.
The old cuneiform Akkadian script was very difficult to learn because it involved some 600 fairly complex characters. Its use was restricted to specialist scribes.

Somewhere before 1100 B.C.E., maybe several centuries earlier, a new script based on a much smaller number of characters, evolved somewhere around the area of Canaan. In c.1100 B.C.E. the Arameans, "a nomadic people from the Syrian desert who spoke a Semitic vernacular, adopted this script in the form of an alphabet based on only 22 characters" [Ref.81:44]. This became known as the Aramaic script. Since the late second millennium B.C.E., the Arameans had been influential traders throughout the region of Western Asia between the Mediterranean and the Persian Gulf, where many settled down on the plains of southern Mesopotamia. Their Aramaic script with its 22 letter alphabet was carried by the seafaring Phoenicians and gradually spread to the Mediterranean countries. Cuneiform could only be inscribed by pressing a stylus into wet clay but the Aramaic script was suitable for writing on a wide range of materials including papyrus, wax and clay.

The educated classes in Babylonia supported the scribes in trying to hold onto their monopoly of writing using the old Akkadian cuneiform script but the new script was far easier to learn, even by children in schools, and consequently its spread was very rapid particularly amongst the previously non-literate population. By the eighth century B.C.E., the Assyrians of northern Mesopotamia passed a decree giving the Aramaic script and the Aramaic spoken language special status. It eventually became the lingua franca of international commerce and diplomacy and also became the mother tongue of most people in the Middle East including Jesus Christ.

The new Semitic alphabet, often called the Phoenician alphabet, spread from Asia to Europe where it became one of the most important civilising and cultural exports from Asia to Europe.

Martin Bernal [Ref.78:123], in his conclusion to the Cadmean Letters asserts that: "There can be little doubt that the alphabet was introduced to the Aegean at some point before 1400 B.C.E. and evidence indicates some time around 1750". He goes on to say that this "tallies with the legendary and archaeological evidence of eastern influence at the beginning of the heroic age in the second quarter of the second millennium". Thus Bernal finally concludes that "if we use all the information at our disposal...we shall arrive at very much the same conclusion as Herodotus and his contemporaries, that is, the 'Phoenician' or Levantine alphabet was transmitted westward (from Asia) at some time around the middle of the second millennium B.C.E." and "to the extent that the legendary Cadmus represented the Semitic colonisation of Greece in this period, Herodotus and his contemporaries were right to call the earliest Greek alphabet Cadmean Letters". According to Herodotus [Ref.79:Vol.2:BookV:section58], "Now the Phoenicians who came with Cadmus...introduced into Greece upon their arrival a great variety of arts, among the rest that of writing, whereof the Greeks till then had, as I think, been ignorant".

Cadmus [Ref.68:116], son of Agenor, King of Phoenicia, was the brother of Europa [Ref.68:xvii], a Phoenician maiden who, according to legend, was either kidnapped and taken to Crete or abducted by the god Zeus (Jupiter) in the guise of a white bull and carried off to Crete on his back. Cadmus roamed the world searching for his sister and his arrival in Greece, as Bernal [Ref.78:113] suggests, represents in legend the actual
Semitic colonisation of Greece at that time.

Norman Davies [Ref.68:116] informs us that the Phoenician alphabet introduced into Greece consisted only of consonants and was “a simple system...which broke the monopoly in arcane writing which had been exercised for millennia by the priestly castes”.

The names of the letters passed almost unchanged into Greek, for example: aleph (alpha) = ox; beth (beta) = house and so on. Later the Greeks added five vowels to the sixteen consonants and the modified Semitic alphabet from Asia became the ancestor of modern Greek, Latin and all the other main branches of European writing which formed the basis of future Western scholarship and culture.

c.1000 B.C.E.

Ionia.

Ionia was the ancient name for the area which now comprises the country on the central section of the western coast of modern-day Turkey in what is often referred to as Asia Minor or Western Asia on the Eastern coast of the Aegean Sea. The Greeks used to say that Europe was where the sun set on the Aegean sea and that the coast towards the rising sun was Asia. So, despite the still continuing argument on the geographic boundaries of Asia, Ionia was always considered to be in Asia. Indeed later on it comprised the Roman province of “Asia”. Ionia included the adjacent islands including Samos and Chios. The region received its name from the Ionians, Greeks who emigrated from the mainland of Greece probably before 1000 B.C.E. Over the next few centuries great cities grew up of which Ephesus, Clazomenae, Erythrae, Colophon and Miletus were the most celebrated. Ionia is of enormous importance to the intellectual and scientific history of the world because from here came some of the greatest Asian contributions to world civilisation particularly in the form of the first true scientific thinking in the world. Although Western oriented historians used to refer to contributions from here as Greek innovations, in point of fact these were uniquely Ionian. It would be equivalent to describing Australian science four hundred years after colonisation as British science. In fact, the true scientific methods developed in Ionia by such geniuses as Thales and Pythagoras in the seventh and sixth centuries B.C.E. were rejected by the great Athenian philosophers. The Ionian contributions to art, literature, philosophy and mathematics were an enormously important factor in the influence of West Asia on the development of Greek science and civilisation that underpinned the later rise of modern Western civilisation. [Ref.73:16] (Refer also portrait No.6 - 625 B.C.E.)

The city of Miletus in Ionia became an extremely busy seaport and established some 80 colonies of its own around the shores of the Euxine (Black Sea) and on the upper Mediterranean coast. With mariners, traders and travellers from all over the known world came a massive influx of knowledge that was not only commercial but also mathematical, astronomical and geographical. Fortunately, there were people in Miletus who classified, studied and built on this knowledge. One of these was Thales, a trader who made a fortune from olive oil, but who was one of the outstanding geniuses of the age. It was he who began modern scientific methodology as explained in portrait No. 6 - 625 B.C.E.

In his book, The Early Ionians, G.L.Huxley [Ref.86:154] queries, “How finally are we to judge the early Ionians? It is obvious that the significance of Ionia lies in its peculiarly intellectual character; the greatest gift of the eastern Greeks to posterity was the creation of philosophy, a rational view of the origin and nature of the world and of man’s place in it. This was chiefly the work of the Milesians of the sixth century B.C.E. who, with wonderful originality devised the speculative systems out of which the natural sciences were ultimately to grow...Thales and Anaximander, and their colleagues, who by
creating out of cosmogenical myths a rational world view, became the founding heroes of the Ionian enlightenment”. Indeed, the western Greeks, often wrongly lauded as the originators of philosophy and scientific methods of thinking, were actually responsible for trying to spoil this intellectual enlightenment in Ionia. Huxley goes on to deplore the “deadening” domination of Ionia by Athens after the Persian Wars which gave the Ionians less scope for political initiative. Ionians were no longer able in their own cities “to join thought with action, philosophy and politics, as statesmen of the sixth century had done; and many...were driven to take up arms against Athenian rule [Ref.86:154 et seq.]. The Athenians’ persecution of the (Ionian) philosopher Anaxagoras would have been inconceivable in the Miletus of Thales and Anaximander” [Ref.86:93].

Huxley [Ref.86:98] tells us that Thales carried out the pioneering work of interpreting rationally the physical world, which was carried on by his successor Anaximander, whose intellect Huxley regards as preeminent in the history of Milesian philosophy.

The last of the great Milesian philosophers of the sixth century B.C.E. was Anaximenes, the reputed pupil and successor of Anaximander but details of his work have unfortunately not survived. Pythagoras was also from the Ionian island of Samos.

The Period of the Persian Empire.

539-331 B.C.E.

We have seen above that Cyrus I of Persia conquered Babylon in 539 B.C.E. J.M.Roberts [Ref.14:114] gives his opinion that, “In so far as the story of antiquity has a turning point, this is it. An independent Mesopotamian tradition going back to Sumer is over. We are at the edge of a new world”.

The ensuing era of greatness for Persia was very complex in that it involved a multiplicity of diverse peoples. Roberts [Ref.14] puts the period into general perspective. However, for the student, teacher or educator who wishes to study the detail of this amazing period in a very readable form, reference should be made to The History of the Persian Empire by Professor A.T. Olmstead [Ref.12].

Olmstead [Ref.12:1] writes: “When Cyrus entered Babylon in 539 B.C.E. the world was old. More significant, the world knew its antiquity” and studied it passionately to learn from what had gone before.

Many of the ancient peoples knew of the biblical flood of Noah. The history of antediluvian times was known through legend while that of the more recent four thousand years or so was visible in buildings, inscriptions and accumulated knowledge, traditions and practices. Whilst it is probably “too early to speak of the interplay of Asia and Europe”, Roberts argues [Ref.14:58] that “there are few more striking examples of the interplay of reciprocal influences” than in this period which “marks the end of the ancient world. Persia suddenly pulled people into a common experience: Indians, Medes, Babylonians, Lydians, Greeks, Jews, Phoenicians and Egyptians”. A future world civilisation, beginning in Western Asia, was in the making and its enormous importance has been shockingly downplayed by Western historians who have tended to date everything from European Greece.

In the sixth century B.C.E., the independent greatness of Egypt came to an end with its defeat by Nebuchadnezzar in 588 B.C.E., and its conquest, at the hands of the Persians in 525 B.C.E who integrated Egypt into their huge empire.
The history of the Persians dates back to about 1000 B.C.E. with an influx of Aryan tribes from the north into what was to become Iran (literally Land of the Aryans). Two especially vigorous tribes were the Medes and the Persians. The Medes moved to the north west when they overcame the Assyrians and began their age of individual greatness at the beginning of the sixth century B.C.E. The Persians, on the other hand, went south towards the Gulf where their legendary kings took over the land near the Tigris River and the old adjacent lands of Elam and Fars. Here they set up a new and important dynasty called the Achaemenids. From this dynasty came Cyrus, the conqueror of Babylon, who had dispensed with the last independent king of the Medes in 549 B.C.E. and who now ruled the largest empire that the world had ever seen.

As Roberts [Ref.14:155] asserts, "The style of the new empire was different from its predecessors, the savagery of the old Assyrians was replaced by a more gentle rule. At least brutality was not celebrated and Cyrus was careful to respect the institutions and ways of his new subjects". He particularly continued the major religious traditions of his predecessors. For instance, when Cyrus was crowned king of Babylonia, he called on their greatest god Marduk for his protection. But more significantly for later history, Cyrus demonstrated a new value, respect for cultural diversity, when he restored the Temple of the Jews at Jerusalem which Nebuchadnezzar had completely destroyed before carrying off the population to Babylon as slaves. Cyrus decreed in 538 B.C.E. that the House of God in Jerusalem be rebuilt, at his expense, to its previous scale and grandeur. The gold and silver artifacts from the House of God that had been taken to Babylon by Nebuchadnezzar were to be restored to the Temple exactly as they had been. Such an action in international relations was a great advance in human thought and ethical behaviour and a very good example of early networking for peaceful coexistence.

Unfortunately the gentleness of the Persians has been downplayed, especially by post-Islamic Western historians. In the Greco-Persian wars Persia is always painted as wicked with horror being expressed at the dreadful consequences which would have ensued if the Greeks had been vanquished by the Persians. History really needs rewriting to provide a fairer perspective. The Persians, like Asians in more recent times, have been regarded by Europeans as the 'Other'.

Cyrus, according to Roberts [Ref.14:155], "lived as a world historical figure, recognised as such by other would-be conquerors, who were to strive in the next few centuries to emulate him. He requested from his subject provinces little but obedience and tribute in gold to replenish the Persian treasuries". Roberts again emphasises, that it was "a beautiful and gentle civilisation" which was symbolised by the fact that Herodotus, the Greek historian, commented on their love of flowers and, as Roberts muses, "There are many things we could do without more easily than the tulip, which we owe to them" [Ref.14:156].

Fortunately, the creative work of Cyrus was carried on after his death by a young man who claimed Achaemenid descent and who came to be called "Darius the Great", who ruled from 522 to 486 B.C.E. His achievements rivaled those of Cyrus and, in the field of administration, more than eclipsed them.

According to Olmstead [Ref.12], "At the foot of the Mount of Mercy in south-eastern Persia, Darius the Great built his capital, Persepolis - symbol of Persian glory for two centuries". At its greatest extent the Achaemenid Empire, with its power centred in this city, reached from the Nile and Greece eastward to India. The empire dominated the major travel routes between East and West. It was also the meeting ground of the great social
cultures of the ancient world. Its influence lasted from the time of Cyrus, through the reign of Darius I until the burning of Persepolis by Alexander the Great in 331 B.C.E. during the reign of Darius III.

The sponsorship of major religious ideas, which was such a feature of the rule of Cyrus, was carried on under Darius I. It was during his reign that the most refined of the Persian religious cults, started by a fairly unknown prophet, Zarastra or Zoroaster, evolved into the major religion of the empire called Zoroastrianism and, by the time of Jesus, was the most widely practiced religion in the known world. (See portrait No. 5: West and Central Asia - Religion and Philosophy).

According to Olmstead [Ref.12:195], Zoroaster was a true monotheist because he believed that Ahura-Mazdah (the god of Zoroastrianism) was literally the one and only god. Darius was equally monotheistic in spirit and no god but Ahura-Mazdah was mentioned by name in his royal inscriptions. Olmstead [Ref.12:479] argues that Zoroastrianism made very important contributions to the religion of the Jews and even Christianity which Roberts regards as the first world religion. Some Zoroastrian beliefs that were passed on included the doctrines of true immortality, the Devil Satan and the Last Judgement.

Towards the end of his days, Darius I began extensive preparations for a war against mainland Greece. He already had under his control "the more populous, more wealthy, and more cultured part of the Greek world (in Western Asia) and especially Ionia, and incorporation of the remainder into his empire must have seemed inevitable" [Ref.12:151].

This war is usually painted as a major effort by the Persians to crush the fledgling democracies in Greece. However, as Olmstead warns us [Ref.12:151], "In reading the story of the Persian Wars we naturally identify ourselves with the Greeks, since our accounts must be based almost exclusively on that of the Greek Herodotus...Needed correction to the traditional interpretation is given in part by the huge quantity of oriental source material so recently uncovered". According to Olmstead [Ref.12:158], following a revolt of the Asian Greeks against the tyrants whom the Persians had installed to govern them, Darius instructed his general Mardonius "to expel the tyrannies, whose usefulness was obviously past, and to reorganise the Ionian city-states as democracies". For the first time in history, democracy had conquered a large and important part of the Greek world in Asia and was nestled under the protecting aegis of a 'barbarian' monarchy! No wonder Herodotus [Ref.79] quotes the policy as a very great marvel and a complete refutation of those Greeks who had refused to believe his earlier statement that Otanes (one of the seven conspirators who put Darius in power) had urged the Persians to adopt a democratic form of government.

The original plan for the war was to advance from the north towards Athens cautiously with the protection of a fleet offshore. Persian General Mardonius publicly announced that his objective was the conquest of Eretrias and Athens. After his grant of democracy to Ionia, there was every reason to believe that the democrats in the threatened cities in Greece would seize the first opportunity to drive out the conservatives and to install their own leaders under the suzerainty of their good friend, the Great King of Persia. Until this time, Persian diplomacy and strategy had been virtually without flaw but it now went horribly wrong with a long series of rather unfortunate military and diplomatic blunders which led to the ultimate defeat of Persia in the field at Marathon, Thermopylae, Salamis, Plataea and finally Mycale. Olmstead [Ref.12:26] says, "The war had been lost by the Persians through repeated military and diplomatic blunders and not won by timid, incompetent, or disloyal allied (Greek) commanders". Nevertheless all the good intentions of the Persians with regard to democracy have hardly ever been mentioned in
Western history books. Even though these intentions came to nought, it is very important to realise that the true enemies of democracy were not the Persian invaders from Asia but rather the Greek conservatives from Europe.

Darius I died in 486 B.C.E. after a rule of thirty six years [Ref.12:184]. He was a great administrator, especially when we remember that no-one in history before him had had to rule such a complex and widespread empire. He was a great law-giver, carrying on the tradition of Hammurabi but in a more difficult environment and he was also an outstanding financier. Cyrus and his immediate successor, Cambyses, had been content to receive unspecified gifts from their subject peoples but Darius set up the first imperial state budget and set specific dues and taxes. As Olmstead [Ref.12:185] concludes: "Rarely among ancient monarchs do we find a ruler who so thoroughly understood that the successful state must rest on a sound economic foundation". Darius standardized weights and measures, used the already existing system of coinage but developed definite denominations, kept bullion as backing and reserve and set a definite value on precious metals.

Following the death of Darius I, the succession went directly to his son, Xerxes I, who ruled from 486-465 B.C.E.

Xerxes has been unfairly presented by European historians as "the weakling monarch, dominated by his eunuchs and remembered chiefly for (what has been portrayed as) his insane attack on European Greece" [Ref.12:230]. Oriental sources present a very different character. Xerxes was thirty five when he came to power, having ruled the great city of Babylon for twelve years as viceroy, a strenuous and demanding job. He inherited the war with Greece from his father under whose leadership the blunder at Marathon had already occurred. However, rather than lead the formidable military machine created by his father, Xerxes preferred to complete the magnificent city of Persepolis. The Greek War he tended to leave to his cousin, General Mardonius. On the other hand Olmstead, [Ref.12:230] argues that "against his one military failure, in Europe (against Greece), not so spectacular to his subjects as it appeared to later generations, must be placed a whole series of victories, including the previous recovery of the two wealthiest and most civilised peoples of his vast empire (Babylonia and Egypt) and his retention of control over the majority of the Greeks themselves". Xerxes went on to tighten up administration of his far-flung empire by bringing in more innovations, accentuating the break with the past and setting the pattern for the future. In 465, he was assassinated.

After Xerxes, the great empire began to fail due to internal strife and over-taxation. Persia never really again reached the heights achieved under Cyrus I or Darius I. She had many periods of strife and many wars especially with Athens, Sparta and Egypt. There were, however, some periods of illumination and certainly periods of memorable building, art and literature. Towards the end of the Persian period, both Phoenicia and Egypt were reconquered and once again Persia regained control of the sea.
In 336, Darius III came to the throne. In the same year Philip of Macedon was murdered and his son, who came to be called Alexander the Great, came to the throne. It was these two, Alexander and Darius, who were to write the final chapters of independent Persian history leading eventually to the death of Darius and the burning of the great city of Persepolis by Alexander in 331 B.C.E. At the time, Persepolis was the richest city in the world and its destruction was savage. Only a few coins have ever been recovered. All the men were slain and the women taken into slavery. Worse still, the city had been surrendered by the garrison commander before the city was sacked. Alexander even boasted in his letters that he had ordered a massacre of all captives. So, we might ask were the Persians barbarian or was Alexander a barbarian? Although the Hellenic Age that followed Alexander was a step forward in world civilisation, we might ask whether this was due to Alexander’s personal qualities.

c.334
B.C.E.

Alexander “the Great”.

Alexander, as we saw in the last snapshot, was not Greek by birth but Macedonian. However, he had learnt to appreciate Greek culture from his tutor, Aristotle. On the other hand the Greeks never trusted the Macedonians and considered them to be culturally inferior. Consequently Alexander virtually forced the Athenian Greeks to support him in his expedition of conquest into Western Asia and beyond. His pretext for this expedition was to free the Greek colonists in Asia and take Greek culture into the Persian areas which he believed were relatively uncivilised. However, the Greek colonists had been in Asia since before 500 B.C.E. and had now become the most numerous, wealthiest and most cultured part of the Greek world. Although they were currently under Persian rule they were allowed a high degree of autonomy and were prospering.

After his initial defeat of the Persian forces in Western Asia, Alexander and his Greek allies went down into Egypt where he founded the city of Alexandria. After his death, this city, with its famous library, was to become one of the most important centres of learning in ancient times.

In 331 B.C.E., Alexander returned into Asia and decisively defeated Darius III of Persia, before committing the never to be forgotten vandalisation of the Persian capital, Persepolis. [Ref.12; 14:204; 18:65]

327-325
B.C.E.

Alexander then continued on through Iran into Afghanistan and penetrated beyond the Indus River into the Punjab in India. He thereby created the most extensive empire yet seen [Ref.14:204].

323
B.C.E.

Alexander died suddenly in Babylon at the early age of 33 years and left his lieutenants in Egypt and Asia to develop the areas he had conquered [Ref.14:208].

Alexander remains a controversial figure. Olmstead [Ref.12] emphasises his cruelty while Roberts [Ref.14:208-209] regards him as a man of intelligence and great courage that bordered on recklessness. Olmstead regards him largely as a fierce military conqueror who merely set the scene through his conquests for the important Hellenistic Age that followed his death. Nevertheless, Roberts points out that his founding of over twenty cities along Greek lines in Western Asia, astride the main trade routes, was no mean feat. Both Olmstead and Roberts do agree that Alexander was greatly influenced by and even obsessed with the civilisation that he found in Persia and saw himself as a “god-king” on the Asian pattern. This suited his obvious ego and, despite opposition from his generals, he tried to force through an integration between Greeks and Asians in his government. He even went so far as to marry off nine thousand of his Greek and Macedonian soldiers to
Asian women. How far he would have succeeded with East-West integration if he had not died so soon is something on which we can only speculate.

In his short lifetime, Alexander finalised the end of the so-called 'Golden Age' of Greece and almost destroyed, but was greatly influenced by, the highly civilised Persian Empire. He went on to found an even larger geographical empire in Asia and Egypt in which the official universal language (coine) was Greek. This empire, which had the one unified currency, constituted a world economy, similar to and no doubt based on Persian ideas and organisation.

300-220
B.C.E.

The Hellenistic Kingdoms.

Alexander's two main heirs were the Ptolemies in Egypt and the Seleucids in the old area occupied by Persia. Although they were not as powerful as the Ptolemies in Egypt, the Seleucids were the chief heirs of Alexander, for they had the larger part of his empire that stretched for 1,500,000 square miles from Syria to Afghanistan, with probably 30 million people. The capital was at Antioch which became the commercial rival of Alexandria and the greatest seat of commerce in the Northern Mediterranean.

The Hellenistic Kingdom of the Seleucids, set up by one of Alexander's generals, Seleucus, provided a peaceful setting for the wide extension of a new type of civilisation, now known as the Hellenistic Age, using the Greek language and the Greek alphabet but with very definite Persian influences. Greek became the official language of the whole Near East and especially of the cities which became the focal centres of the new world.

In Egypt, the Ptolemies naturally adopted the pattern set by the old Pharaohs and so they ruled in absolute and unlimited power. The Seleucids, on the other hand, adopted a completely different style which more closely followed Alexander's plan of integrating Asians and Greeks in government. Seleucus and his son founded scores of Greek style cities through Asia Minor and Syria, down the two rivers Tigris and Euphrates in Persia and over as far as India. These city-states were given a degree of self-government even though they were under a king who exacted tribute and taxes, as in the old Persian Empire. The form which the royal authority took was that which was so ancient in Asia and that Alexander had already adopted, where the ruler was regarded as a god to whom each community owed divine reverence and obedience. This homage they paid without any offence to their feelings as free citizens. Also the existence of these free city-states stimulated economic and cultural life all over Western Asia. [Ref.14:210,516]

323
B.C.E.
to
c.23
C.E.

The Importance of the Hellenistic Age.

The three centuries following the death of Alexander are now referred to as the Hellenistic Age, meaning the period when this civilisation spread throughout the ancient world, especially in the extended Middle East, and was itself modified by the culture of Western Asia. The city-states provided a relatively free life with a prosperous standard of living not previously enjoyed by people in many of the areas. However, the pivotal importance of this age was in its impact on future global civilisation. The language of the new empire was Attic Greek. Government and business was conducted in Greek and therefore every educated man found that he had to master the Greek tongue. Once he had done this, he found that the many great written works in the Greek language, both from mainland Greece and the Asian Greek colonies, were available for him to study. The Jewish Scriptures, equivalent to the current Old Testament of the Bible, even had to be translated into Greek so that the educated Jews in the new Hellenised cities could read them. Although Alexandria in Egypt became the greatest seat of learning with a library of
700,000 volumes, accurate copies of the standard Alexandrian editions were supplied to all corners of the Hellenistic world. From these are descended most of the manuscripts later preserved and translated by Islamic scholars and passed on to the libraries of Europe.

In the Hellenistic World, second only to the great library at Alexandria in Egypt, was the library at Pergamum in Asia Minor, and there were probably other libraries in the many Hellenised cities. The dissemination of the classical Greek and Persian texts throughout the Asian parts of the Hellenistic world became of overwhelming importance after the library at Alexandria was destroyed. The works of the great thinkers at Alexandria and other parts of the Greek world during that period included Euclid and Archimedes (mathematics), Hipparchus and Aristarchus (astronomy) and Eratosthenes (mathematical astronomy). Their works, together with those of the "golden age" of Greece including Plato and Aristotle, were preserved and subsequently transmitted to the West through Islam. Without this dissemination, the ideas of many great thinkers would have been lost and our Western civilisation may never have evolved in its present form. As it was, Islam translated the works and combined them with knowledge from Persia, India and China before taking them to Europe. This body of literature became one of the major foundations of modern Western civilisation and it was through the Hellenistic world, rather than the Roman world, that they have come down to us [Ref.19:521].

As the Seleucid kingdom lapsed into decadence, two areas to the east of the Caspian split off as separate kingdoms. These were Bactria in 250 B.C.E. and Parthia in 247 B.C.E. Bactria, although being furthest east, is shown by recent excavations, to have been highly Hellenised. Parthia was to grow in importance as it was astride the main land route to China now known as "The Silk Road". [Ref.14:215]

It is significant that Mithridates II of Parthia even welcomed ambassadors from as far away as China in 124 B.C.E. [Ref.20:144].

The Continuing Legacy of Mesopotamia.

The Hellenistic occupation of Babylon was followed by a period of dominance by the Parthians, under whose control Mesopotamia remained an unconquerable challenge to the power of Rome. It is interesting to note that, after the destruction of Jerusalem by the Romans in 70 C.E., many Jewish rabbis migrated to Mesopotamia as refugees and flourished there for centuries enriching the cosmopolitan culture still further.

By the end of the second century C.E., the city of Babylon was abandoned but the region that had produced pottery, irrigation, the wheel and writing, as well as the very idea of a city, maintained its influence because most of its neighbours had become repositories of Mesopotamian culture.

After the decline of Rome in the fourth century C.E., the Middle East renewed its time-honoured station as the major centre, outside the Far East, of literacy and urbanity. It retained this preeminence throughout the European Dark Ages and the medieval period until the Renaissance, which it helped to originate by preserving many of the essential texts on which the Western revival was based. Thus Mesopotamia passed on to future civilisations the accumulated wisdom accrued over millennia from the time of the Sumerians. It seems highly likely that the emphasis on urban life, citizenship, trade, commerce, and literacy which came to characterise the Islamic world later on, was a legacy of the Mesopotamian past. [Ref.81:150]
Islamic Civilisation Following Muhammad.

Of all the civilisations in history, the Islamic civilisation was more than any other based on its religious foundations. In portrait No.5, "West and Central Asia: Religion and Philosophy", is a comprehensive summary of the life of Muhammad (570-632 C.E.) and the impact of his new religion of Islam. Readers are recommended to consult that section before reading the following.

Professor Philip Hitti, in his very detailed yet very readable "History of the Arabs" [Ref.77], gives a full explanation of the rise of the various Muslim sects and dynasties after Muhammad died suddenly in 632 without naming a successor.

According to Hitti [Ref.77:139], "As long as Muhammad lived, he performed the functions of prophet, lawgiver, religious leader, chief judge, commander of the army and civil head of state all in one. In his role of the last and greatest prophet, Muhammad could not have a successor. On the other hand, someone had to take over all the other important functions which he performed. This person would become his khalifah, or caliph, who would perform all except Muhammad's spiritual function. It was this succession which, according to Al-Shahrastrani in 1153, brought about more bloodshed in Islam than any other issue".

With the first caliph, Abu-Bakr (632-634), began a period of crusading zeal that led to a period of unprecedented conquest, expansion and colonization, in Arabia itself and then in Syria, Iraq, Persia, and finally Egypt in 643 [Ref.77:Chapters XI-XVI].

Although the Islamic Arabian caliphate started with very little it had now grown to be the strongest power in the world. This was followed by a period of consolidation during which Islam began the assimilation of the cultures which they had but recently acquired. As Hitti [Ref.77:175] says: "Theirs was another instance in which the victor was made captive by the vanquished".

Islamic Civilisation, sometimes mistakenly referred to as "The Arab Civilisation", was Arabian neither in its origins and fundamental structure nor in its principal ethnic aspects. The purely Arabian contribution was linguistic and, to a certain extent, religious. Throughout the whole period of the caliphate, it was the Syrians, Persians, Egyptians and others, as Muslim converts or as Christians and Jews, who actually implemented the new learning and enlightenment. However, it was the logical continuation of the earliest Semitic civilisation of the Fertile Crescent that had been originated and developed by the Assyro-Babylonians, Phoenicians, Aramaeans and Hebrews and culminated in the unity of the Mediterranean civilisation of Western Asia. Islam now began to assimilate the culture of the peoples it had recently conquered and with their help began to preserve, record and even use their intellectual and aesthetic heritage. All the different fields of knowledge were covered including art, literature, architecture, philosophy, medicine, science and government.

With the founding of the Umayyad dynasty of kings by Mu'awiyah in 661, whose capital was at Damascus, the stage was set for a new era of expansion. The first campaign was to the east as far as northwest India (713) but included several unsuccessful attempts to conquer Constantinople from the Byzantines, which were finally abandoned in 717. In 751, the Muslims occupied Tariska "thus definitely establishing the supremacy of Islam in Central Asia so firmly that it was not further disputed by the Chinese" [Ref.77:210].
The campaign to the west was even more spectacular and included all North Africa and finally Spain, the largest European country ever to be occupied by Muslims.

According to Hitti [Ref.77:206], under the Umayyads, at the time of al-Walid and Hisham, "the Islamic empire reached its greatest expansion, stretching from the shores of the Atlantic Ocean and the Pyrenees to the Indus and the confines of China - an extent hardly realised in ancient times and surpassed only in modern times by the British and Russian empires". Raids on Sicily took place from 652 and the island was finally conquered in 902. Rome itself was threatened and Pope John VIII (872-882) paid tribute but, from 871, Italian Christians began to retaliate and the era of Muslim expansion soon ended. The Umayyad dynasty had fallen in 749 and been replaced by the Abbasid dynasty of caliphs who reigned until 1258.

In 762, caliph al-Mansur laid the foundation of the new capital at Baghdad. The city was completed in four years and, within half a century of its founding, Baghdad grew from nothing to "a world centre of prodigious wealth and international significance" [Ref.77:301]. The outstanding caliphs were al-Rashid (786-809) and his son al-Mamun (813-833), who initiated what Hitti describes as an age "especially illustrious in world annals...and one of the most significant in the whole history of thought and culture" [Ref.77:301].

In 830, al-Mamun established in Baghdad his famous Bayt al-Hikmah (House of Wisdom) which included a library, academy and translation bureau, the most important educational institution since the Museum in Alexandria in the third century B.C.E. [Ref.77:310].

Although India acted as an early source of inspiration, the Greek originated Hellenistic world held the main treasure to be tapped by Islamic translators. "In three quarters of a century after the establishment of Baghdad the Arabic-reading world was in possession of the chief philosophical works of Aristotle, of the leading Neo-Platonic commentators and much of the medical writings of Galen, as well as of Persian and Indian scientific works. This culture was fed by a single stream with sources in ancient Egypt, Babylonia, Phoenicia and Judaea, all flowing to Greece and now returning to the East in the form of Hellenism. This same stream was later redverted into Europe by the Muslims in Spain and Sicily, whence it helped create the Renaissance of Europe" [Ref.77:307].

The Arabs themselves at first knew no Greek at all and therefore had to rely on their subjects including especially the Nestorian Christians, the Jews and the heathen Sabians to do the work of translation. Many works had to be translated into Syriac and then into Arabic. Transmission is no less essential than invention, for, "had the researches of Aristotle, Galen and Ptolemy been lost to posterity, the world would have been as poor as if they had never been produced" [Ref.77:363]. The era of translation continued from about 750 to 850 during which time the caliph's emissaries scoured the known world for manuscripts.

As Hitti [Ref.77:315] remarks, "All this took place while Europe was almost totally ignorant of Greek thought and science. For while al-Rashid and al-Mamun were delving into Greek and Roman philosophy their contemporaries in the West, Charlemagne and his lords were reportedly dabbling in the art of writing their names". By the tenth century, Arabic, which in pre-Islamic days was "only a language of poetry and, after Muhammad, mainly a language of revelation and religion, had become metamorphosed in a remarkable and unprecedented way into a pliant medium for expressing scientific thought and conveying philosophical ideas of the highest order" [Ref.77:316].

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Hitti [Ref.77:Chapter XXVII:363] points out that the epoch of translation in Islam (c750-850) was followed by one of "creative activity". The Muslims not only assimilated the ancient knowledge of Persia and the classical heritage of Greece but adapted both to their needs. Their independent advances in medicine and philosophy were less conspicuous than in alchemy, astronomy, mathematics and geography but they also contributed original research in law, philosophy and linguistics. Their translations and original contributions were transmitted to Europe through their bases in Syria, Spain and Sicily and laid the foundations of the European Renaissance.

6th Century C.E.

Central Asia - Its Importance to the History of World Civilisation.

Central Asia, even today, is one of the least known regions on earth. And yet its importance to world history and the development of world commerce and civilisation has been immense [Ref.94:3 et seq.].

Geographically it is an area of enormous distances and contains some of the most inhospitable terrain on the globe extending from the Middle East to the Yellow River Valley of China. It contains the highest mountains and plateaus in the world, i.e. the Himalayas, Karakoram, Pamir and Kunlun Ranges, with the almost impassable areas of the Gobi and Taktlimakan Deserts and the Mongolian and Tibetan High Plateaus. The climate is harsh and the barriers formidable.

It is this geographic environment which has made communication between Eastern and Western Asia and Europe so incredibly difficult. The traveller had to contend with some of the fiercest mounted nomadic tribesmen in history who defended their isolation and preyed on those passing through. Nevertheless, such is the persistence of human nature, that trade, the transmission of knowledge, the diffusion of culture and the dissemination of religion has continued despite all the difficulties for at least two millennia over what has come to be known in fairly recent times as the Silk Road. Indeed there is no single road but a series of roughly parallel routes that wend their way through the least difficult of the dangerous mountain passes and deserts and consist of many sections joined end to end at various hand-over points that have become important trade and cultural cities.

In the east, the undisputed terminus was the ancient Chinese capital of Chang-an which was to become the greatest city in the world by the sixth century C.E.

Besides silk, many commodities and ideas passed along the Silk Road, mainly from east to west, and were paid for with gold and other valuable currency moving from west to east. However, the most important item moving from west to east was religion, including Christianity, Buddhism and Islam, all of which originated in Western Asia and hoped to convert the whole of the Far East.

During periods when the main sections of the road came under strong military protection from the armies of nations such as Persia, China, Kushan or Mongolia, the whole length of the road could be traversed in relative safety. At other times when empires fell the road became virtually impassable. Travel at night was impossible due to brigands. Caravanserais were constructed every ten kilometres or so all the way from Turkey to China to house the camel caravans at night in some degree of comfort and safety.

It is not surprising that "few people in the Near East, let alone in Europe, knew much about Eastern Asia until the emergence of the Achaemenid dynasty of Persia in the sixth century B.C.E. and China itself remained almost unknown there until shortly before the Christian era" [Ref.72:70-73]. Undoubtedly borrowings and influences did occur slowly
across the vast distances by simple person to person handing on over a long period. Such great ideas as bronze and iron technology, silk culture and weaving, history telling and religion could not be denied even by the immense difficulties involved in their transmission. Thus the important influences for future world civilisation began across Central Asia.

During the Roman era, trade became not only important to China and Rome but the lucrative tolls, that could be exacted for protecting travellers across Central Asia led the Parthians and the Afgans to maintain and garrison the roads. So safe did travel become during this period that China even sent an ambassador to Antioch in 97 C.E.

By the second century C.E., with the creation of the great Central Asian empire of Kushan, which included most of the Central Asian landmass north of India, trade seemed to have become permanent. Unfortunately this did not last and by the third century C.E. the incursions of barbarian tribes from the steppes of central Asia contributed to the downfall of the Roman and Chinese empires thereby confining transport between East and West to the relatively new and untried sea routes. But even here the practice of piracy and the hazards of the sea in small fairly primitive ships made travel unsafe.

With the rise of Islam in the seventh and eighth centuries communications across Central Asia were at first cut off. However, the Arabs soon realised that they could gain wealth by acting as middlemen to facilitate trade across the Silk Road and of course extend their religion right across to the Far East.

However, it was not only through the Silk Road, that Central Asia affected the course of world civilisation. In the early centuries of the Christian era, the barbarians from the steppes of Central Asia, well outside the Silk Road, invaded the Roman Empire itself thereby hastening the collapse of Rome as a unifying power and beginning the chaos and darkness which characterised the Middle Ages in Europe. At the same time in the East, China was subjected to similar invasions.

The final cataclysmic invasions by the nomads of the steppes were instigated by the Mongols whose importance is the subject of the following snapshot.

Readers who wish to learn more about the Silk Road are referred to the “Asia Education Teachers Journal”. Volume 25, No.3 [Ref.94] which focuses on “The Silk Road”.

1206-1405 C.E.

The Effects of the Mongol Conquests.

The Mongols, a pastoralist nomadic people from the depths of Central Asia were few in numbers but “made a tremendous impact on world history. Their conquests were of a scope and range never equalled, stretching from the eastern frontiers of Germany to Korea and from the Arctic Ocean to Turkey and the Persian Gulf. They even attempted seaborne invasions of Japan and Java. This was the last, and most violent, assault by nomadic armies inflicted upon the settled peoples of Asia, and its effects were enormous. The political organisation of Asia and a large part of Europe was altered; whole peoples were uprooted and dispersed, permanently changing the ethnic character of many regions; the strength and distribution of the principal religions of the world were decisively altered; European access to Asia and the Far East, interrupted (by brigands and political differences) for 1000 years, became possible again” [Ref.72:126].

A young military genius, Temujin, later called Genghis Khan, turned these fierce tribes into the most efficient, organised and effective fighting force in the world led by an
invincible cavalry. Their appearance on the world stage was “sudden and devastating and old kingdoms went down before them in monotonous succession” [Ref.72:127].

Their effect on the history of world religion was profound. Having only an “ancestral shamanism”, the Mongols were attracted to the new creeds which seemed to be associated with higher culture. Although at first implacably opposed to Islam, they eventually treated it favourably. Buddhism, like Islam, ended up being stronger than before and “the Mongol dynasty gave it a predominant place in Chinese society” [Ref.72:127]. Christianity in Asia suffered more than other religions and Asian Christianity, whose prospects for converting the whole of the continent had seemed so bright, suffered a complete collapse and never recovered.

Although the Mongols, during their short period of ascendancy, did not establish any new civilisation, they did stir up the whole of contemporary civilisation and hence had a widespread effect on all future world civilisation.

By 1405, internal strife and counterattacks by Russia and China saw the final and permanent end of the power of the Mongols. Central Asia has never again assumed such a high profile in world affairs.
Judaism: The Hebrew Patriarchs.

Archaeologists still argue over the early dates but McNeill [Ref.33:158] reports that “Biblical tradition asserts that Abraham, the ancestor of the Hebrew people, migrated about 1950 B.C.E. from the Sumerian metropolis of Ur northward to Harran and then to Palestine” or Canaan. Abraham was the first person in the Bible to be referred to as a Hebrew [Ref.55:467].

The word “patriarchs” usually refers to Abraham, his son Isaac, his grandson Jacob and the twelve sons of Jacob [Ref.55:804]. Because of a severe famine in Canaan, eleven sons of Jacob, together with their father and families, migrated to Egypt, where they joined the youngest son, Joseph. Joseph, who had virtually been sold into slavery by his brothers without the father’s knowledge, had prospered in Egypt and had become an official in Pharaoh’s court. Jacob’s descendants multiplied significantly over the next 400 years prior to their Exodus with Moses and were used as slave labour on the construction of Egyptian public buildings [Ref.55:1072].

According to Roberts [Ref.14:113], prior to the time of Abraham, people other than the Hebrews were already developing a concept of one God who was superior to other gods. For example, in Mesopotamia all the gods took the form of idols and religious statues but were brought down the river once a year to take counsel with the main god, Marduk, and to acknowledge his superiority. Nevertheless, Roberts [Ref.14:106] emphasises that “only the Hebrews and those who came to share their beliefs were able to push the process home, transcending polytheism and localism to arrive at a coherent and uncompromising monotheism”. It is this fact which makes Abraham a figure of pivotal importance in history and especially for the Jews, Christians and Muslims.

According to the Bible, Abraham made a covenant or agreement with God that involved promises on either side [Ref.55:259]. This was an original concept and different from any previous religious concept. In the covenant, God promised to bless Abraham’s descendants and regard them as His chosen people whilst Abraham agreed to remain faithful to God and serve as a channel through which God’s blessings could flow to the rest of the world.

Roberts [Ref.14:106] explains that the essential steps of the process may have taken several centuries to crystallise but that the overriding concept was that “the people of Israel (as the descendants of Jacob came to be called) owed exclusive allegiance to Yahweh, the tribal deity, a jealous God, who made a covenant with His people”. Yahweh was already different from other tribal gods in that no graven image was to be made of him. As the Israelite religion developed, Yahweh was seen as the one true God who had created everything but existed independently of his creation as a universal being.
Judaism: Moses and the Exodus.

McNeill [Ref.33:158] argues that the “distinctive beginning of the Hebrew religion must be dated from the time of the exodus from Egypt”. Most probably only a small part of the Hebrew people went down into Egypt and worked there. It was sometime during the thirteenth century B.C.E. that Moses led them out into the desert. The sudden change in their way of life from forced labour on public works to wandering in the wilderness, despite its resemblance to their ancient ancestral nomadic pattern in Palestine, was one reason why they needed a new set of definite laws. Other reasons were that their ancient customs were probably eroded after many years in Egypt and now they were a mixed people of varied origins, lacking any single traditional leadership and organisation. As soon as they had made good their escape from Egypt, Moses, being a very wise man and a natural leader, ascended Mount Sinai to commune with Yahweh and returned with a simple code of law: the Ten Commandments. The people’s formal acceptance of the commandments constituted a renewal of the original covenant with Yahweh as agreed by Abraham.

The historians, John M. Roberts [Ref.14:106 et seq] and William H McNeill [Ref.33:159] point out that many experts still produce hypotheses and argue over whether the Biblical account of the times of Abraham and Moses is strictly correct. It is doubtful whether this really matters except from an intellectual point of view. What really had such an enormous influence on many centuries of Judaism, Christianity and Islam was what was actually believed and this is found in the Biblical writings themselves. Readers are strongly recommended to study the Pentateuch, the first five books of the Bible, which is the knowledge the Jews most revere.

Much of Palestine is agriculturally unproductive, especially in the south, even around Jerusalem. In the north the valleys were fertile and suitable for agriculture but there was no irrigation. Nevertheless, Palestine was important as the marketplace of the ancient Near East where people of many nations met and communed together. Unfortunately, its position between the great powers of Egypt and the Mesopotamian nations also made Palestine the battleground of the Near East for many centuries. Consequently, when the Hebrews took possession of the area, there was little prospect that they would enjoy freedom from powerful foreign oppression for any length of time. Centuries before the date of the Exodus, the Hebrew people from the Arabian desert had begun moving into the area called Palestine or Canaan where they found the Canaanites “already dwelling there in flourishing towns protected by massive walls, and with a long established civilisation including comfortable houses, government, industries, trade, writing and religion” [Ref.19:221]. As well as trying to conquer the towns the Israelites adopted more and more of the Canaanite civilisation, left their tents and began to settle in houses. This change was more pronounced in the fertile north, whereas the Hebrews in the more arid south tended to maintain their tough desert way of life. Thus the two areas developed differences which led to various levels of discord between the two peoples. The new Mosaic Law and the renewed covenant with Yahweh offered a valuable rallying point for both communities [Ref.19:217 et seq.]. (See also the snapshot, “Judaism: Kings and Prophets”, 1000 B.C.E. below.)
Zoroastrianism.

Zoroastrianism is not one of the world's major religions today. In 1976, there were only 130,000 believers worldwide, comprising 77,000 in India, 25,000 in Iran, 5,000 in Pakistan and 23,000 in the U.S.A. Nevertheless, Zoroastrianism is important in the historical development of religious thought [Ref.65:80 et seq.].

Zoroaster, or more correctly Zarathushtra, is dated as living as early as 1200 B.C.E. and could arguably have been the first prophet of the world's major religions. He was a descendant of the Aryans, i.e. the Indo-Europeans who moved through Persia (Iran) leaving settlers there between 2000 and 1500 B.C.E. Zarathushtra was a priest. At thirty years of age, he had the first of a series of visions that inspired him to teach a new message. Some ten years later, his religion became the official religion of a small kingdom in northern Persia and over time became the official religion of the entire Persian Empire that stretched from India to the Mediterranean.

John Hinnells, Professor of Religious Studies in the School of African and Oriental Studies at the University of London, argues that perhaps the one major feature of Zarathushtra's teaching was his emphasis on 'personal' religion [Ref.65:81]. All human beings are seen as having a personal responsibility to choose between good and evil and they will then be judged on this in the hereafter to determine whether they are sent to Heaven or to Hell.

According to Zarathushtra, God, the Wise Lord (Ahura Mazda) was the wholly Good Creator of all things but was in no way responsible for evil. All evil comes from the Destructive Spirit (Angra Mainyu) who rules from Hell and who has opposed God from the beginning. He is not a fallen angel because this would make the Good Creator ultimately responsible for evil and this is an inconceivable concept. God created the world and humankind to help Him in the eternal battle of good versus evil. Humans are regarded as basically good and, with the assistance of a number of specially created immortal beings, will help God overcome evil and restore the world to its original perfect state. At that stage, the dead will be raised and judged, resulting in the wicked going to hell and the righteous dwelling with God in perfection for eternity.

In the middle of the second century B.C.E, an indigenous Persian dynasty took over the Persian empire from the foreign Hellenistic Seleucids. These were the Parthians who ruled the empire for 400 years and became the largest power to confront successfully the might of Rome itself. Hinnells points out that it is not generally realised that, at the time of Jesus, the Parthians had made Zoroastrianism the most powerful religion in the world.

It was during the Parthian era that the ancient traditions of the Zoroastrian holy book, the Avesta, began to be compiled.

In 224 C.E., the Sasanid dynasty took over the Persian empire and ruled it until the Muslim invasion in the seventh century. It was during this era that Zoroastrianism was at its peak. It was not only the official religion but also had a great influence on state affairs, at the same time that Christianity, as the official religion of the Roman Empire, provided unity of church and state.

After 633 C.E., Islam took over Persia and, in contrast to its tolerance of Jews and Christians, has continued to persecute Zoroastrians.
In the tenth century, a group of believers left Persia and, seeking religious freedom, migrated to India where they became known as the Parsis. It is this group that now provides the main base for the continuance of Zoroastrianism with its maintenance of the cosmic battle between Good and Evil. Only stalwart determination has enabled it to survive despite a millennium of oppression.

**Judahism: Kings and Prophets.**

The Israelites from Egypt occupied Canaan in what was basically a military operation and military necessity stimulated the next stage in the consolidation of the nation. The new threat came from the Philistines in the west, who were more formidable opponents than the local Canaanites had been. This stimulated the emergence of the Hebrew kingship about 1000 B.C.E. and the rise of the prophets as a power in the new nation. It was the prophet Samuel who anointed both Saul, the first king, and his successor, David. Saul was a popular figure who won victories but eventually committed suicide and his work was completed by David who gained great kudos by defeating the Philistine hero, Goliath. David, one of the great figures of world literature, was a model for kings for two thousand years. He is portrayed in the Bible as “a noble-hearted but flawed and all-too-human hero” [Ref.14:108] who ended the Philistine peril and reunited the kingdom which had split at Saul's death. At this time also Jerusalem became Israel’s capital.

Solomon, David’s son and successor, was the first king of Israel to achieve major international standing. He was a king of great energy and drive and due to his personal entrepreneurial skills, the economic and technical advances of the period were also notable. The building of his famous temple was the most important of his public works and tended to centralise political and religious control from Jerusalem. David gave Israel a capital and had planned the temple but it was Solomon who brought it to fruition and gave the worship of Yahweh “a more splendid form and an enduring focus”.

As Roberts states [Ref.14:109], “The prophets brought to its height the Israelite idea of God. They were not soothsayers such as the Near East already knew, but preachers, poets, political and moral critics”. Their power depended on convincing the populace that God spoke directly through them. As a result, Israel is remembered, not for the great deeds of her kings but for the ethical standards announced by her prophets. They defined the connections between of religion and morality which were to dominate not only Judaism but Christianity and Islam.

“The prophets evolved the cult of Yahweh into the worship of a universal God, just and merciful, stern to punish sin but ready to welcome the sinner who repented” [Ref.14:110]. Prophets, including Amos, Isaiah and Jeremiah went behind the king and the privileged priestly caste to denounce religious officialdom directly to the people. Using their perceived direct inspiration from God, the prophets bitterly attacked social injustice as being contrary to the overriding laws of God.

Although Solomon is usually portrayed as having unlimited wisdom he eventually came to grief. The splendours created by Solomon, such as the ornate temple built with foreign materials and foreign artisans, required massive capital expenditure. This was raised by heavily taxing the populace. The discontent that resulted from this was so great that, on Solomon's death in c.937 B.C.E., the Northern kingdom of Israel split off completely from the southern kingdom of Judah.
The animosity between the two kingdoms escalated. The prosperous north neglected Yahweh and many worshipped the Canaanite local town gods or baals. The prophet Elijah angrily denounced the northern king and the followers of Elijah slaughtered the whole royal family and the priests of the baals. Such violent methods were indicative of those who shortsightedly thought of Yahweh purely as a war god. Fortunately for the future, the Hebrews had leaders who thought more constructively of a peaceful god [Ref.19:214].

About 750 B.C.E. Amos, a social reforming prophet, rebuked the selfish and oppressive wealthy classes of the towns, especially in the north. He preached that Yahweh was not just a desert war god but a God of fatherly kindness. His sermons were written down and still survive. Literature was the unique and only art that the Hebrews possessed. Drawing on their past history, Israel was building up one of the most noble literatures of ancient times with the stories of Abraham, the patriarchs, Moses and other inspirational heroes. They were the first examples of historical writings in prose of a finished literary style. It is now quite clear that these writers were also acquainted with the papyrus rolls written by Egyptian social reformers over a thousand years earlier in defence of the poor and helpless.

Amos and others also began to announce that, because the social and religious fabric of the northern kingdom of Israel was deteriorating due to the neglect of Yahweh, the Kingdom of Israel would be destroyed by the Assyrians. This indeed occurred in 722 B.C.E. when the northern kingdom of Israel disappeared from history.

The national hopes of the Hebrews now centred on the one helpless little kingdom of Judah, in the midst of a world conflict dominated by Assyria. The people grew depressed because they began to feel that the great Assyrian god, Assur, must be superior to Yahweh. Another great prophet, Isaiah, arose and through a series of orations to the crowds in Jerusalem declared that Yahweh controlled not only one nation but the whole world. When the hosts of the Assyrian king Sennacherib were destroyed by a pestilence from the Nile marshes it appeared that Isaiah’s words were justified. In 612, Assyria fell and the Chaldeans took over control of Palestine [Ref.19:227 et seq].

586 B.C.E. Judaism: The Babylonian Captivity.

In 586 B.C.E., Nebuchadnezzar, king of Babylon, attacked the unsubmitive Hebrews, destroying Jerusalem with its Temple and carrying away the core of the people into exile in Babylon. For most nations and religions this would have been the end but in exile both the Hebrews and their religion survived. In fact it was the Exile which showed the Hebrews that the worship of Yahweh did not require a temple. The people, who survived this period in Babylon and who slowly but eventually returned to Jerusalem after the conquest of Babylon by Cyrus the Persian in 539 B.C.E., were, for the first time, called “Jews” [Ref.19:231].

According to Roberts [Ref.14:252], “The experience of the Exile had transformed Jewish life as well as confirming the Jewish vision...Jewish religious life was deeply stirred. The most important change was the implanting of the reading of the scriptures as the central act of Jewish religion”. The Five Books of Moses were substantially complete soon after the return from exile and were used at weekly readings by the assembled congregation. The maintenance of the Mosaic Law was given a new coherence. Out of the weekly
meetings was to grow the institution of the synagogue. The Jewish religion could be practiced wherever Jews could come together to read the scriptures.

Unfortunately enforcement of the Law became more rigid. For example a Jew married to a Gentile was expected to divorce her. Self segregation of Jews in towns became more obvious and often led to their isolation and even to anti-Semitism. The controlling power in Judah was in the hands of the priestly aristocracy whose power was to continue until Roman times.

However, the religion and literature of the Jews with its power and vigour, uniquely combining religious universalism with individualism and nationalism, strongly appealed to Jewish minds and hearts and would continue to make Judaism a world-transforming force [Ref.33:166].

**Judaism: After the Exile.**

The Jews slowly returned to Jerusalem after Cyrus of Persia defeated the Babylonians and set them free but the process took several centuries to complete. After the Persians, they were under the control of Alexander the Great's successors in the Hellenistic era until finally the Jewish Maccabean revolt (168-164 B.C.E.) gave them a century of independence. During the Hellenistic period the Jewish way of life was subjected to increasing pressure for it to become more and more Greek in language and outlook. The Jews resisted this more than most other subject peoples but nevertheless Greek was used as the language of some of the biblical editions to enable it to be read in the predominantly Greek-speaking Hellenised cities. Finally, a king of Hellenistic Syria went too far by interfering with Jewish religious rites and profaning the temple which led to the Maccabean revolt.

According to Roberts [Ref.14:254], the period of independence following the revolt was marred by conflict between the kings who were drawn from priestly families and the priests themselves against the Pharisees who clung rigidly to the Law and fought against creeping Hellenisation. The Pharisees did accept converts from non-Jews and taught belief in a resurrection of the dead and a divine Last Judgement. Converts were attracted by “a code of behaviour of great minuteness, a form of religion not dependent on temples, shrines or priesthood for its exercise, and, above all, the assurance of salvation”. Pharisees were “deeply antagonistic to Sadducees, the formalising representatives of the aristocratic priestly caste” [Ref.14:255].

The period of Jewish independence was brought to a close when the Romans took over. Although the Romans allowed a measure of local control under the Herods, who carried favour with their overlords, a bloody insurrection in 66-79 C.E. led to the sack of Jerusalem and the destruction of the Temple that had been reconstructed in 165 B.C.E. by Cyrus of Persia. A final revolt in 132-135 C.E. resulted in the loss of Palestine as the Jewish homeland till the establishment of the State of Israel in 1948, more than eighteen hundred years later. [Ref.14:254 et seq.; 17: 705]

**Asian Greek Philosophy: Thales of Miletus.**

Thales was an Asian Greek from Ionia in Asia Minor. He was the founder of Greek philosophy, became famous for his knowledge of astronomy and is credited with introducing geometry into Greece. He is widely regarded as the first scientific thinker.
(Refer portrait No. 6 - 625 B.C.E., where the importance of Thales as the father of scientific thinking is emphasised.)

Judaism and Christianity: The Dead Sea Scrolls.

In 1947 C.E., near Qumran on the Dead Sea, a shepherd boy accidentally found a number of clay pots in a cave containing ancient scrolls. Over 500 scrolls were eventually located. The so-called Dead Sea Scrolls are thought to have been hidden from the advancing Roman armies in the early part of the first century C.E. by the Qumran community known as the Essenes. When the value of the scrolls became evident many were hidden by local dealers and consequently it took over twenty years to bring them together and a much longer time to decipher them. Considerable secrecy and jealousy between the Jewish authorities, the Roman Catholic Church and others have made proper translation and interpretation difficult. The scrolls appear to have been written between 250 B.C.E. and 68 C.E. and therefore offer an invaluable source for studying the history of the Jews, the early Christian church and the Essenes themselves. The meaning and significance of the scrolls has become highly contentious. Some religious commentators like Geza Vermes [Ref.59], state that the Qumran community and their Dead Sea Scrolls are a separate branch of the same tree as Christianity, as might be expected given the common ancestry of both in Judaism in that era. Vermes concludes that the Qumran community would have no direct impact on the Christian church. Others, such as Barbara Thiering [Ref.107], violently disagree and consider that the Scrolls put the whole basis of the Christian church under question. There is no doubt that this controversy will rage for years to come and it is uncertain what the final impact on Christianity will be. However, the scrolls have thrown valuable light on Jewish biblical history. They have also shown that the Essenes in their doctrines promised their adherents much of what was promised by the early Christian church including a last deliverance and the coming of a Messiah.

It was into the pregnant atmosphere of the time of the Dead Sea Scrolls that Jesus, who was to have such an enormous effect on the future world, was born [Ref.55:289; 56:115; 57:256]

Christianity: The Birth of Jesus Christ.

Jesus was of such pivotal importance to future civilisation that the calendar was split at the date on which it was thought he was born although later discoveries have shown that he was probably born towards the end of the reign of King Herod the Great of Judaea in 4 B.C.E.

Christianity: The Historical Life of Jesus.

Of all the great figures of history probably less historical facts are known about Jesus than any other.

Geza Vermes, a noted authority on the Bible and the Dead Sea Scrolls [Ref.59:3-5], cites, what he regards as a few "non-controversial facts concerning Jesus' life and ministry". Jesus lived in Galilee. His home town, Nazareth, was such an insignificant place by Jewish standards that it was not even mentioned in the histories of the Jews by Josephus, the first century Jewish historian. In fact, Nazareth was not mentioned, outside the New Testament, until the third century at least. It is also uncertain whether he was born here or
somewhere else and some scholars are highly suspect of the Bethlehem legend of the first Christmas. Jesus was crucified during the Roman governorship of Pontius Pilate (26-30 C.E.) in Jerusalem. His public ministry is said to have lasted no more than three years prior to his crucifixion [Ref.68:192-193].

We know nothing definite about Jesus’ education and training or the early influences on his development as a young man. In fact, the interval between his twelfth year and the start of his ministry is shrouded in mystery. Jesus spent the whole of his public life and probably most of his early life in Galilee and left only to attend Jewish religious festivals in Jerusalem and to make his final, fateful journey to that city. The simple accounts of the first three gospels show that Jesus became famous among his own people for his abilities in regard to charismatic teaching, healing and exorcism. At the time of Jesus, Tiberius Caesar in Rome was the undisputed head of the known Western world while Caiaphus was high priest of the Jews and, as head of the powerful priestly religious group the Sadducees, was president of the Sanhedrin, the supreme body of Judaism. The Sadducees were bitterly opposed by the other powerful Jewish group, the Pharisees. The Jewish underground movement against the Romans known as the Zealots had been founded; the ascetic Essenes were worshipping in isolated seclusion at Qumran on the Dead Sea planning to convert the rest of Jewry to their religious beliefs and the Galileans were unsophisticated and religiously uneducated freedom fighters.

Christianity: Some Beliefs from the Gospels Regarding Jesus Christ.

Jesus was said to have been conceived by God himself through his mother Mary who was a virgin and had not yet married Joseph, the carpenter of Nazareth. Jesus is said to have been born in a stable in Bethlehem in Judaea and was taken to Egypt by Mary and Joseph to escape possible murder by King Herod. When it was considered safe, he was taken to Nazareth.

Jesus came to be regarded by some as the Messiah or the Christ (the anointed one), who had been sent down by God as His only son to save his people and indeed the whole of mankind.

Jesus began his public ministry when he sought baptism at the hands of John the Baptist, an itinerant preacher. Following this, he is reported to have been tempted by Satan in the wilderness.

After the imprisonment of John the Baptist, Jesus began proclaiming the “Good News” regarding the establishment of the Kingdom of God on earth. The popular view was that this meant that he would lead the people in revolt against the Romans but Jesus resisted taking this path.

Jesus’ faith healing activities aroused great enthusiasm amongst the common people and soon attracted the attention of the authorities who were disturbed at his influence. Much of his teaching ran contrary to the rigid interpretation of the Jewish law. Although he was soon banned from teaching in the synagogue he took to the streets and drew huge crowds. He illustrated his teaching by using stories or parables from everyday life and this proved to be especially popular. Stories also began to circulate about “miracles” that he performed which defied human explanation.
Jesus selected twelve apostles to assist him in his work and he educated them specifically to continue his ministry after his death. Soon he began to prepare them for the fact that he would have to go into the thick of things in Jerusalem where he would be killed. In fact, when he arrived in Jerusalem, Jesus continued to arouse the ire of the Jews who quickly had him arrested, tried and crucified by the Romans. On the third day after his execution, Jesus was reported to have been resurrected from the dead and appeared to his disciples and family members on a number of occasions.

Christianity: Some of the Major Teachings of Jesus.

Even Gandhi, one of the greatest Hindus of all time and a non-Christian, said that he regarded Jesus as “one of the greatest teachers humanity has ever had” and “the highest example of one who wished to give everything asking nothing in return” [Ref:46:56]. So what did he teach?

For many Christians the pinnacle and essence of Jesus’ teaching lies in his distillation of all the commandments into just two: First, “The Lord our God, the Lord is one; you shall love the Lord your God with all your heart, and with all your mind, and with all your soul, and with all your strength”; and second, “You shall love your neighbour as yourself” [Ref:32:Mark 12:29].

When asked, “Who is my neighbour?”, Jesus told the famous story of The Good Samaritan, that described a gentile or non-Jew as an example of a good neighbour, thereby extending his teachings to gentiles not just the Jews who regarded themselves as the “chosen people” of God [Ref:32:Luke 10:29].

Jesus deplored the old maxim “an eye for an eye” and proposed turning the other cheek, (a doctrine used later to great effect by Gandhi in his policy of non-violence against the British in India). Jesus explained carefully that we should not only love those who love us, but also those we find difficult to love, including our enemies. This last statement has even been regarded by some Jews as an entirely new prophetic teaching [Ref:32:Matthew 5:43].

Perhaps the most famous of all Jesus public moral and ethical teachings was the so-called “Sermon on the Mount” [Ref:32:Matthew, chapters 5-7] aimed at his closest followers. The sermon began with a series of beatitudes, each of which promised blessedness for a particular type of moral behaviour.

Jesus emphasised that he did not come to abolish the old Hebrew Law but rather to ensure that it was not used legalistically, as advocated by the Pharisees. His particular teaching of the Law required that we consider what is the true intention behind each of the commandments and what is its effect on the human heart and mind.

It was also in the Sermon on the Mount that Jesus expounded what has come to be known as “The Lord’s Prayer”, the correct way to pray to God, praising Him above all, asking for very little and only expecting forgiveness as we forgive others.

Realising the frailty of human nature, Jesus warned humanity against making a show of their religion, their praying, their fasting and their giving and proceeded to warn against judging what might be fairly minor faults in others rather than correcting the major faults in ourselves.
Jesus concluded his sermon by assuring his followers that, if they adhered to his teachings and trusted in God, there was no need to worry about the things of this world but that if people did not listen to his words and use them as a basis for their lives, it would be like a house, built on the ground without a foundation, which could not resist destruction from outside forces.

**Christianity: The Religion.**

With religion one soon comes to the conclusion that the actual historical facts are not nearly as important as the believed facts. For example the Jews believed that Moses received the Ten Commandments from God himself on top of Mount Sinai. Whether he actually did or not is not the important thing. However the belief that this is what happened has had enormous influence on world history, religion and culture through the Jews, Christians and Muslims. Similarly, it is belief in Jesus Christ that is the important thing. Jesus recognised this fact himself when he said in Luke 8:50; “Just believe”.

Jesus said himself that he would be controversial. In [Ref.32:Matt.34-36] he said: “I did not come to bring peace, but a sword. For I have come to turn “a man against his father, a daughter against her mother, a daughter-in-law against her mother-in-law, a man’s enemies will be the members of his own household”. Consequently, no two Christians agree on what it means to be a Christian and each considers the differences between the various interpretations to be of vital importance. Centuries of study and acrimonious debate, millions of publications, vast research, bitter wars, inquisitions and ceaseless soul-searching have failed to clarify who Jesus really was and what he means to humankind. All this has been complicated by the simple fact that Jesus wrote nothing. Consequently interpretations by the writers of the gospels, Paul, theologians and historians are open to question and to the criticism that many were made with hidden agendas. Indeed, readers will still make their own interpretations depending on whether they are fundamentalist, conservative or liberal Christians. For the purpose of this portrait the important thing to realise is that the basis of Christian teaching came from Asia and has had a global effect. [Ref.53:Vol.3:348; 55:220]

**Christianity: The New Covenant.**

In studying Christianity, students will come up against the term New Covenant. According to the Bible a number of covenants or agreements were made during the history of Judaism between God and the Hebrew people. In the new Testament, Paul regards those who believe in Jesus Christ as being part of a new and better covenant in which God’s Law is written in their hearts [Ref.55:259-260].

**Christianity: Paul the Missionary – Spreading the Faith.**

Saul of Tarsus was one of the major persecutors of the followers of Jesus and became converted to Christ’s teachings after a mystical experience on the road to Damascus. After his conversion to Christianity at Antioch, Paul set out on a series of missionary journeys commencing some time after 38 C.E., travelling some 30,000 kilometres. These not only took him through the areas north of Palestine but also into present day Turkey. On reaching Troas in around 48 C.E., Paul made the decision to carry the faith from Asia into Europe [Ref.32: Acts16:9-15]. This move from one continent to the other has had momentous consequences for Europe and the rest of the world up till the present day.
Although Paul founded many churches in Europe and Asia which are indelibly linked with his name, his greatest contribution to Christianity was that by emphasising the divinity of Christ and getting down to the basic message of Jesus he showed that the new religion could be separated from its Jewish parent and could flower among the gentiles of the entire known world and eventually in Rome itself and beyond. Thus began Europe's adoption of a great new Asian religion that it would later adopt as its own. [Ref.53:Vol.3:348; 58:172]

50-56 C.E.

Christianity: Early Literature -- the Letters of Paul.

The first Christians were mostly illiterate and relied on charismatic oral preaching. In their view, the expectation of an imminent Second Coming of Christ made the need for literature unnecessary. As they were still Jews, they came under the complete taboo against writing additions to religious scriptures. Even Jesus and his twelve disciples used the Jewish scriptures and all four writers of the later Gospels describe Jesus interpreting these scriptures in the synagogue.

In 50-51 C.E., Paul neatly sidestepped the taboo on writing new religious scriptures by writing a Hellenistic style letter or epistle to the Thessalonians. Paul's First Letter to the Thessalonians was therefore the first piece of Christian literature. It propagated the Christian message in a new form, the written composition and, as such, it was the first of a series of documents that were eventually collected together to form the Christian New Testament. Paul's first letter was a most successful experiment and led to a range of such compositions, not only by himself in the years 50-56, but by others later. There are twenty-one apostolic letters in the New Testament. Paul asked in his first letter that it be read out to all the brethren and the reading of the letters and the gospels became a distinctive feature of early Christian services. Paul's First Letter to the Thessalonians is also significant in that it was the first Christian literature from an Asian Jew to a European Christian church that he had recently founded. Thus it represented one of the great crossovers of Asian-European religious and cultural communications. [Ref.53:Vol.2:186 et seq.]

Prior to 70 C.E.

Christianity: Its Early Relations with and Separation from Judaism.

Professor Moule [Ref.58:25] points out that Jesus not only worshipped in the Jewish Temple but also went regularly to the synagogue on the Jewish Sabbath (Saturday) where he frequently taught and healed the sick. Moule argues that "While Jesus used at least some of the Jewish institutions of worship and apparently did so with great devotion he saw in his ministry and in his own self the focal point of the new Temple. He expressed his dissatisfaction with the failure of the Jewish temple to provide a true focus for the sincere worship of God and with its restriction to Jews only". Until the Christians were eventually expelled from the synagogue because their views were incompatible with Jewish teaching "not only were Jewish places of worship frequented by Christian Jews but doubtless also the Jewish religious calendar was observed". This included the Saturday Sabbath until Sunday became dominant as the day of Jesus' resurrection.

In the disastrous war of 66-70 C.E. against the Romans, the Nazarenes (a term used to describe Jewish Christians at the time) refused to participate in the Jewish resistance movement or the Zealot insurrection against the Roman overlords. It was this crisis which finally separated the Christians from the Jews and consequently Christianity from
From mid 1st Century C.E.

Christianity: The Three Cultures.

The placard placed by Pilate's order on the cross of Jesus was written in three languages: Hebrew, Greek and Latin. It is significant that these represent the three cultures that shaped the early history of the Christian church as explained below.

The Hebrew Influence.

Christianity's early relations with Judaism have been addressed above. Not only did Christianity have its roots in the Jewish bible but was also steeped in Jewish culture and the expectation of the coming of a Messiah. Whatever expectations Jews had (and there were many) of the expected Messiah who was to deliver the Jewish people, they had not conceived of a crucified Messiah. The thought of Jesus as the promised Messiah therefore scandalised Jewish minds but to this was added two further unacceptable changes in thought. Firstly, the new belief in the grace of Jesus in human relationships with God seemed to call into question the old Jewish divine-human relationship with God, and secondly, the openness of the new religion to all (including non-Jews) introduced a new concept of universality that was opposed to the old Jewish exclusiveness as the 'chosen people' of God. Thus, there developed a deep cleavage between the two faiths and, even though the first members of the Christian church were Jews, by the second century the new church was composed predominantly of gentiles (non-Jews). This became particularly evident when the Church spread from Asia to the West. These tensions have remained a major factor in Western Asia and especially Palestine until the present day. Nevertheless, even though the Christian Church abandoned its Jewish roots it clung to the old Jewish scriptures.

The Greek Influence.

It must be remembered that the whole of Western Asia was Hellenised as a result of the conquests of Alexander the Great and his transferance of Greek culture to the area. Whereas many of the earliest Christians were illiterate, Paul and others brought the new religion into areas of Greek intellectual culture, where it had to compete with other beliefs, philosophies and religions. Consequently Christianity came under careful scrutiny by people trained in Greek logic and philosophy who would not accept that it was only necessary to adore rather than to define. As a consequence of this scrutiny, Christian concepts had to be properly defined. This not only became one of the great strengths of the religion that contributed to its longevity but also began centuries of analysis and discussion about virtually every aspect of Christianity and led to leadership conflicts within particular churches and between the various centres of control such as Antioch, Alexandria, Rome and later Constantinople.

The Latin or Roman Influence.

For approximately three centuries, believers in the new religion that had come from Asia were persecuted and martyred by Rome and were often confined to worship in the catacombs, the underground tombs in Rome. The last Imperial effort to crush the hated sect was carried out by Diocletian between 303 and 312. However, the next emperor, Constantine converted to Christianity and it became the official religion with imperial sponsorship. From then on, Roman talents for organisation and control were applied and led to the creation of a powerful episcopal hierarchy and eventually a monarchical form of leadership. [Ref.53, Vol.3:362 et seq.]
Christianity: The Move to the West.

Although some forms of Christianity still remained in Asia, from 312 C.E. the future history of Christianity was dominated by the West [Ref.53:Vol.3:349]. (see also portrait No.8: "The Christian Roman Empire").

From 330 C.E.

Christianity: The Byzantine Christian Culture.

The history of Byzantium, following the founding of Constantinople by the Roman emperor Constantine in 330 C.E., is incredibly complex but Roberts [Ref.14:333-358] admits that historical and archaeological data is so sparse that the history of the period may never be adequately written.

In the beginning, Constantinople was to be the New Rome. The emperors from Constantine onwards, not only regarded themselves as heirs of the old pagan caesars but also as equal to the apostles of Christ and frequently involved themselves in the administrative, liturgical and doctrinal affairs of the Church. Initially the dominance of Byzantine Christianity by Rome was total and the Bishop of Rome even carried the title 'pontifex maximus' (supreme pontiff) which was a term also derived from the ancient caesars. However, as time went on and the political power of Rome waned, the dominance became more of an illusion and Byzantium developed its own culture which was more Asian and Hellenistic Greek than Latin. Major conflicts began to develop. These really came to a head in the eighth century when some of the emperors tried to remove icons from Eastern churches on the grounds that these were being worshipped as idols. In fact, Eastern churches have always regarded these figures of Christ as figures of God himself and regarded the Son and the Father as one. This was the beginning of a schism that commenced with a curtailment of the unilateral authority of the emperor over the whole church and eventually developed into a complete split by the eleventh century. As a final disaster in East-West relations, Sancta Sophia in Constantinople, the greatest church in Christendom until the building of St. Peter's basilica in Rome several centuries later was sacked by Western Christian crusaders in 1204. They terrorised and pillaged the city and carried away the bronze horses from the Hippodrome to stand (as they do today) in front of St. Mark's cathedral in Venice. As a final insult they placed a prostitute on the Patriarch's throne in Sancta Sophia.

Icons were not the only distinctive feature of Eastern Christianity. Art, architecture, poetry, music and language, stemming from the Greek-Asian environment, provided further differences. The image created in Sancta Sophia was one of religious aura. A mission of pagans from Russia examining different religions is reported as saying after visiting Sancta Sophia, "There God dwells among men". The spirit of the church became more and more West Asian, so much so that when Islam came along it tended to be regarded by the West as a Christian heresy rather than as a pagan religion. In the Eastern Orthodox Church, the relation between clergy and laity also differed from that in Rome. Priests were not 'set apart' and were allowed to marry which has made the priesthood a cementing and stabilising force in society until the present day. No religious figure equivalent to the Pope emerged but, in Constantinople, the autocratic Emperor towered above the priesthood.

One of the enduring important innovations of the Eastern Orthodox Church was the use of the indigenous language and culture of peoples converted to the religion, rather than the
slavish use of Latin by the Western church and its missionaries. This assisted emerging nationalism in Russia, Ukraine, Bulgaria and Serbia. [Ref.53:Vol.3:350 et seq.]

**Judaism: The Books.**

By 5th Century C.E.

The Jews are often referred to as *The People of the Book* and indeed there are a number of books that are important to the Jews. The Jews not only have inherited the books or Holy Scriptures but their primary duty is to study them and carry out the teachings therein [Ref.57:215].

Eastman [Ref.46:275] argues that the “concept of revelation, the idea that God reveals his will to mankind through prophets and through history, attaches an enormous significance to the Holy Scriptures that chronicle the revelation and the Hebrews response to it”.

The most sacred object in Judaism is the Scroll containing the Five Books of Moses. The scroll is placed in an Ark in every Synagogue in such a position that as all the people turn towards the Ark in prayer they automatically face Jerusalem [Ref.57:9, 215].

**The Torah.**

The word *Torah* is derived from a root meaning ‘to instruct’ or ‘to lead’ and usually refers to the first five books of the Bible that are also called the Five Books of Moses or the Pentateuch. The expression used for the whole Jewish Bible is the *Tanakh*. This is basically the *Old Testament* of the Christian Bible.

**The Talmud.**

A basic belief of Judaism is that, along with the Torah, an oral law was given as well which was handed down by word of mouth from one generation to the next. The work of collecting and editing the oral laws into written form was completed about 200 C.E. and was called the *Mishnah*. People now began studying, questioning and debating the laws and these commentaries were added to the *Mishnah* to create the *Talmud*. The Babylonian Talmud, the later and more comprehensive of the two Talmuds was completed by 500 C.E. A recent translation of the *Talmud* comprises 64 volumes.

According to Adin Steinsaltz [Ref.46:287], a prominent Jewish scholar, “If the Bible is the cornerstone of Judaism, then the Talmud is the central pillar. In many ways the Talmud is the most important book in Jewish culture, the backbone of creativity and of national life. The Jewish people have always been keenly aware that their continued survival and development depend on study of the Talmud and those hostile to Judaism have also been cognizant of this fact”. To illustrate this hostility, mention must be made here of the earlier Jerusalem Talmud, which was different from the Babylonian Talmud but was destroyed by the medieval Christian Church’s persecution. “For example, in the late 13th century, there was a public burning of the Talmud of no less than 24 cart loads of manuscripts in Paris” [Ref.57:219].

The Talmud contains thousands of years of Jewish wisdom and as been created by recording answers to a continuing stream of critical questions from students. The Talmud is perhaps the only sacred book in the world that permits and even encourages students to question it [Ref.46:288-290].
Muhammad ibn Abdullah (the son of Abd Allah) was born in approximately 570 C.E. in the Hejaz.

John L. Esposito gives a summary of the life of Muhammad in “Muhammad, Prophet of God” from his book, “Islam: The Straight Path” [Ref.46:371]. According to Esposito’s discussion, Muhammad was orphaned at an early age. His father died before he was born and his mother, Amina, died when he was six years old. As a young man, Muhammad was employed in Mecca’s thriving caravan trade. The city was at the crossroads of trade routes between the Indian Ocean and the Mediterranean. Muhammad became business manager for the caravans of a wealthy widow, Khadija, whom he subsequently married. Muhammad was twenty-five and Khadija forty. During their fifteen years of marriage, they enjoyed a very close relationship. The most famous of Muhammad’s children to survive infancy was Fatima, who married Ali, the fourth caliph of Islam and the first legitimate imam (Leader) of the Shi‘i school of thought. Sunni and Shi‘i are two denominations of Islam.

Mecca’s transition from a semi-Bedouin community to a commercial, urban society was accompanied by serious economical and social cleavages. Muhammad, who had become a successful member of Meccan society, was profoundly affected by these changes. He enjoyed great respect for his judgement and trustworthiness and this was reflected by his nickname al-Amin, the trusted one. This rectitude was accompanied by a reflective nature that led him to retreat regularly to a cave on Mt. Hira, a few miles north of Mecca. Here, in long periods of solitude, he contemplated his life and the ills of society during a search for greater meaning and insight. Here also, at the age of forty, during the month of Ramadan, he received the first of many revelations from God that qualified him to join that group of individuals whom Semitic faiths, including Judaism and Christianity, acknowledge as divinely inspired messengers or prophets of God.

Muhammad continued to receive divine revelations over a period of twenty-two years (610-632 C.E.). These revelations were finally collected and written down in the Qur’an (“The Recitation”) which is Islam’s sacred scripture and is sometimes spelt Koran.

The first ten years of Muhammad’s preaching were difficult. There was a trickle of converts but opposition to Muhammad was formidable. The monothestic message of Muhammad condemned the socio-economic inequalities of Meccan life and constituted a direct challenge to traditional polytheistic religion and the power and prestige of the prosperous Meccan oligarchy. Muhammad’s teaching also threatened the very considerable revenues that accrued from the annual pilgrimage to the Kaaba, the religious shrine that housed the tribal idols. This was coupled with the undermining of Meccan tribal political authority by Muhammad’s claim to prophetic authority and leadership as well as his insistence that all true believers belonged to a single universal community (ummah) that transcended tribal bonds.

The death of his wife, Khadija, followed by the death of his uncle and protector, Abu Talib in 619 C.E., made life especially difficult for Muhammad. Meccan opposition escalated and was led by the Umayyad clan of the Quraysh tribe, keepers of the Kaaba. As conditions deteriorated further in Mecca, Muhammad sent some of his followers to other areas, like Christian Abyssinia, for safety. In 620, Muhammad was invited to go to Medina, two hundred miles north of Mecca. Some of his followers quietly migrated to
Medina and in September, 622, together with Abu-Bakr, Muhammad himself migrated from Mecca to Medina. This migration (hijra) marked a turning point in Muhammad’s fortunes. Islam took on a political form with the establishment of an Islamic community state (umma) at Medina. The significance of the hijra is reflected in its adoption as the beginning of the new Islamic calendar. The community or umma, as much as the individual, was to be the vehicle for realising God’s will on earth.

While the majority of Arab tribes in Medina came to embrace Islam, the Jewish tribes (that is those Arabs who had previously converted to Judaism) remained an important minority. Muhammad promulgated a charter that set out the rights of all citizens and the relationship of the Muslim community (umma) to other communities. Muslims constituted an umma whose primary identity and bond were no longer to be tribal ties but a common religious faith and commitment. Jews were recognised as a separate community allied to the Muslim umma but with religious and cultural autonomy.

Mecca was still the religious, political, economic and intellectual centre of Arabia. Further revelations to Muhammad, which designated Mecca as the direction (qibla) for prayer and the site of the Muslim pilgrimage (hajj), increased its religious significance. Muslim religious fervour was matched by the power of Meccan tribal mores that branded the Muslims as secessionists and traitors. These were the ingredients for a formidable battle. Muhammad initiated a series of raids against Meccan caravans in retaliation for the Meccans confiscation of Muslim properties in Mecca and several important battles ensued. In 624, at Badr, near Medina, Muslim forces, although greatly outnumbered, defeated the Meccan army in the first victory for the forces of monotheism over those of polytheism. The elation of Badr was dissipated when the Muslims were defeated (by the same foe) at Uhud in 625, where Muhammad himself was wounded. Finally in 627, frustrated by the growing strength of Muhammad, the Meccans mounted an all-out siege of Medina. At the Battle of the Ditch (so-named because the Muslims used a ditch to neutralise the Meccan cavalry), the Muslims held out so successfully against a coalition of Meccans and mercenary Bedouins that the coalition disintegrated and the Meccans withdrew. The failure of the Quraysh enhanced Muhammad’s prestige and leadership amongst the tribes of Arabia. The balance of power had shifted. Muhammad would now initiate and Mecca would respond. The final phase in the struggle highlights the method and political genius of Muhammad. Instead of seeking to rout his Meccan opponents, Muhammad sought to gain their submission to God and His messenger by incorporating them within the Islamic community-state. A truce was struck in 628 to permit Muslims to make their pilgrimage to Mecca the following year. In 629, Muhammad led the pilgrimage to Mecca as planned but in 630, he accused the Qurash of breaking the treaty and the Muslims marched on Mecca. The Meccans capitulated and Muhammad accepted a settlement and granted them amnesty. The Meccans, on their part, converted to Islam, accepted Muhammad’s leadership and were incorporated within the umma. During the next two years, Muhammad established his authority over most of Arabia.

Muhammad’s new message to his people was “initially as clear as it was simple. There is only one God, Allah. He is all-powerful, the creator of all, the everlasting. There is a paradise and there is a hell. Splendid rewards await those who obey His commands. Terrible punishment awaits those who disregard them” [Ref:64:443].

In 632, Muhammad led a large body of believers in the annual pilgrimage to Mecca where he preached one of his greatest sermons which substituted the new religious bond between brothers in Islam for the old bond of blood as the basis of social cohesion.
By now, Muhammad and his followers had control of a large slice of Arabia and he even proceeded with plans for the conquest of Syria and Iraq. Suddenly, however, he died at his home in Medina on June 8, 632, and was buried under the floor of the mud hut of his favourite wife, 'Aisha. [Ref.46:371; 77:111 et seq.].

The Qur'an or Koran.

The holy book of Islam is divided into 114 chapters or suras arranged (like the Bible) in no particular chronological order. To non-Muslims the Qur'an may appear formless and repetitious but A.J. Arberry, a noted authority, has written that those who know the Qur'an in the original Arabic insist that much of its force and beauty is lost when translated. "The rhetoric and rhythm of the Arabic are so characteristic, so powerful, so highly emotive, that any other version whatsoever is bound in the very nature of things to be but a poor copy of the glittering splendour of the original" [Ref.40:449,123].

As Ninian Smart [Ref.44:281] argues, "It is easy to think of the Qur'an as simply a book and to say that Muslims have faith in the words of a holy book. But this does not convey the centrality and power of the Qur'an in Muslim eyes. If you were to look for the rough equivalent to the Christian incarnation (the divine nature of Jesus) in Muslim piety, it would be the Qur'an. It is divine thought and divine law incarnated in words... This gives it a much deeper meaning and a much higher status than that of the Bible".

Although it is now a fairly old reference and the term Mohammedan is no longer acceptable because it wrongly implies that Muhammad's followers worshipped him, Sir Hamilton Gibb's article, "Doctrine and Ritual in the Koran" from his book "The Mohammedans" [Ref.40:458] gives an excellent summary of the subject.

Although the Qur'an does not give a systematic set of Muslim beliefs or ritual, it does contain a body of doctrine and practical obligations that are the core and inspiration of the Muslim religious life. Surprisingly, the famous shahada, "There is but one God, Muhammad is the Apostle of God", is not found in composite form anywhere in the Qur'an but its two halves appear separately. In describing God, the Arabic word Al-lah is a shortened form of the expression, al-ilah, 'the god'. For Muhammad, the essential element of true belief was uncompromising monotheism. Alongside the terrible and majestic aspects of God as Creator, Supreme Power, Judge and Avenger, the Qur'an stresses also God's bounty and loving kindness. In the Qur'an, angels are represented as God's messengers who can assist Muslims and non-Muslims in all aspects of life. There are also devils, who are not fallen angels, but rebellious jinn, like men, but created of fire, not earth. Next to the Unity of God, the doctrine of Apostles is the central doctrine of the Qur'an. At all times and to all men, God has sent messengers or Prophets to preach the Unity of God and to warn men of the Judgement. The last of the Prophets is Muhammad, who is God's Apostle to all mankind. Twenty eight Prophets are mentioned in the Qur'an, including four Arabic; eighteen Old Testament and three (Zechariah, John the Baptist, and Jesus) New Testament. The stories of the prophets are almost all contained in the Qur'an but vary from the Biblical accounts. In the story of Jesus, particular stress is laid on the virgin birth, his miracles and the Muslim denial of his claim to divinity. The crucifixion is rejected as a Jewish fable and it is contended that another was crucified in his stead. The doctrine preached by all Prophets is essentially one and the same. The Qur'an emphasises that Muhammad was not superhuman but that he is a noble
pattern to those who hope in God and his decisions must be accepted in matters of faith and conduct. Belief in his revelation and obedience to him are necessary for salvation.

The Last Judgement is presented as a cataclysmic event but is lightened by the assurance of God’s Mercy. Islamic orthodoxy has accordingly always coupled faith with works and in particular with those “acts of devotion” (ibadat) that are enjoined on all believers in the Qur’an. The observances of the ritual prayers (salah) is an essential religious duty. The Qur’an mentions the noon prayer on Friday, the principal congregational prayer of the week and enjoins the suspension of work during it. The Qur’an imposes the duty of giving alms as a means of salvation and lays down that the month of Ramadan, the ninth month of the lunar year, is to be observed as a period of fasting and fasting is also included amongst the expiations for various offences. Although the Pilgrimage (Hajj) to the Sacred Mosque at Mecca constitutes a religious obligation on every Muslim, the obligation is limited by the possession of the necessary means and physical possibility of getting to Mecca. With this exception, the duties of prayer, alms giving, fasting and pilgrimage, together with the shahada or profession of faith, form the ‘Five Pillars of the Faith’. Besides these, the Qur’an contains a large body of religious and ethical teaching and legal injunctions and penalties are laid down for certain crimes.

Jihad.

“The Holy Qur’an” [Ref.45:Surat IX, verse 20] states that “Those who believe and suffer exile and strive with might and main, in God’s cause, with their goods and with their persons, have the highest rank in the sight of God”. In his footnote 1270 to this verse, translator A.Yussuf Ali, states: “Here is a good description of jihad”. He goes on to say that “mere brutal fighting is opposed to the whole spirit of jihad”. Surat IX, verse 5 states: “Slay the Pagans wherever you find them, and seize them, beleaguer them in every stratagem; but, if they repent and practice regular prayers, open the way for them for God is most merciful”. Fighting for the faith should not be exclusively attributed to Islam because we need to consider the Jews (e.g. David slaying Goliath) or the Christians fighting the Crusades. “Fight in the Way of God against those who fight against you, but do not transgress limits” [Ref.45:Surat I: Verse 190] and in footnote 204 thereto: “War is only permissible in self-defence and under well-defined limits”. Aggression or transgression is continually described as abhorrent to God. The main striving is within oneself against evil. If war is forced upon Islam, fighting is required to be pursued vigorously, whether it be against pagans, Jews or Christians, until the enemy of the faith is defeated. Then if the enemy repents and pays compensation or jizya, mercy must be shown.

Ninian Smart [Ref.44:238] writes: “An aspect of Muslim law is the notion of the duty to struggle on behalf of the faith and indeed to fight on its behalf to expand the territories over which the faith dominates. Jihad is sometimes counted as the Sixth Pillar of Islam”.

From 7th Century C.E.

The Impact of Islam.

From the seventh century, both Western and Eastern Christianity had to come to grips with the new religion of Islam just at the time when differences between them were accelerating.

Here was a religion that was not bound up in the language, culture and traditions of Hebrew, Latin and Greek but based on Arabic culture and language. As H.G.Wells described in his “Outline of History” [Ref:1:607], Islam was “uncompromisingly
monotheistic, void of any Jewish exclusiveness, and proof against the theological elaborations which had perplexed and divided Christianity and smothered the spirit of Jesus. Muhammad had specifically excluded sacrifices, priests and a hierarchy. Its simple methods of regular prayer and worship were meticulously prescribed and limited. Muhammad himself shunned any suggestion of his own divinity. It was a prophetic religion, and designed to remain so, thus avoiding many of the complications that had come to plague Christianity.

During the century following the death of Muhammad in 632, the geographical spread of Islam was more rapid and effective than for Christianity in previous centuries. Soon, several major centres of Eastern Christian religious power, including Jerusalem, Alexandria and Antioch, were taken over by Islam. Persia, Syria, Egypt, Turkey, North Africa and, by the ninth century, even Sicily, Spain and parts of France fell to the Muslim armies. In 1453, even Constantinople fell to the Turks who turned the great church of Sancta Sophia into a mosque. Christians saw this as a catastrophic tragedy because it represented the end of 2000 years of Roman and therefore Western domination.

Edward Said explains [Ref.60:58 et seq.] that for Europe Islam came to symbolise terror, devastation and demonic hordes of hated barbarians that had to be “dealt with”. This was done by orientalising Islam, i.e. incorporating it into the European lore of the Orient. It was given the degrading title of Mohammedanism even though Muslims never did worship Muhammad like Christians worship Christ. It was regarded as some form of misguided Christian heresy and therefore could be compartmentalised so people did not have to worry about it or study it. Said [Ref.60:61] argues that, “This rigorous Christian picture of Islam was intensified in innumerable ways, including...a large variety of poetry, learned controversy and popular superstition”. Said further points out [Ref.60:63] that even in the introduction to The Cambridge History of Islam, reference is made to D’Herbelot’s Bibliotheque Orientale, published in 1697, which is described as “highly important” in widening “the new understanding of Islam” and conveying it “to a less academic readership”. Under its entry for “Mohammed”, the Bibliotheque explains Muhammad’s ideological and doctrinal value as follows: “This is the famous impostor Mahomet, Author and Founder of a heresy, that has taken on the name of a religion, that we call Mohammedan”, before continuing in a similar inflammatory vein. As Said [Ref.60:67] argues, “Not only is the Orient accommodated to the moral exigencies of the Christian West, it is also circumscribed by a series of attitudes and judgements that send the Western mind to other like-minded Orientalist works”. [Ref.53:Vol.3:351; 1:607 et seq.; 60:59]

12th Century C.E.

Judaism: Dogmas or Beliefs.

Moses Maimonides (1135-1204), described by Eastman [Ref.46:251] as the outstanding Jewish philosopher of the Middle Ages, stated the basic dogmas or beliefs of Judaism as follows: God exists and is the sole creator, God is one, He does not have a physical form, He is eternal, He is approachable through prayer, all the words of the prophets are true, Moses was the greatest of all the prophets, the Torah that we have today is the same one given to Moses by God, the Law given to Moses can never be changed, God cares, God is just, the Messiah will come and the dead will be revived.

Present Day

Judaism: What is it?

Judaism is commonly used to describe one of the great religions of the world. It is
regarded as the oldest member of the family of monotheistic (one God) religions which comprise Judaism, Christianity and Islam and which all began in a comparatively small area of Western Asia and ascribe, in their different ways, an honoured place to the city of Jerusalem [Ref.46:263-4].

Many Jews have severe reservations about being lumped together with the other two religions as a family. They feel that Judaism is misrepresented as being the same kind of thing as the others. Judaism is often described by the Jews as being not so much a religion as a way of life [Ref.46:265-7].

The word “Judaism” in the sense of “the religion of the Jews” is a fairly recent addition to the Jewish vocabulary. Indeed the word for “religion” does not even appear in the Hebrew language. Jews have really been forced to consider Judaism as a religion because of the dialogue and comparison with Christianity. “Judaism” is an abstract noun of Greek origin formed from the word “Jew”. In its original use it does not refer to a belief but rather to a ‘Jewish identity’.

Well-known Cambridge Rabbinic scholar, Nicholas de Lange [Ref.46:266] says, “The history of the word ‘Judaism’ brings us face to face with a phenomenon that is of the utmost importance in understanding the meaning of Judaism. To be a Jew means first and foremost to belong to a group, the Jewish people, and the religious beliefs are secondary”. (The Christian, on the other hand, is defined by his beliefs). Lange goes on to say that “Indeed there are many people in the world who consider themselves to be loyal Jews in every respect and would deny that they have any religion at all”. Many Jews would consider the rituals, institutions, methods of worship, observances of holy days and fasts as being “far more critical to Judaism than religious beliefs and theological doctrines”.

[For further study, consult A Jewish Primer by Rabbi Himelstein [Ref.57], which gives a comprehensive description and explanation of these in question and answer form. Judaism by Meyer Domnitz [Ref.56] is a good basic reference book, simply and profusely illustrated.

“It is certainly true and generally accepted, that Judaism (particularly in terms of observance) takes different forms in different places but it is also strongly felt that there is a single thing called ‘Judaism’, that is not just the lowest common denominator of Jewish observance worldwide”.

Rabbi Finkelstein [Ref.46:268], past Chancellor of the Jewish Theological Seminary of America states that “Jewish rules of conduct apply, not merely to worship, ceremonial and justice between man and man but also to such matters as philanthropy, personal friendships and kindnesses, intellectual pursuits, artistic creation, courtesy, the preservation of health, and the care of the diet. So rigorous is this discipline, as ideally conceived in Jewish writings, that it may be compared to those specified for members of religious orders in other faiths” [Ref.46:266].

“Because Judaism is a way of life, no confession of faith can by itself make one a Jew” [Ref.46:269]. One must accept its discipline rather than any verbal formula or creed. However, “no failure either to accept the beliefs of Judaism or to follow its prescriptions is sufficient to exclude from the fold a member of the Jewish faith. According to Jewish tradition, the covenant between God and Moses at Mount Sinai included all those present and their descendents”. Therefore, unlike Christianity, there is no need for any ceremony
to admit a Jewish child into the faith of Judaism. Furthermore anyone who is converted to Judaism binds his descendants forever.
The Beginning of Urbanised Civilisation and Agriculture.

In northern Mesopotamia, around the headwaters of the Tigris and Euphrates Rivers, Stone Age hunter gatherers finally settled down and made the first great contribution of Asia to global civilisation by inventing urbanised civilisation itself. This came about more or less simultaneously with their other great invention, agriculture. Before that time men were hunter-gatherers. Professor Truswell, Professor of Nutrition at Sydney University, told his students that he lived with present day hunter-gatherers in Africa for two years. In that community only an average of one of the fast, cunning game animals per month was killed by the male hunters and therefore the majority of the food, which was vegetarian, was provided by women. As the systematic planting of seeds for food production which we call agriculture began in Northern Mesopotamia it is probable that women took the first step in that direction. It was this systematic production of food which became the basis of all future civilisation. It is probably no coincidence that this occurred in one of the few areas in the world where cereals such as wheat and barley occurred naturally. Also, the region where it began, in upper Mesopotamia, was in the zone shown on [Ref.51:2:Map 4] where rainfall was sufficient to sustain cereal crops, which was not the case further down river. According to The Times Atlas of World History [Ref.51:6], “The increase in food production which followed made possible a spectacular growth of human population calculated to have multiplied sixteen times between 8000 and 4000 B.C.E.” (Refer also portrait No.4: West and Central Asia: Civilisation and Culture.)

c.6500 B.C.E. Early Building Methods in Mesopotamia.

Ancient builders in Jarmo, Mesopotamia, were already using a precursor of bricks called pisé blocks. These were a simple type of sun-dried mud bricks. Some houses already had stone foundations [Ref.22:347].

5000 to 2100 B.C.E. The Development of Irrigation.

When the population of the world’s first true civilisation, between the headwaters of the Tigris and Euphrates Rivers, outgrew the original area, Mesopotamians were forced to move down river onto the fertile but extremely dry plains. As there was still not enough room for the increasing population along the rivers, men began to dig trenches along which they could grow crops at a distance from the rivers. According to The Times Atlas of World History [Ref.51:6] the important discovery of irrigation, occurred after 5000 B.C.E. By 2100 B.C.E., early Mesopotamian rulers were organising a system of irrigation canals which covered the plain between the mouths of the two rivers [Ref.22:353].
By 4000 B.C.E. Months and Seasons.

By 4000 B.C.E. the Sumerians had developed the concept of 'months' to express the time between 'seasons' [Ref.28:16].

c.4000 B.C.E. Further Mesopotamian Building Methods.

In about 4000 B.C.E., Mesopotamians began using bitumen slime to bond brick courses together which was the first use of mortar. At first bricks were sun dried but the Sumerians later developed kiln drying as a means of making longer lasting bricks. [Ref.22:347]

By 3500 B.C.E. Early Sumerian Mathematics.

The Sumerians discovered that the area of a rectangle was equal to the length times the breadth [Ref.28:13].

The needs of agriculture and business in Sumeria gave rise to a primitive numerical system. The Sumerians later developed mathematical tables, including tables of reciprocals, and knew the relationship that the square on the hypotenuse of a right angled triangle equals the sum of the squares on the other two sides, thereby anticipating the Theorem of Pythagoras by many centuries [Ref.22:411].

2400 B.C.E. The Use of Arches in Buildings.

Sumerian builders began to use arch and vault construction as early as 2400 B.C.E. [Ref.22:347].

c.2400 B.C.E. The Sexagesimal Number System.

By 2400 B.C.E., the Sumerians made a most important mathematical break-through when they developed a complete numerical system based on the number sixty. Although this was more cumbersome than the later decimal system, based on the number ten, it is interesting to note that the sexagesimal system is still used today for minutes, seconds, angular degrees and such like [Ref.22:411].

c.2000 B.C.E. Mathematical Place-Value System.

The principle of 'place-value' in mathematics refers to the type of number in which the value of each numeral depends on its position in the number, e.g. the numeral "1" means one, but if moved one position to the left it means ten, two positions to the left one hundred and so forth. This principle of place-value was first used by the Babylonian mathematicians in the early second millennium B.C.E. Joseph Needham [Ref.24:vol.III:149] gives reasons for thinking that this principle was not implemented in China as a result of contact with Babylon but concedes that, as technology was exchanged with China, the 'idea' of place value may have been transferred to China from Mesopotamia.

By 1950 B.C.E. Quadratic Equations.

In Hammurabi's day, the Babylonians could solve simple quadratic equations, i.e. those
based on $x^2$. They could even solve some equations including higher powers, i.e. $x^3$ and $x^4$. They also used some geometrical constructions, such as inscribing a square in a circle. Numbers were written in *cuneiform*, i.e. wedge-shaped characters pressed into wet clay with a stylus [Ref.28:15].

**Mathematical Tables.**

By about 1800 B.C.E. ‘mathematical tables’ were in use in Babylon [Ref.22:411].

**Advanced Mathematics.**

By 1700 B.C.E., Babylonians were making use of use of square roots and cube roots as well as the square and cube of numbers.

They also calculated and used the approximate value of $\pi$ (the ratio of the circumference to the diameter of a circle). [Ref.22:411]

**Irrigation Dams.**

Rulers of Saba (now Yemen) completed the Marib Dam. This was one of the great ancient dams built to provide mountain water for irrigation. It was made of boulders [Ref.22:353].

**By 700 B.C.E. Early Babylonian Astronomy.**

By 700 B.C.E., the Babylonians were keeping accurate astronomical records of eclipses and the return of comets. These records are still of use to scientists today, e.g. they have been used to help Western scientists calculate that the earth is slowing by 1/1000 second per 100 years.

The five planets, Mercury, Venus, Mars, Jupiter and Saturn, were already known in Babylon by this time. These planets were considered to be very important in controlling human affairs and, consequently, they were worshipped as gods together with the sun and moon. It was therefore regarded as essential to keep an accurate track of planetary behaviour.

In about 500 B.C.E., Chaldean astronomer, Nabu-Rimann, used the abovementioned records to compute and record the movements of the sun and moon on a daily, monthly and yearly basis. He estimated the year as 365 days, 6 hours, 15 minutes, 41 seconds (an error of only 26 minutes, 55 seconds) without the use of a telescope! A hundred years later, another Chaldean astronomer, Kidinnu, greatly improved the accuracy of these calculations. [Ref.28:17]

**Regular Use of Fired Bricks.**

The palace of Sargon II was constructed of fired brick in Khorsabad, Mesopotamia [Ref.22:347].
The Hanging Gardens of Babylon.

King Nebuchadnezzar of Babylon built the Temple of Bel in the form of a multicoloured brick ziggurat or pyramid. The temple, with its multi-storied terraced gardens, was considered one of the seven wonders of the ancient world. [Ref 22:347]

The Origins of Science and Mathematics in Ionian Greece.

Ionia, in Asia Minor (refer portrait No. 4 - 1000 B.C.E.), was a part of Asia which was colonized by the Greeks in about 1000 B.C.E. and bordered Mesopotamia. Being colonists in a strange land, these expatriate Greeks had the bold and imaginative spirit typical of pioneers and were also able to communicate with the people of the two ancient civilisations in the valleys of the Tigris and Euphrates Rivers just beyond their borders.

Both Thales and Pythagoras, the founders of the 'science' of mathematics, came from Ionia, not from Greece itself. Pythagoras is thought to have been the pupil of Thales. Both men appear to have travelled to centres of learning in Babylon and Egypt. [Ref 28:33; 86:98 et seq.; 14:194 et seq]

Thales of Miletus.

Although none of the works of Thales (c.625-546 B.C.E.) are extant, he is credited with being the first man to make mathematics theoretical and abstract rather than just practical. Thales began using the step by step deductive proof which became the chief feature of Greek mathematics and scientific reasoning, an innovation that was not used by any other nation for many centuries. Mesopotamia, Egypt and China never developed 'abstract' mathematics. They gave numerous quite brilliant examples of the practical use of mathematics, but never proved why the answer they got had to be so.

Six propositions that Thales is credited with proving by deductive reasoning for the first time are that:

1) Any circle is bisected by its diameter.
2) The angles at the base of an isosceles triangle are equal.
3) When two lines intersect the vertically opposite angles are equal.
4) An angle in a semicircle is a right angle.
5) The sides of similar triangles are proportional
   6) Two triangles are congruent if they have two angles and a corresponding side respectively equal.

Thales reportedly also calculated the height of the pyramids in Egypt by the length of their shadows and became famous by accurately predicting the eclipse of May 28, 585 B.C.E. However, even more importantly, he saw and had the courage to state that the movements of the sun and moon were not the work of mysterious gods but the result of fixed natural laws.

Thales left no writings and so knowledge of him is derived from an account in Aristotle's Metaphysics. [Ref 86:98 et seq.; 14:194 et seq]
Anaximander.

To Anaximander of Ionia goes the credit for the first map drawn to scale. He also realised the many uses to which the old Babylonian invention, the **gnomon** could be put. This was a sundial with a vertical pole on a flat plane. By measuring the sun's shadow regularly the time of equinoxes, solstices and other celestial phenomena could be determined.

The Ionians were also the first scholars to consider the concept of a 'prime substance' from which all things are made. Thales opted for water, Anaximander opted for an abstract substance that he called *Apetron*. This thinking was the precursor of atomic theory. [Ref.73:18]

Early West Asian Science, especially during the Persian Period.

Professor A.T. Olmstead [Ref.12:200] contended that "science was no opponent of religion in the ancient orient [in this case meaning western Asia], rather it grew up in the temple’s shadow".

Chaldean (not Babylonian) astronomical observations around 568 B.C.E. were the most accurate until the invention of the telescope in the West. Their astronomical tables which were used to produce accurate calendars for religious and agricultural purposes covered observations, calculations and predictions of the sun, moon, and planets and included lunar and solar eclipses.

The first great Babylonian astronomer, Nabu-rimanni, who worked about the beginning of the fifth century B.C.E., was given the title *mathematician* because, while his tables were based on astronomical observations, he used quite advanced mathematics to draw conclusions from them in regard to times and seasons.

According to Olmstead, "Astronomy was the one science the Orient gave the West full grown" [Ref.12:206] and, although our current fragmentary sources do not permit (at this stage) a similar picture in other fields of knowledge, enough surviving information has been interpreted to show that in pure mathematics, botany and medicine the learning of the ancient past had not been forgotten and that in important respects there were substantial advances during the Persian period from 539 to 331 B.C.E.

Geographical Studies in Miletus.

James and Martin [Ref.73:19] credit Thales and Anaximander of Ionia with the establishment of the 'mathematical' tradition in the study of geography while the credit for the literary tradition goes to **Hecataeus** (c.550-c.475 B.C.E.).

Hecataeus was actually the first writer of prose in Greek. He also began the classification of geographical information brought into the busy port of Miletus from all over the known world. Hecataeus divided the world into three regions which came to be called Europe, Asia and Libya (Africa). He only recorded what he believed to be true from his investigations and referred to this method as the “new geography”. By thus separating fact from romantic narrative he set an important standard for all future geographers. In dividing Europe from Asia he used the boundaries which were apparently well known in those days and which are used throughout these **portraits**. These divisions were along the
Hellespont (Bosphorus), the Caucasus Mountains, the Euxine (Black Sea), and the Caspian. However, Herodotus took Heeretus to task when he set the boundary between Asia and Africa as the Nile River. Herodotus, quite rightly, insisted that Egyptians at the time were not divided into Asians and Africans.

Pythagoras (582-510 B.C.E.), who was born in Samos, an island off the Ionian coast, was one of the most influential of all ancient mathematicians. He founded the Pythagorean School which was a secret, mystical, communal society and through this organisation his teachings had a profound influence not only on mathematics but also on the lives of most of the ancient Greek thinkers. Pythagoras "made geometry a science, by basing it on axioms (self evident truths), postulates (assumptions) and definitions, and by setting down methods of proof" [Ref.28:39]. The Greeks relied mainly on geometry in mathematics because their number system was impractical for arithmetical and algebraic calculations due to the fact that it was based on the twenty-four letters of their alphabet.

Pythagorean astronomy represented an important advance in ancient scientific thought because for the first time it regarded the earth as a globe that revolved, together with the other planets, around a central fire. [Ref.28:36-39]

Anaxagoras (died. 428 B.C.E.).

Another great Ionian mathematician and natural philosopher was Anaxagoras of Clazomenae, who, as Boyer [Ref.27:70] says, "represents the spirit of rational inquiry, for he regarded the aim of his life as the study of the nature of the universe - a purposefulness that he derived from the Ionian tradition of which Thales was one of the founders". Socrates, the Athenian philosopher, initially expressed interest in Ionian natural philosophy but later rejected it in favour of the search for ethical verities which he espoused. According to Olmstead [Ref.12:328], Anaxagoras visited Athens and explained his views that the universe could be explained by subjecting it to reason. He expressed his theory that the entire universe was composed of minute homogeneous particles. He then began to explain his theories regarding the true nature of the Milky Way, comets, meteors and stars. However, when he went on to announce that the light of the moon was merely the reflected light from the sun, he was charged with impiety in his teaching of astronomy by the superstitious Athenians and had to flee back to Ionia to save his life. As Olmstead [Ref.12:328] comments, "While Athens was declaring the very study of astronomy illegal, the Orient [Asia] continued to refine its scientific results". Furthermore, the fact that Socrates rejected this form of thinking means that the Athenian Greeks cannot claim deductive scientific reasoning as their own.

Democritus of Abdera.

Democritus, a scientist who came from the Greek colony of Abdera, visited Babylon where he was welcomed as a fellow-student and given free access the ancient Babylonian treasures of knowledge. In 439 B.C.E., Pericles of Athens had boasted that Athens was the school of Helas, that the city was open to the world and foreigners would be allowed every facility for learning. However, in contrast to his Babylonian visit, when Democritus visited Athens he, like Anaxagoras, was depressed by the rejection of scientific thinking which the Athenians did not want to learn or even discuss. [Ref.12:333,341]
Eudoxus.

Eudoxus was born at Cnidus in southwest Asia Minor and was probably the most brilliant mathematician of the Platonic period (see Plato: portrait No.9). He devised a considerable number of new geometrical theorems and, as a result, it was said of him that "he practically invented the whole of Euclid’s fifth book of geometry" [Ref.34:28].

Apollonius of Perga.

Apollonius, another Asian Greek, was born at Perga, south of Pergamum in Asia Minor. His original work on conic sections earned him the title of “The Great Geometer”. Along with Euclid of Alexandria (323-283 B.C.E.), whose works he studied and used, Apollonius is one of the two greatest figures in the field of geometry. According to Florian Cajori [Ref.34:38], "he incontestably occupies the second place in distinction among ancient mathematicians" after Archimedes.

Hipparchus.

According to Cajori [Ref.34:43], Hipparchus was the greatest astronomer of antiquity”. He was born in Nicaea, Bithynia (now Iznik, Turkey). He was extremely accurate in his research and, by comparing his own celestial studies with those of earlier astronomers, discovered the precession of the equinoxes. His calculation of the length of the year was within 6.5 minutes of modern measurements. He also catalogued, charted and calculated the brightness of perhaps as many as 1000 stars. Hipparchus also devised a method of locating geographical positions by means of latitude and longitude. His compilation of a table of trigonometrical chords became the basis for modern trigonometry.

A couple of centuries later, the Alexandrian astronomer, Ptolemy (see portrait No.9) put the findings of Hipparchus into systematic order in a book called the Almagest, that became the standard textbook on astronomy till the days of Johann Kepler in the early seventeenth century C.E.

Parchment.

Due to the rivalry between the great libraries at Alexandria in Egypt and Pergamum in Asia Minor, when Pergamum ordered papyrus from Egypt to extend its library, the Egyptians were afraid their library might be excelled and so they refused to sell Pergamum any papyrus. The scribes at Pergamum were ordered by their king Eumenes II to write on animal skins, a technique that had been used before 3000 B.C.E. but which had been superseded by papyrus. The scribes at Pergamum, by using improved techniques to prepare the skins of sheep, goats and calves, produced a superior writing material that the Romans called charta pergamenæ (paper of Pergamum) and under this name it gained wide use in Europe. The French turned the word pergamenæ into parchemin that became, in English, “parchment”. Consequently, the scribes not only had a superior writing material for extending their library but also developed a thriving export business with the West. Parchment remained in use in Europe until the sixteenth century C.E. when paper came into general use. The finest grade of parchment was made from the skins of newborn calves and lambs and was called vellum. [Ref.6:76]
Strabo.

Strabo was yet another prominent scholar born in Western Asia, at Amasia in present-day central Turkey. He is noted for having written a seventeen volume treatise entitled *Geography*. This treatise summarised all known geographic knowledge and was used mainly by contemporary Roman administrators and politicians [Ref.73:35].

**The Beginning of the Islamic Contribution to World Science and Technology.**

Under the heading: “Islamic Civilisation Following Muhammad” in *portrait No. 4: “West and Central Asia - Civilisation and Culture”*, it was explained how the Muslims, following the death of Muhammad in 632 and, especially under caliphs al-Rashid and al-Mamun of the Abbasid dynasty, began the great work of translating Indian, Persian and Greek inspired Hellenic works on science and technology. This important era of translation lasted for about one hundred years till about 850 and was followed by a period of original contributions to world knowledge. Many scholars, scientists and mathematicians combined their translation work with their own scientific investigations to check the statements in the original works, to correct them where necessary and to advance science and technology to a new level [Ref.77:307].

The Muslim caliphs set up libraries, research facilities and observatories to encourage scientific research. Many astronomical and mathematical works were composed by Muslim sponsored authors from Arabia and nearby countries. Arabian and other Muslim original contributions to science and technology were substantial. For example, they solved cubic equations by geometric construction, greatly improved trigonometry and made numerous other advances in mathematics, physics and astronomy. Their service to science also included their adoption, conservation and promulgation of the learning of Greece and India. When interest in science began to grow in the West, they transmitted these ancient intellectual possessions to the Europeans and provided the spark for the European Renaissance [Ref.34:102].

By 732 C.E., only 110 years after the flight of Muhammad from Mecca to Medina in 622, Muslims had conquered the whole area from India to Spain. By 755, the Islamic empire was divided, one caliph reigning in Baghdad, the other at Cordova in Spain. The Arabic language was made the official written language throughout the conquered lands. With the rule of the Abbasids in the East began a new chapter in the history of learning. Their capital, Baghdad, situated on the Tigris, lay half way between two old centres of scientific thought: India and Greece. The Abbasids, at Baghdad, encouraged the introduction of the sciences by inviting able specialists to their court, irrespective of nationality or religious belief. Medicine and astronomy were the most favoured sciences. In 772, a Hindu astronomer brought to court astronomical tables, probably from Brahmaputra’s *Siddhanta* (q.v.) which were translated into Arabic by al-Fazari who became the first astronomer in Islam. This appears to have been the first of many translations of foreign scientific works. The Indian manuscript included the important Hindu *table of sines*. Another very important contribution that came to the Muslims from India and China was the decimal system. In addition, a most important contribution to mathematics by Islam was the system of *Arabic Numerals*, that was finally adopted as the standard numeral system in the West. These numerals are acknowledged generally now to have been based on earlier Indian numerals and Al-Biruni, an Arab writer, who died in 1039, stated that the Arabs borrowed different numerals from different parts of India to suit their needs [Ref.34:99].
In Syria, the sciences, especially philosophy and medicine, were cultivated by the Greek Christians and translated into Syriac. The most celebrated schools were established at Antioch, Emesa and especially the Nestorian school at Edessa. From Syria, Greek physicians and scholars were called to Baghdad to translate works from Greek and Syriac into Arabic. A large number of Greek manuscripts were secured by the Caliph Al-Mamun from the emperor in Constantinople and translated into Arabic. By the beginning of the tenth century the more important philosophical, medical, mathematical, and astronomical works of the Greeks could be read in the Arab tongue. These included the works of Euclid, Ptolemy, Apollonius, Archimedes, Heron and Diophantus. Thus we see in the course of one century the Arabs gained access to the vast treasures of Greek science which they eventually passed on to the West [Ref.34:101].

**From 9th Century C.E.**

**Astronomy and Mathematics in Islam.**

In Arabia, original astronomical research started as early as the ninth century and may have been initiated by the fact that Islamic religious observances over such a vast area required accurate calculations of time and direction. Astrology required accurate tracking of heavenly bodies, prediction of eclipses and other astronomical data. Astronomical tables were compiled, instruments perfected, observatories erected and continuous observations instituted. Most mathematicians were first of all astronomers.

The principal figure in early Arab mathematics was Mohammed ibn Musa Al-Khwarizmi (c.780-850) who was "one of the greatest scientific minds of Islam, he influenced mathematical thought to a greater extent than any other medieval writer" [Ref.77:372]. Apart from compiling the earliest tables of sines and tangents he also composed the first texts on arithmetic and algebra. Translated into Latin, his treatise *Hisab al-Jabr w-al-Mugabilah* was used until the sixteenth century as the principal mathematical textbook of European universities and served to introduce Europe to the science and the actual name of algebra which comes from the title of the book.

The following are some of the more outstanding Islamic mathematicians:

**Tabit ibn Korra** (836-901) from Harran in Mesopotamia was proficient not only in astronomy and mathematics but also in the Greek, Arabic and Syrian languages. According to Cajori [Ref.34:104], "his translations of the Greek mathematical works by Archimedes, Apollonius, Euclid, Ptolemy and Theodosius are among the best".

**Al-Battani**, from Banna in Syria, was foremost among the astronomers of the ninth century. His astronomical observations were characterised by great originality and precision such as his determination of the length of the solar year as 365 days, 5 hours, 46 minutes and 24 seconds. Among his original contributions were his compilation of the first table of cotangents and his correction of Ptolemy's calculations of the orbits of the moon and planets [Ref.34:105].

**Abu'l Wefa** (940-998) came from Chorassan in the Persian mountains and, according to Cajori [Ref.34:105], made the brilliant discovery of the variation of the moon, an inequality usually supposed to have been discovered by Tycho Brahe, the Danish astronomer in the sixteenth century.

**Omar Khayyam** (c.1045-1123), also from Chorassan, was a very famous Arab poet and an outstanding mathematician. He did most to elevate to a method the solution of
algebraic equations by intersecting conics. Cajori [Ref.34:107] argues that “the solution of cubic equations by intersecting conics was the greatest achievement of the Arabs in algebra”. In the West, these Arabic mathematical methods remained unknown until late in the eighteenth century, while Descartes and Thomas Baker had to independently invent them in the seventeenth century. Omar Khayyam also produced a calendar more accurate than the Gregorian.

With Al-Karkhi and Omar Khayyam Arab mathematics reached its peak and began to decline.

Between 1100 and 1300, the Crusades provided the West with the opportunity to observe and assess the superiority of Arab culture and science. After the conquests of the Mongols under Hulagu in 1256, the caliphate of Baghdad ceased to exist. It is surprising that Arab science continued to exist at all after the Mongol conquests in the thirteenth and fourteenth centuries but the work of the following scientists shows that it did.

Nasir-Eddin (1201-1274), an Arab astronomer, even persuaded Hulagu, the Mongol leader, to build him and his associates a large observatory. “Treatises on algebra, astronomy, arithmetic, and a translation of Euclid’s Elements were prepared by him. He, for the first time, elaborated trigonometry independently of astronomy to such great perfection that, had his work been known, Europeans of the fifteenth century might have been spared their labours” [Ref.34:108].

Beha-Eddin (1547-1622), author of the book *Essence of Arithmetic*, was the last prominent Islamic scientific writer of the period. Despite periods of peace punctuated by war, science continued to be cultivated for several centuries in Western Asia. During all these centuries, astronomy and mathematics in Western Asia greatly excelled these sciences in the West [Ref.34:109].

**Islamic Culture in Spain.**

In Spain today, especially at Cordova, one is struck by the magnificent splendour of the Islamic architecture. At this renowned seat of learning, schools and libraries were founded by the Muslim conquerors during the tenth century. Here we find that Jabir ibn Aflah, ranked among the most eminent astronomers of the eleventh century. His chief work was a nine volume treatise on astronomy and trigonometry, with some very independent and original thinking, especially on spherical trigonometry [Ref.34:109].

When Toledo, the old Spanish capital, fell to the Christians in 1085, the process of translating the remarkable contents of the Muslim libraries in Spain from the Arabic language into Latin began in earnest and continued until around 1300 C.E. By 1492, when the Muslims lost their last foothold on Spanish soil, the productive period of Islamic science was already past. From then on the West made use of the Muslim legacy as the main basis for the scientific aspect of the European Renaissance [Ref.77:588-590].

**Muslim Medical Science and Pharmacology.**

“In the curative use of drugs some remarkable advances were made by the Arabs. It was they who established the first apothecary shops, founded the earliest school of pharmacy and produced the first pharmacopoeia” [Ref.77:364]. Several major pharmacological treatises were composed, beginning with those of the world famed Jabir ibn-Hayyan,
also called Geber (c776), who is regarded as the father of Arab alchemy and who was second only in eminence to Al-Razi (see below) in medieval chemistry.

According to Professor Philip Hitti [Ref.77:367], “The most notable medical authors who followed the epoch of the great translators were Persian in nationality but Arab in language: Ali al-Tabari, al-Razi, Ali ibn-al-Abias al Majusi and ibn-Sina. The portraits of al-Razi and ibn-Sina adorn the great hall of the School of Medicine at the University of Paris”.

Al-Razi (865-925), chief physician of Baghdad Hospital, is regarded as the greatest and most original. One of his principal works the Kitab al-Asrar became the chief source-book of chemical knowledge in Europe until it was superseded by Jabir’s works in the fourteenth century. However, his most important work was al-Howi (The Comprehensive Book) which was an encyclopedic treatise on all known Greek, Persian, Hindu and Arab medical knowledge that was translated and printed for six hundred years exercising “a remarkable influence over the minds of the Latin West”.

The most illustrious name after al-Razi is that of ibn-Sina or Avicenna (980-1037). He wrote ninety nine works on philosophy, medicine, geometry, astronomy, theology, philology and art. According to Hitti [Ref.77:368] his famous book, al-Quammi fi al-Tibb, represents the “final codification of all Greek-Arabic medical thought”. It displaced all previous medical treatises and became the standard textbook for all medical schools throughout Europe for several centuries.

Ali ibn-Isa wrote a treatise on ophthalmology, the Tadkirah, that is still in use to this day [Ref.77:364 et seq.].
Introduction.

Portraits Nos. 1 to 6 have detailed the contributions of East, South and Central Asia to global civilisation, culture, science, technology, religion and philosophy.

The term "West of Asia", used as the category for portraits Nos. 7 to 9, mainly covers the geographical areas of Europe and North Africa, especially Egypt.

When the first civilisations arose in Mesopotamia in Western Asia around the Tigris and Euphrates Rivers, there was nothing to rival them until the rise of Egyptian civilisation which seems to have been influenced by Mesopotamian experience. Europe itself remained relatively undeveloped until the first Minoan maritime civilisation, centred on the island of Crete, and the later Greek-Aegean civilisation. Both of these civilisations straddled the border between Europe and Asia where they drew on the already ancient civilisations of Western Asia.

Ancient Egypt and Its Contribution to World Civilisation.

The civilisation of ancient Egypt covered an immense period of time from about 3200 B.C.E. till around 1000 B.C.E. It was only the second major civilisation on earth and the only one to rival that of Mesopotamia which had begun before 7000 B.C.E., developed under the Sumerians from c.4000 B.C.E. and lasted until the end of the Babylonian period in 539 B.C.E. [Ref.14:64-84].

Like Mesopotamia, Ancient Egypt was a river based civilisation and was governed by the slow annual rise and fall of the Nile. Roberts [Ref.14:64] calls the country "one drawn-out struggling oasis, defined by the Nile and the deserts which flanked it".

More archaeological evidence has been found in Egypt than in Mesopotamia or anywhere else in the region and this has fascinated historians and tourists alike from the time of Herodotus down to the present day.

There is some evidence to show that Egypt benefited from the Mesopotamian experience, although the extent of this still has to be determined. However, there is one significant difference between the two. "The river was the bringer of life to Egypt. It was a benevolent deity whose never-failing bounty was to be thankfully received, rather than the dangerous, menacing source of sudden, ruinous inundations, amid which the men of Sumer struggled" [Ref.14:65]. The different effect on the character of the population showed. The Sumerians were a hard working people forced to irrigate their land and fight for it in order to survive. The Egyptians, by contrast, were a passive people, grateful for the annual benevolence of the Nile which provided its riches with very little human effort.
required. This left plenty of time for the Egyptian preoccupation with the preparation for death and this is evidenced by the country's multiplicity of pyramids and other magnificent tombs [Ref.14:84].

The second most important influence on Egyptian civilisation was the absolute worship of the pharaoh or god-king, to whom all the great public buildings were dedicated. In contrast, the largely peasant population lived in mud huts that have long since disappeared. Religion became the pervading ethos of ancient Egypt. It was fostered by the ruling priestly class that surrounded the pharaoh and consequently was highly political in character and maintained at great cost by spectacular public rituals.

Contrary to current popular wisdom, the construction of Egyptian public buildings did not require highly developed mathematical skills. Although Egyptian surveying methods were quite sophisticated, what was required to construct the pyramids was outstanding competence in practical mensuration and the relatively simple and routine manipulation of formulae for volumes and weights. This was as about as far as Egyptian mathematics went and so it may be that the only significant contribution to later mathematics was the invention of simple fractions. Similar comments could be applied to the later Romans who too were great builders and organisers but made no original contributions to the advance of mathematics [Ref.14:71].

Egyptian astronomical observations were accurate enough to permit the forecasting of the rise of the Nile and the ritual alignment of buildings but Roberts [Ref.14:72] argues that "their theoretical astronomy was valueless and the one solid work which rested on Egyptian astronomy was the calendar". In all other ways, Egyptian astronomy was more than surpassed by that of the Babylonians.

Whilst Gods and pharaohs formed the main subjects of Egyptian art, it was "based on a fundamental naturalism" that was "restrained by conventions of expression and gesture"[Ref.14:74]. However, Egyptian art never took root anywhere else in its original form.

The Egyptians invented a unique pictorial form of calligraphy called hieroglyphics [Ref.14:75]. They adopted the Sumerian invention of representing sounds rather than things but did not take the Mesopotamian method of using the same basic shape arranged in different ways to do this, as in cuneiform. Rather, the Egyptians opted for a much more complex and difficult to master series of pictographs. None of the Greek writers about Egypt ever mastered hieroglyphics. Because reading hieroglyphics was the closely guarded secret of the priestly ruling class it never became the written language of the populace. The invention of the use of papyrus as a writing medium had a far greater effect on the Mediterranean world in later times. The Egyptians even pasted sheets of papyrus together to form scrolls and books. Roberts [Ref.14:76] maintains that papyrus "may be our greatest debt to the Egyptians, for a huge proportion of what we know of antiquity comes to us directly or indirectly via papyrus".

Apart from these advances, Egyptians were slow to innovate and a number of major developments during the period appeared in Egypt well after their introduction elsewhere. The one exception was in medicine, where there was indisputable originality and achievement. Indeed, much of our knowledge of drugs and medicinal plants was initially established by the Egyptians. Consequently, by 1000 B.C.E., Egyptian pre-eminence in medicine was internationally and justifiably recognised and the contribution of this
knowledge to subsequent history was great, especially when compared to that of the Mesopotamians in this field [Ref.14:77].

The vast period of time covered by Egyptian civilisation and the spectacular monuments left as reminders of that period can mislead us into overestimating the significance of the Egyptian contribution. The Egyptians produced the “greatest tombstones the world has ever seen” [Ref.14:82] but passed on no enduring religious or philosophical innovations to future civilisations to compare with those of the Greeks, Jews and Chinese. McNeill [Ref.33:82] argues that “Egypt fell behind the Mesopotamian achievement” which he blames on the “extreme polarity” between the pharaoh and his people. [Ref.14:65-84; 33:69-84]

The true greatness of Egypt’s contribution to world civilisation had to await the founding of Alexandria by Alexander the Great from Macedon and its influence as one of the greatest manifestations of the Hellenistic civilisation in Egypt, Western Asia and Greece, just prior to the Christian era (see portraits Nos. 4.5 and 6).

Mainly c.20th Century to 15th Century B.C.E.

The Minoan Civilisation in Crete.

Contemporary with the latter part of the civilisation of Ancient Egypt, the first of all European civilisations developed on the island of Crete, midway between Egypt and present-day Greece at the entrance of the Aegean Sea. [Ref.14:91-95; 51:18; 102:13 et seq]

This so-called Minoan Civilisation was a maritime civilisation, not unlike that of Britain in modern times, and lasted almost without rivals till it was mysteriously destroyed, probably by some natural conflagration, after 1500 B.C.E.

The great city of Knossos in northern Crete was built in about 1900 B.C.E. It was impressive both from an architectural and an artistic point of view and “exercised a cultural hegemony more or less over the whole Aegean” [Ref.14:92], well before the earliest civilisation of the Greek peoples who eventually invaded it in its later years after it had been weakened by earthquakes and other disasters.

The palace at Knossos was “equipped with elaborate sanitary and drainage systems” [Ref.51:18] which were the most advanced until the time of the Romans. The walls were decorated with beautiful frescos showing the pleasant and stylish life-style of the inhabitants.

Minoan art showed “a startling liveliness and movement, a really original style” [Ref.14:95] and influenced the development of art in Egypt and Greece. The Minoans obviously loved plants and flowers and lived life to the full. The women especially showed an outstanding degree of beauty and sophistication. The Minoans were also great traders and even adopted writing in 1600 B.C.E. using their own locally invented “Linear A” script.

One of the most important innovations in agriculture with which the Minoans are credited was the culture of olives and grapes which could grow even in areas which were not particularly suitable for cereal cultivation. As this applied to so much of the Mediterranean basin (and still does) it provided the potential for increased populations in these areas and stimulated some of the major later civilisations such as Greece and Rome.

The Minoans exploited the sea as other peoples exploited their natural land based environments. They traded with Egypt, the Greek mainland, the Aegean islands, the West Asian mainland, had close connections with Syria before 1550 B.C.E. and even traded as far west as Sicily. The result was an interchange of products and ideas that
The Early Greek-speaking Peoples.

The first Greek-speaking peoples, called the Achaeans, were Indo-Europeans who came down into the Peleponnese and Attica on the present-day Greek mainland, in about the eighteenth and seventeenth centuries B.C.E.

“They entered a land long in contact with Asia” [Ref. 14:96] and established towns, which were to become later city-states, at Pylos, Athens and Mycenae which gave its name to the Mycenaean civilisation that finally spread over Bronze Age Greece by about 1400 B.C.E. Roberts [Ref. 14:96] expresses his opinion of the Mycenaeans that “they were barbarians by comparison with the Minoans on Crete” (whom they later displaced in the Aegean) and their way of life was mainly militaristic in nature but by about 1200 B.C.E., there appears to have been significant Minoan cultural influence on Mycenaean civilisation. Unfortunately, about this time further barbarian invasions overcame Mycenae and also between 1100 and 1000 B.C.E. there was a major depopulation of both the Greek mainland and the Near East due to some mysterious cataclysm or plague. Apart from myths and songs, culture virtually disappeared and a Dark Age began.

Following this setback in the advance of civilisation, the new Greek-speaking civilisation which eventually emerged from the centuries of confusion “owed much to the resumption of intercourse with the East...It was very important that the Hellenes (which the Greeks came to be called) had spread out into the islands and onto the Asian mainland; they provided many points of contact between the two cultural worlds” [Ref. 14:100]. However, the other important link between Asia and Europe was the dispersion of civilisation around the whole Mediterranean Sea by that great trading people, the Phoenicians.

The Impact of the Phoenicians on the Mediterranean.

From the narrow coastal area of what is now modern Lebanon in Western Asia, where they were well established by 2000 B.C.E., the Semitic Phoenicians spread out as maritime traders and began to prosper after the decline of the more powerful Egyptians, Minoans and Mycenaean. After 1000 B.C.E., they entered a brief Golden Age during which they became the most respected traders of the Mediterranean, as evidenced by their provision of carved cedar timbers for Solomon's temple at Jerusalem. Being maritime traders, they set up bases and colonies throughout the region, culminating in the building of the famous trading city of Carthage on the north African mainland in about the eighth century B.C.E. which remained a major power in the Mediterranean until destroyed by the Romans.

Although they did not establish a permanent settled civilisation, the Phoenicians were responsible for the spread of goods, ideas, culture, and especially the alphabet from Asia, which did so much in preparing the foundations for the establishment of the so-called Classical Mediterranean Civilisation [Ref. 14:100].

224
From 776 B.C.E.

Classical Mediterranean Civilisation.

The period of Classical Mediterranean civilisation generally covers three phases in world history: The Greek Aegean Civilisation, The Hellenistic World and Rome. [Ref.14:159]

The Greek Aegean Civilisation.

The first of the three civilisations has almost exclusively been referred to by Western historians as “The Greek Civilisation” but this label is misleading. The great majority of modern people naturally associate the word “Greek” with mainland Greece only and especially the area dominated by Athens. In actual fact, ancient Greek civilisation covered areas right around the Aegean and particularly Ionia in Western Asia (now in Turkey) which made equally significant contributions to the advances achieved by this great civilisation whose main commonality was the Greek language.

Davies [Ref.68:95] warns us to be cautious in assessing the Greek civilisation because modern Western opinion has been saturated by romantic ideas about the past which make it very difficult to see Ancient Greece for what it was. The term “Greek miracle”, often applied to the blossoming of Greek civilisation in a relatively short period, is probably not too strong a description because one would have to agree with Roberts [Ref.14:159] that “it was the seedbed of almost all that played a dynamic part in shaping the world we still inhabit”. It is significant that this influential civilisation straddled the border between Asia and the West, with half in Western Asia itself, from whence came all the stimulus of the earliest civilisations and the rest located west of Asia and drawing on the relics of Egyptian and Minoan civilisations that had been influenced by Western Asia. As Roberts [Ref.14:163] argues, “The appearance of a new civilisation in the eastern Mediterranean owed much to older Near Eastern and Aegean traditions. We confront an amalgam of Greek speech, a Semitic alphabet, ideas whose roots lie deep in Egypt and Mesopotamia. Even when this civilisation matured, it still showed the diversity of its origins. It was never a simple, monolithic whole...it was always hard to delimit, a cluster of similar cultures around the Mediterranean and the Aegean, their frontier zones blurred outward into Asia, Africa, barbarian Europe and Russia”.

Athens tried to dominate the Aegean civilisation of Greek-speaking peoples and endeavoured to hold them together by staging the Olympic Games regularly from 776 B.C.E., a date from which the Greeks counted all subsequent dates just as Western nations have counted from the birth of Christ. On the other hand, the Greek-speaking regions were to fight bitterly amongst each other over the centuries: Athens against Sparta, Macedonia against southern mainland Greece, the Greek Asians of Ionia in Asia Minor against the mainland, and so on. It was not a happy family. Nevertheless, it is true that Dorians, Ionians, Aeolians all spoke Greek as a common language and all were influenced by the Iliad and the Odyssey, two mythologies attributed to the poet Homer. Despite the importance of these two early pieces of literature, however, Davies [Ref.68:114] makes a good case for concluding that they were not, as often thought, the oldest forms of high literature in the world but that “The Epic of Gilgamesh” from Mesopotamia was far more ancient and that Homer’s works drew quite directly from this epic.

776 B.C.E.

The mainland Greeks were illiterate until their traders brought the alphabet from Asia. In fact, the first known inscription in Greek characters is on a jug dated 750 B.C.E. which was written in an adaptation of Phoenician script; thereby showing how much the renewal of Aegean civilisation owed to Asia [Ref.14:165].
It was actually the Romans, much later, who coined the word "Greeks" for the people who spoke this common language and who attended the Olympic Games. They themselves would have used the word Hellenes which became the name of all the Greek-speaking peoples of the Aegean. These people regarded all other peoples as "barbarians" - people who make a "bar-bar" sound - which was not Greek.

The fact that the Greek peoples worshipped Poseidon, the god of the sea, and placed him second only to Zeus in their pantheon is of great significance. The sea "pervaded the whole of Greek life" [Ref.102:9]. It was a source of food, an arena for battle, a highway of trade and above all a medium for communications between peoples of all areas scattered around its shores. Indeed the Greek world "extended from as far west as the coast of Spain to the northern shores of the Black Sea in southern Russia" [Ref.102:9]. Apart from a common language and an increasingly common culture the Greek peoples, all worshipped, with some variation, the same gods on Mount Olympus.

The vision of Greece as being an ideal civilisation has been over romanticised and this led to the title "classical" being applied to it. However, Greek society was far from ideal. The only people who had a chance of getting anywhere in public life were landowners and the rule of these leaders, often called tyrants, was resented by much of the populace as burdensome. The intellectuals only formed a very small elite in society and the vast majority of Greeks were of a narrow mind and highly superstitious. We must not forget that Socrates, for example, the greatest philosopher of his age, was executed by poisoning because his teaching was considered too revolutionary and insulting to the gods. It was, however, the intellectual elite which brought about the major change in civilisation with which the name of the Greek peoples is associated, i.e. a systematic way of questioning our existence on earth.

By 5th Century B.C.E.

Greek philosophy, as represented by Thales (c.640-546 B.C.E.), Anaximander and Pythagoras, began in Ionia, on the Asian coast of the Aegean in present-day Turkey, before the fifth century B.C.E., and not as commonly thought, with Socrates (c.469-399 B.C.E.), Plato and Aristotle on the Greek mainland [Ref.102:55]. The Ionian philosophers were not concerned with the Athenian subjects of philosophy, like morality and ethics, but rather with the formulation of mathematical and physical laws to explain their natural environment. It is probably no accident that this initiative occurred in a region easily accessible to the earliest civilisations of Mesopotamia in Western Asia. The methods of these philosophers represent the beginnings of modern scientific thinking. It is interesting that Einstein admired their deductive reasoning, this "method of the ancients" as he called it, and argued that the greatest achievements of the human mind are only attainable by deduction which is able to go beyond what one can observe and reach conclusions which may not be able to be proved by experiment until much later.

The Greeks were also famous for their poets, such as Homer and Hesiod, and their dramatists including Aeschylus, Euripides and Sophocles.

Another Greek invention was "history". The first Greek historian was an Ionian, Hecataeus, who wrote on the geography, sociology and genealogy of the peoples and countries that he knew in Western Asia.

The Graeco-Persian Wars are discussed in portrait No.4, under the heading "The Period of the Persian Empire" and so it will not be repeated here. However, the wars were highly significant in defining future East-West relations. As Roberts [Ref.14:180]
explains, "In the repulse of Asia by Greece lay the beginnings of a distinction between Europe and Asia which would eventually lead men to look back anachronistically at Marathon and Salamis as the first time Europe was saved". These wars led to Asia being regarded, even more than before, as "the other", even though, at the time, Persia was highly civilised and its thinking on democracy was at least as advanced as that of Greece. In fact, the Persians thought that those who espoused the fledgling Greek democracy in Athens would revolt and support them against the autocratic Athenian aristocrats.

Herodotus (c.484-c.424 B.C.E.), the Greek often called "the Father of History" and who wrote so much on the Persian wars, was born in Ionia. He deserves the title accorded him because he introduced reason into history, giving commentaries as well as facts. "As an Ionian who had been born on the fringes of the Persian empire and had travelled extensively through it, he had an encyclopedic knowledge of Persian history and habits. Unlike most Greeks, who hated the Persians without understanding them, Herodotus did understand them and viewed their way of life sympathetically. Nevertheless, his keen interest in foreign lands earned him from his more chauvinistic compatriots the label "Father of Lies"...whereas...he saw the past in terms of the titanic contest between Europe and Asia" [Ref.102:49].

The Hellenistic World.

The second phase of Classical Mediterranean Civilisation after the Greek-Aegean was "The Hellenistic World", which is covered in considerable detail in portrait No. 4: West and Central Asia - Civilisation and Culture because it was in West and Central Asia that the Hellenistic World was mainly situated, with the exception of Alexandria in Egypt [Ref.68:129].

By 346 B.C.E., the history of the Hellenistic World began with Macedon, a kingdom in the northern part of the Greek mainland which was regarded by many Greeks as barbarian rather than Greek [Ref.14:204]. It was controlled by warlords. When Philip II became king he "wanted Macedon to be thought of as Greek" [Ref.14:205] and this developed into an obsession. He built up an efficient army with improved military techniques and began seizing Greek territory with, of course, violent opposition from Athens and Thebes, the two most important city-states.

By 346 B.C.E., Philip had taken over central Greece and controlled the strategic pass at Thermopylae. Against the advice of Demosthenes, described by Roberts as "the last great agitator for Athenian democracy" [Ref.14:205], a reluctant league of Greek states, excluding Sparta, was formed under the military leadership of Philip.

This coalition was achieved only after the defeat of Athens and Thebes in 338 B.C.E. by the Macedonians, during which Philip's son, Alexander, razed the great city of Thebes to the ground and enslaved its population. As Roberts [Ref.14:206] states, "This was the real end of four centuries of Greek history...Mainland Greece was from this time a political backwater". The country, which had done so much to help make the Greek-Aegean civilisation what it was, could now only look forward to Macedonian occupation. Demosthenes, the Athenian democrat, poisoned himself.

The following year, Philip was assassinated in mysterious circumstances and his son, Alexander, later known as Alexander The Great (356-323 B.C.E.), became king. He carried on his father's obsessions and inherited his military machine. Furthermore,
Alexander’s mother drummed into him from infancy that he was the direct descendant of the Greek mythological heroes, Achilles and Perseus and “the importance of this belief must never be discounted when assessing the motives for his achievements” [Ref.102:100]. Alexander invaded Western Asia and conquered it, including the great Persian Empire which had fallen into decline, and then went down into Egypt, where he is credited with founding the city of Alexandria. His armies even penetrated into northern India before Alexander died suddenly, also in mysterious circumstances. He was a fanatical, ruthless and cruel conqueror. In recent years, he has fallen into disrepute with historians and the connotation “Great” sits uneasily on his shoulders when we consider that he razed the Greek city of Thebes to the ground as well as Persepolis, the Persian capital, described by Olmstead as the greatest city in the world. Moreover, at the time, Persepolis was defenceless, after its commander had voluntarily handed his sword to Alexander. Nevertheless, Alexander still proceeded with the slaughter and destruction, an action which Olmstead considers “an act of sheer vandalism” [Ref.12:230].

There is no doubt that the Hellenistic World which covered most of Western Asia and Egypt was founded as a result of Alexander’s blitzkrieg, but it was his successors, particularly in Alexandria and Pergamum, who ensured that the Greek-Aegean culture was spread over a much larger area than ever before, to leave an incalculable legacy to future world civilisation. (refer portrait No.4).

Rome.

The third and final phase of Mediterranean Classical Civilisation was Rome. Roberts [Ref.14:219] maintains that “the core of the Roman achievement was an idea, the idea of Rome itself, the values embodied and imposed”. When one looks at today’s ruins of Roman buildings, one wonders how any civilisation could have achieved so much and yet, the Romans were a very practical people who were great builders, great organisers and great conquerors but not great creators. For this reason, Roberts [Ref.14:236] considers that “if the Greek contribution to civilisation was essentially mental and spiritual, that of Rome was structural and practical; its essence was the empire itself”. Thus Cajori [Ref.34:67] maintains that “in philosophy, poetry and art the Roman was an imitator. But in mathematics he did not even rise to the desire for imitation. The mathematical fruits of Greek genius lay before him untasted”. It was only in the fields of law and practical engineering that Romans left significant advances.

With their organisational flair the Romans created what was their most lasting and probably greatest achievement, the conversion of a localised oriental religion, Christianity, into a world religion. (Refer portrait No.8).

Contrary to popular wisdom, it was not the Romans who passed on the fruits of the earlier civilisations to modern Western civilisation. It was Islam.

The Middle Ages.

After the collapse of the Roman Empire, western Europe fell into a period of intellectual darkness for a thousand years, a period that was governed by rigid and repressive religion. St. Augustine put the stamp on this age when he decreed that people should only believe what was in holy writ and not question God’s creation. Fortunately, during this time, Eastern Asia and especially China were not restricted by such beliefs.
Islam.

Portraits 4, 5 and 6 dealing with West and Central Asia provide a detailed account of the enormous contribution of Islam to world civilisation after its foundation by Muhammad in the seventh century C.E. It was through the Muslims that the intellectual treasures of Ancient Greece, the Hellenistic World and even some Chinese and Indian civilisations were passed on to the West. This was particularly the case when the Muslims set up libraries and learning centres in Spain and Sicily. It was these centres that ignited the European Renaissance in the fourteenth century C.E. which constituted the true beginning of modern Western civilisation.
PORTRAIT No. 8

WEST of ASIA: Religion and Philosophy

Prior to 312 C.E.

The Development of Westernised Christianity.

We have seen in portrait No.5 the birth, foundation and early development of Christianity as an Asian religion, its introduction to the West by St. Paul and the influence on it of the Hebrew, Greek and Latin (or Roman) cultures.

Eamon Duffy [Ref.67:1-9] points out in his history of the popes, Saints and Sinners, that "Christianity is an "oriental" religion". Jerusalem was the first centre of Christian preaching and the Church at Jerusalem was led by members of Jesus' own family, starting with his brother, James. Within ten years of Jesus' death, however, Christianity had reached Rome, mainly through the efforts of Paul of Tarsus. Paul, against the opposition of some fellow Christians, including Jesus' first disciples, began preaching that Jesus offered reconciliation and peace with God to the whole human race. It was Paul who turned an obscure heresy, from an equally obscure corner of the Roman Empire, into a world religion.

The Roman Catholic Church traces the authority of its popes back to the Apostle Peter, to whom Jesus said: "Thou art Peter, and upon this Rock I will build my Church" [Ref.32:Matt.16:18]. This text is written in letters two metres high around the dome of St.Peters in Rome. Yet, Irenaeus, according to Duffy [Ref.67:1-9], wrote in 180 C.E. that the authority of the Church at Rome came from its foundation by two apostles, Peter and Paul. As Duffy also contends, the detailed stories of the martyrdom of both apostles at Rome were accepted as "sober history" by the greatest minds of the early church, but, "they are pious romance, not history". In fact, we have no reliable historical records of this very early period. Indeed we know from the writings of Paul and others that there was a Christian church in Rome before the arrival of either apostle. Moreover, there was no actual bishop in Rome for almost a century after the deaths of the apostles, so the idea of a direct succession from Peter himself is a later embellishment. Irenaeus [Ref.67:1-9] actually made a list of the earliest popes starting with Linus and showed Clement as the third pope, whom he dated at c.96 C.E. However, in the beginning, there was no actual pope and no bishop. Nor does it appear there was one until about 150 C.E.

Rome, of course, was a magnet for tourists and scholars from all over the known world and there were plenty of brilliant thinkers in the Church anxious to make their mark on its history. Consequently, the Bishop at Rome came to exert a special authority over the new church but, without state support, his power was still limited.

From c.312 C.E.

According to Jaroslav Pelikan [Ref.53:Vol.3:349 et seq.], "The most portentous event - for good or ill - in all Christian history", was when the Roman emperor Constantine (306-337) "first made the new religion legal, then made it his own and then made it the official religion of the realm". As Roberts [Ref.14:276] says, "Constantine unwittingly founded
Christian Europe and, therefore, the modern world”.

In the century from Constantine to Augustine, the monarchical church hierarchy was set firmly in place. Orthodox belief became rigidly fixed in the promulgation of definite creeds by a series of church councils beginning with the first in Nicaea, in 325, presided over by Constantine himself. As Roberts [Ref.14:276] puts it: “The Church was clothed in the imperial purple”. Rome went on to consolidate its domination in the next two centuries as the “Apostolic See”.

During this period, any type of thinking which did not accord with orthodox belief was called a ‘heresy’ and was often punished by death. Nevertheless, there were many heresies. Prominent among these were Arianism, which taught that Jesus the son did not share the divinity of the Father; Manichaeism which originated in Persia and “brought together Judaeo-Christian beliefs and Persian mysticism and saw the whole cosmos as a great drama in which the forces of Light and Darkness struggled for domination” [Ref.14:308]; Mithraism, a cult popular amongst soldiers, which offered them peace and liberation from their present situation; Pelagianism, which was “a version of Christianity which subordinated mystery and sacramentalism to the aim of living a good life”[Ref.14:286], as well as many lesser heresies.

Augustine (354-430), the Bishop of Hippo in North Africa, became known as the great defender of the faith against all heresies. Beginning with a somewhat immoral life and even being a devotee of Manichaeism for ten years, Augustine eventually became a staunch Christian and a passionate campaigner against all heresies and all enemies of the Church. He wrote several books which had enormous influence on the future of the medieval church and his insistence that people should only study and believe what was set down in holy writ retarded progressive and scientific thinking in Europe for over a thousand years, in stark contrast to the great advances that took place in Asia over this period.

In 330, prior to the birth of Augustine, Constantine had taken a most significant step in East-West religious relations, when he founded, on the European-Asian border, the city of Constantinople (now Istanbul) on the Bosphorus at the site of the old town of Byzantium. (See portrait No.5: “Christianity: The Byzantine Christian Culture”).

From 1517 C.E.

Christianity: The Protestant Reformation.

The Roman Catholic Church, with its powerful hierarchical structure, often strayed from the true teachings of Christ. Over the centuries, the Church was reformed from time to time by some of its great monks such as Boniface (670-754) known as the “apostle of Germany”; the Venerable Bede (c.673-754) who laid the foundations of scholarship in England; Bernard of Clairvaux (1090-1153) who called the Church back to its original simple teachings; Francis of Assisi (1181-1286) who ministered to the needy; Thomas Aquinas (c.1225-1274) who was one of the great systematisers and defenders of the faith; and Hildebrand who became Pope in 1073 and tried to root out heresy, corruption and impurity in the priesthood. Despite the efforts of such outstanding people, by the sixteenth century the papacy had become secular, corrupt and even licentious.

In 1517, a German Catholic monk, Martin Luther, was infuriated by the sale of papal “indulgences” to poor peasants. The indulgences promised remission of sins for payments to the building fund for St. Peter’s in Rome. Luther demanded a series of
drastic reforms that he presented in the form of ninety five theses, written in Latin, which he attached to the door of the church in Wittenberg. Luther's theses were soon translated into German and, in the first mass distribution in history, used was made of the recently copied Asian technology of the printing press. Luther urged a return to the basic teachings of Jesus in the Bible which, ironically, also originated in Asia.

Luther's actions were to effect a global religious revolution. He and his "protestant" reformers initially considered themselves to be friends of the mother Church who only wished to purify her. However, they soon found themselves rejected by the Church hierarchy and were forced to set up their own new teachings and organisations to survive and to achieve their aims of reinstating the Bible as the basis of worship. The Protestant churches had one main commonality, their opposition to the authority of Rome. In other respects, they varied widely. Calvinism began in Switzerland and was more rigid in its requirements of the behaviour of individuals than was Lutheranism. Anglicanism, which began with Henry VIII declaring himself head of the Church in England and soon became a separate Protestant Church of England, adhered more closely to the Roman Catholic style than other Protestant churches because it used bishops and a prayer book. Protestantism became involved with the conflicting political ambitions of European states and it was soon to become a powerful colonizing force in the New World of America and in Asia.

The Roman Catholic Church was forced by the above events to institute a major series of internal reforms which purified and strengthened it and its influence. One of its most far reaching innovations was the founding in 1540 by Augustus Loyola of the Jesuits, a highly disciplined scholastic body within the church and a powerful missionary organisation in Europe and later in the colonized areas of the Americas and in Asia. Thus, the Christian religion that originated in Asia became a tool for Europe's colonization of Asia. [Ref.53:Vol.3:351 et seq.; 14:556 et seq.]

Christianity as a Western Colonizing Tool.

Edward Said, in Orientalism [Ref.60:74,100], explains that one of the methods used by Western nations to colonize the Orient was to identify, or even create, an "interest", which had to be defended with great zeal. From the seventh to the sixteenth centuries the main activity of the Western Christian churches was centred around the defence of Christian interests against the dominant threat of Islam. However, when the competition for colonies between Britain, France and others reached its height in the seventeenth to twentieth centuries, some of the great Christian societies were deliberately used as tools to help colonize non-Christian foreign lands. These included the following organisations: the Society for Promoting Christian Knowledge (1698), the Society for the Propagation of the Gospel in Foreign Parts (1701), the Baptist Missionary Society (1792), the Church Missionary Society (1799) and the British and Foreign Bible Society (1804). Whilst many of the missionaries were undoubtedly well-meaning and devoted Christians, they were often being used by politicians and militarists to foist a westernised form of the originally Asian religion onto foreign people in the view that the ways of the West were superior.
Early Buddhism in the West.

Encounters between Westerners and Buddhists began with Alexander's invasion of India in 326 B.C.E. Greeks who remained in Asia long after Alexander's death had "established a striking Greco-Buddhist civilisation by the first or second century C.E. During the Middle Ages, however,...the world's third great international religion (Buddhism) was barely known to even the most learned scholars in Christendom." [Ref.53:Vol.2:436-438]. This situation was remarkably slow to change. Hinduism and Confucianism had both been introduced to the West well before the first comprehension of Buddhism in Europe was brought about by European studies of the religion from Sanskrit documents. It was the work of the French scholar Eugene Burnouf (1801-1852), especially in his Introduction to the History of Indian Buddhism (1844), which presented the first coherent picture of Buddhism to the West but there was a mixed response to the spirituality of Buddhism. According to Eliade [Ref.53:Vol.2:436], even Emerson "clearly regarded its nirvanic 'nothingness' and its lack of even the most impersonal God with some distaste". However, in 1875 the Theosophical Society was founded in New York by Madam Blavatsky and Colonel Olcott. In 1880, they were the first Westerners, since the Alexandrian Greeks, to become Buddhists. As Theosophists believe in the convergence of all religions, this act did not signify exclusive conversion. However Olcott spent the rest of his life travelling the world (including Australia) promoting Buddhism with its message of universal compassion.

The first wave of Chinese immigration to the West was the influx to California in the Gold Rush days and, by 1860, they numbered 60,000. However, the eight Chinese temples built in San Francisco by 1875 were mainly for the popular Chinese mix of Confucianism, Taoism and Buddhism and this paralleled the situation in Australia during the Gold Rush days during the second half of the nineteenth century.

Early Buddhism in Australia.

According to Paul Croucher [Ref.54:1-3], "It is not outside the realms of possibility that the first Buddhists to set foot on Australian shores did so hundreds of years before Dampier and Cook".

Many people in Australia might think that the influx of thousands of Chinese during the Gold Rush period may have started an interest in Buddhism in Australia but this does not appear to have been the case. Croucher [Ref.54:1-3] argues that the first concrete instance of Buddhists arriving in Australia may be dated to 1848, with the arrival of the first Chinese, coolie labourers. However, the simple religion of these people was a mixture of Confucianism and Taoism, with a mild Buddhist influence and the average length of their stay in Australia was about five years. These facts, coupled with the open hostility of nineteenth century Australians to anything and anyone Chinese, made the possibility of any lasting effect of their Buddhism very remote. Even the famous "joss houses" on the goldfields were often set up by enterprising Chinese to capitalise on the fact that access to any deity who might bring luck in looking for gold was in demand. In fact, "no Chinese priests are known to have ventured to Australia to officiate in any capacity" during that period [Ref.54:1-3].

From the late 1870s, Japanese and Singhalese Buddhist migrants were active in the pearling industry in Northern Australia and, in places like Broome, Darwin and Thursday Island, Buddhist cemeteries began to appear and Buddhist festivals were held. In the
Queensland cane plantations, other migrants from Sri Lanka set up specific Buddhist communities.

In 1891, Colonel Olcott of the Theosophical Society toured Australia lecturing on the wisdom of the East. His message was readily accepted by adherents of the growing counter-culture that developed before World War I. This group held a rather romantic idea of the mysterious East and began rebelling against established orthodox institutional Christianity. Spiritualist bookstores began to stock every piece of Buddhist literature available.

The Venerable Khantipalo Thera, in his forward to Croucher's book [Ref.54], writes that "early Australian Buddhists, and sympathisers of Buddhism, were mostly attracted to the rationalist-humanistic side of the teachings or to their artistic manifestations. This meant that large areas of Buddhism tended to be neglected and misunderstood". Thus, Buddhism in Australia, at least for most of our current history, has not had the impact that it had in Asia.

20th Century Buddhism in the West.

Religious and spiritual developments in pre-modern Asia have influenced the development of religious and spiritual life in the West up until the twentieth century and, at the beginning of the twenty first century, the influence of Buddhism on the West is accelerating [Ref.53:Vol.2:437-439].

In 1902, Alan West, an Englishman, became the first modern Westerner to become a Buddhist monk. Great Britain, the European country with the most active interest in Buddhism, mainly adopted the Theravada tradition as a result of her colonial interests in the Theravada countries of Ceylon (Sri Lanka) and Burma (Myanmar). Furthermore, the traditional search by nineteenth century scholars for 'origins' gave Theravada more appeal as it was seen as the original teaching of the Buddha. Consequently, the first Buddhist societies of Great Britain and Ireland founded in 1904, were almost exclusively Theravada.

From 1903, a group of German Buddhists was constituted, and their monks who lived in the East and wrote important books on Buddhism, did much to popularise the religion in the West.

World War I saw a lapse in the English Buddhist Society but it was reformed in 1926 following a brief untenable association with the Theosophists.

Under the influence of the writings of D.T. Suzuki who visited England from Japan in 1936, the dominance of Theravada weakened in favour of Mahayana.

Suzuki also influenced a young Englishman named Alan Watts, who had written a book The Spirit of Zen. In 1938, Watts went to the U.S.A. where he became a major expounder of Zen Buddhism and similar spiritual paths.

In America, Mahayana has been the main form of Buddhism practised. As with Theravada in England, the preference for Mahayana in America resulted from geographic influences which brought Americans mainly into contact with East-Asian countries dominated by Mahayana Buddhism, like Korea, Japan and China. The occupation of Japan after World War II also had a big effect, especially in accentuating
Japanese versions of Buddhism in America which had already been brought in by Japanese immigrants to mainland U.S.A. at the beginning of the twentieth century.

North American Buddhism has long had two strands, ethnic and Western. The Western strand has usually been developed by institutions completely different from those used by immigrants from China, Japan, Korea, Tibet, Vietnam, Cambodia and Thailand who brought their own Buddhist traditions. The longest history of continuous practice for any form of Western Buddhism in the United States is that of American Zen that dates from about 1900. Largely due to the work of D.T. Suzuki from Japan, Zen enjoyed a cultural vogue in the 1950s. The 1960s saw the expansion of Japanese Nichiren and Tibetan Vajrayana while the 1970s brought a revival of Theravada with a new interest in meditation techniques.

20th Century Buddhism in Australia.

In the years between the two world wars, the White Australia Policy and a sense of Anglophobia created a cultural climate that did not foster an appreciation of the achievements of Asian civilisations [Ref.54:24-124]. These were lean years for Buddhism in Australia.

World War II helped to loosen the grip of Anglophobia and ease any persisting fears of "the yellow peril". A new generation of Australians who were more idealistic than their parents began to view Eastern culture and philosophy in a different way. The Korean and Vietnam wars also highlighted Australia's position on the edge of Asia. One result of such heightened awareness was a renewed interest in Buddhism. In the 1950s, many Australians were attracted to Buddhism for intellectual reasons, thinking they would therefore be seen as enlightened. Some were attracted because of their need for a psychological cure for post-war neuroses. Others were genuinely seeking for some type of supreme authority to guide their lives in a spiritual sense. Many Australians who had been associated with popular movements like pacifism, rationalism, vegetarianism, humanism and conservatism were attracted to Buddhism because they recognised in it at least some affinity with their particular views. Some used Buddhism as an alternative to Christianity, especially when they found it difficult to believe some of the doctrines concerning Christ. Quite a number saw Buddhism as something akin to a religion without the need to pledge their faith to a particular supreme being. Several prominent Australians including Prime Minister Alfred Deakin, poet Judith Wright, actor Peter Finch and artist Ian Fairweather claimed to have been influenced by Buddhism but they never seriously practiced it. Even Australians whose names have been closely associated with the history of Buddhism in Australia, like Marie Byles and Leo Berkeley, appear to have been mainly interested in meditation accompanied by reading and bushwalking.

There seems to have been continuous disagreements between all the prominent early leaders of Buddhism in Australia including Byles, Berkeley, Natasha Jackson and David Maurice. Conflicts also occurred between the different sects following Theravada, Mahayana, Nichiren, Pure Land, Zen and other forms of Buddhism. Ethnic clashes have also occurred between Australian immigrants from Vietnam, Cambodia, Korea and other countries which practice Buddhism.

Buddhist societies were set up in most states of Australia by 1953 and in the last few years we have seen the establishment of Buddhist centres throughout Australia and even a Buddhist Federation. There are about 12,000 Anglo-Australian and 70,000 Asian-
Australian Buddhists. The many different Buddhist groups now seem to be trying to maintain respect and interactive pluralism in their relations with each other while maintaining their separate identities.

**World Religion Going Into The Twenty-first Century.**

As we enter the new millennium, religious tolerance is of paramount importance for intercultural understanding and world peace and today, networking has given us access to the religious history of all people.

Undoubtedly, in recent decades, the ecumenical movement has broken down many rigid barriers, between Roman Catholics and Protestants for instance. People are now beginning to realise that, in the increasingly global civilisation needed in the twenty-first century, dialogue will have to be taken much further to increase international understanding and inform attitudes. Fortunately, as Clarke [Ref.75:145] argues, dialogue is already leading “into truly hermeneutical terrain where there is no longer a self-conscious counterpointing of East and West, of Christian and Buddhist (for example) but rather an engagement with fundamental issues which integrate themes from Eastern and Western sources without the artificial polarisation that characterised the earlier stages of the process”. The challenge to establish dialogue is especially difficult for Judaism, Christianity and Islam, each of which is of Asian Semitic origin and currently regards itself as supreme in both religion and culture and possessing the ultimate truths given by God [Ref. 108].

Clarke [Ref.75:132] suggests it is especially acute for Christianity in its Western embodiment to acknowledge the existence of a plurality of faiths, particularly with “its long-felt sense of its own uniqueness, allied to the West’s belief in its own cultural superiority”. However, interactive pluralism is already increasing mutual respect between Buddhists and Christians [Ref.75:132] and interfaith dialogue is evident as some Christian theologians search for greater spirituality by engaging in serious conversation with other faiths. Nevertheless, many Christians still feel that the exploration of religious concepts related to Buddhism and Hinduism is “profoundly alien and threatening” [Ref.75:146].

Obviously, to go forward in this complex and emotional debate the goal should be to seek tolerance rather than conversion as we proceed with the objectives of exploring the richness and complexity of other doctrines and understanding the importance of their historical content.

In a networked world, the desire to exchange ideas with those from other traditions is part of the process of attaining human maturity and interaction.
WEST of ASIA: Science and Technology (including Mathematics and Astronomy)

Ancient Egypt.

Some of the advances in science and technology in Egypt, the first of the early civilisations to the west of Asia, are given below.

3000 B.C.E. Hieroglyphic Numerals.

These were in use in Egypt in 3000 B.C.E. [Ref.27:683].

2773 B.C.E. The Calendar.

A calendar incorporating a year of 365 days in 12 months was in use in Egypt in 2773 B.C.E. [Ref.27:12].

2700 B.C.E. Earliest Dam.

The earliest known dam, a rockfill dam on the Nile River in Egypt, was constructed in 2700 B.C.E. [Ref.22:353].


The use of ciphers, simplified easily written signs for numerals, were introduced in Egypt between 2000 and 1850 B.C.E. [Ref.27:12; 683].

c.2000 B.C.E. The Egyptian Attitude to Mathematics.

Egypt seems to have developed many examples of practical mensuration, surveying and astronomy, but as Carl Boyer suggests the regular flooding of the Nile tended to develop a routine pleasant lifestyle that lead to intellectual stagnation and, consequently, the Egyptians failed to ask questions and develop a theoretical base for their mathematics [Ref.27:22].

c.1650 B.C.E. Early Egyptian Mathematical Treatises.

The Rhind or Ahmes Papyrus, written in about 1650 B.C.E., provides methods for solving eighty five practical mathematical problems. It was followed two centuries later by the so-called Moscow Papyrus with another twenty five problems. These treatises show some brilliant practical methods, but, as with the Mesopotamians, there appears to have been no interest in why the answer to a problem was so. Consequently neither nation was the founder of the ‘science’ of mathematics [Ref.28:21].
Building the Parthenon at Athens.

This building is regarded as one of the most perfectly proportioned structures in the world and illustrates the level of technical excellence reached by the early Greek civilisation. Greek architecture seems to have been influenced by the design of some of the great buildings existing in ancient Egypt in those days [Ref.22:347].

The Greek Sophist School of Mathematics.

After the defeat of the Persians under Xerxes in 480 B.C.E., Athens took over as the rich and powerful leader of the Greek League and hired teachers from all over the known intellectual world to educate her wealthy citizens. These teachers were known as Sophists or wise men [Ref.34:20]. They mainly taught rhetoric, but also geometry, astronomy and philosophy. Slowly geometry, especially of the circle, advanced and became the cornerstone of Greek mathematics. Although progress in this area was mainly attributed to Athens, creditable contributions were made by mathematicians and scientists from other Greek-speaking areas such as Ionia in West Asia, Sicily, Thrace (north of Macedonia) and Libya (Africa). One of the most famous of these men, Democritus of Abdera in Thrace, c.460-370 B.C.E. was a pupil of Anaxagoras from Ionia. He was an atomic theorist and held that all physical matter could be explained in terms of random collisions of atoma, extremely small unbreakable particles, not unlike in our modern atomic theory [Ref. 68:119]. (see also portrait No. 6).

Plato.

Plato was born in Athens. He was a pupil and close friend of Socrates, although it was not from him that he gained his taste for mathematics. Although Plato did not produce much original mathematical work, he founded the Platonic School (c.389 B.C.E.) which produced some outstanding mathematicians. He travelled extensively, studied mathematics under Theodorus in Libya, went to Egypt, Italy and Sicily and came into close contact with the Pythagoreans and his school. Like the Pythagoreans, Plato sought in geometry and arithmetic the key to the universe. He tightened up on the logic of mathematics and invented mathematical analysis. He also continually kept in mind the connection between mathematics and philosophy.

Menaeceinus, an associate of Plato, invented the conic sections which, in the course of only a century, according to Cajori [Ref.34:25], “raised geometry to the loftiest height which it was destined to reach during antiquity”.

Aristotle.

Aristotle was the systematiser of deductive logic who, although not a professed mathematician, promoted the science of geometry by improving some of the most difficult definitions [Ref.34:29].

The Elements of Euclid.

Boyer [Ref.27:131] considers that the influential textbook on geometry by Euclid entitled The Elements is the oldest extant mathematical textbook in the Greek language. It was composed in about 300 B.C.E. by Euclid while he was Head of the Department of Mathematics at the famous Museum in Alexandria. It was copied and recopied repeatedly for many centuries. Although very little, if any, of the work in the book was
the work of Euclid it was an excellent textbook containing all the current knowledge of geometry organised systematically.

The complex history of Euclid's *Elements* [Ref.3:14] is a good example of the problems of establishing a firm documentary basis for the study of Greek mathematics. The treatise was put together about 300 B.C.E. but the earliest surviving texts are Byzantine and date from the tenth century C.E. Most of these derive from an edition written by Theon of Alexandria in the fourth century C.E. By the end of the eighth century C.E., *The Elements* had been translated into Arabic and during the twelfth century some Arabic texts were translated into Latin and eventually introduced into Europe by Islam. The first printed edition was published in 1484. The first Latin translation direct from the Greek appeared in 1505 and the Greek text itself was published ten years later. A definitive edition, based on a close study of all available texts, did not emerge until 1888 and it was 1926 when Sir Thomas Heath's English translation finally appeared, over two thousand years after Euclid's original. This complex sequence of events is typical of the textual history of the relatively few Greek works that have come down to us. Most Greek mathematical texts have perished. Indeed, as with some of the writings of Apollonius and Archimedes, no original Greek text survives and so our knowledge of these works comes from Arabic translations.

These examples show us the way in which early Western knowledge was preserved in Asia to be passed back to the West when the climate was receptive so that it could become one of the foundations of modern Western civilisation.

c. 287-212
B.C.E.

Archimedes.

Archimedes, the man often regarded as the greatest mathematician of antiquity, was born and worked for most of his life at Syracuse in Sicily. Archimedes was admired by his fellow citizens chiefly for his mechanical inventions. He himself prized more highly his discoveries in pure science. Tradition says he was killed by a Roman soldier while he was asking that one of his diagrams in the sand not be disturbed. The Roman general, Marcellus regarded the soldier as a murderer and did what he could to make amends to Archimedes' family. He wrote on a vast range of subjects although he is known to most students for *Archimedes Principle* which states that an object immersed in water apparently loses weight equal to the weight of the water displaced [Ref.68:125]. He also realised that the ratio of the diameter of a circle to its diameter is constant and he was the first to accurately calculate this value which is called π. In ancient times, an Archimedian Problem was a problem too difficult for ordinary minds to solve and an Archimedian Proof came to be the synonym for unquestionable certainty [Ref.34:34].

c.276-
c.196
B.C.E.

Eratosthenes.

Eratosthenes, who was Librarian at the great library of Alexandria in Egypt, was a Greek mathematician, astronomer, geographer and poet. His most important work was a systematic treatise on geography and as a result he has been called "the most important geographer of ancient times". It was due to his great influence on this subject that geographical knowledge increased rapidly in the following two centuries. One example of his individual achievements was his measurement of the circumference of the earth to within 50 miles of modern measurements without the use of a telescope [Ref.28:48].
East and West in Alexandria:

Alexandria, situated on the Mediterranean coast of Egypt, was founded by Alexander the Great in about 334 B.C.E. Located close to the border between East and West (i.e., between Asia, Europe and Africa) it became, by the beginning of the Christian era, the major centre for trade and learning in the region, and possibly the contemporary world. According to Cajori [Ref.34:45], "The close commercial relations between the peoples of the East and of the West; the gradual decline of paganism and the spread of Christianity, all these events were of far-reaching influence on the progress of the sciences, which then had their home in Alexandria". Traders of all nations met in her busy streets, while in her magnificent library, museums, and lecture-halls scholars from the East mingled with those from the West. Greeks began to study older literatures and to compare them with their own. As a result of this interchange of ideas, Greek philosophy became fused with Asian philosophy. Neo-Pythagoreanism and Neo-Platonism were the names of the modified systems and they stood, for a time, in opposition to Christianity. The study of Platonism and Pythagorean mysticism led to the revival of the theory of numbers. However, geometry continued to be one of the most important studies in the Alexandrian school which was made famous by the names of Claudius Ptolemy, Diophantus, Pappus, Theon of Alexandria, and others. Whilst not reaching the eminence of some of their predecessors, all of these men significantly advanced the science of mathematics.

Ptolemy.

Claudius Ptolemy, Ptolemaeus or just plain Ptolemy, was born in Egypt and lived from 90 to 168 C.E. He was a celebrated astronomer who made his astronomical observations during the period 121-151 C.E. Both of his famous works are extant. These are *Syntaxis Mathematica* (or the *Almagest* as the Arabs called it) and the eight volume *Geographica*. According to Cajori [Ref.34:46], "Ptolemy seems to have been not so much an independent investigator, but a corrector and improver of the work of his great predecessors". His *Almagest* is based partly on his own work but primarily on the researches of Hipparchus of Asia minor (see portrait No. 6). The *Almagest* included the concept of Aristotle that the earth is a sphere which remains stationary while all the celestial bodies move around it in circles. Another erroneous idea which Ptolemy promulgated was that the Indian Ocean was completely enclosed on the south side by the land, *Terra Australis Incognita*, but he was not proved wrong until the voyages of Cook in the late eighteenth century. Despite the problems caused by his promulgation of wrong ideas, Ptolemy was the last of the great classical geographers and his book the *Almagest* was the most important reference for geographers until the time of Copernicus (1473-1543). As James and Martin say [Ref.73:39], "With the death of Ptolemy the geographic horizons that had been widened both physically and intellectually by the Greeks (and the West Asians and Egyptians) closed in again".

Pappus.

Pappus, according to Cajori [Ref.34:49], was the last important mathematician of the Alexandrian School. He was born in about 340 C.E. About the same time lived Theon of Alexandria, mainly noted for his well-known edition of Euclid's *Elements* and for his daughter, Hypatia, who was torn apart in 415 C.E. by a pro-Christian mob for what they regarded as her practice of "pagan" mathematics. From then on mathematics ceased to be cultivated in Alexandria, thus ending the great period of mathematics in the Greek-speaking world.
476 C.E. **Roman Mathematics.**

In 476 C.E., the Western Roman Empire passed away without the Romans having produced one mathematician of note [Ref.34:63]. Cajori argues that, "In philosophy, poetry and art the Roman was an imitator. But in mathematics he did not even rise to the desire for imitation. The mathematical fruits of Greek genius lay before him untasted" [Ref.34:67].

It is surprising that in the late fifth century C.E., when the Romans were under the heel of Theodoric and his Ostrogoths, they began producing textbooks based on Greek knowledge. These books were very deficient but of absorbing interest because they were the only sources of mathematical knowledge available in the West down to the twelfth century. The most important Roman mathematical writer was Boethius who died in 524 C.E.

Despite the fact that Roman numerals were used fairly extensively even until the twentieth century, partly due to a worship by the West of things Latin, little scientific knowledge came down to the West from or via Rome, it came via the Arabs and Islam (see portrait No.6).

**Roman Geography.**

According to James and Martin [Ref.73:37], the Romans, unlike the Greeks, produced little original work in the field of geography.

**From 7th Century C.E. Medieval Mathematics in Europe.**

With the spread of Christianity from Rome, the Latin language was introduced to Europe not only in ecclesiastical literature but also for use in scientific and any other important worldly transactions. Consequently, what little scientific knowledge there was in the Middle Ages was largely drawn from sources written in Latin and, in fact, in the early part of the medieval period, Roman authors exclusively were read in the West. Although the Greek language was not unknown in Europe, not a single Greek scientific work had been read or translated into Latin. Before the thirteenth century [Ref.34:113].

**Gerbert.**

About the end of the tenth century, at Rheims in France, a monk called Gerbert became the most enthusiastic exponent of mathematical scholarship in Europe and had a profound influence on his pupils. Gerbert sought rare books and found a copy of the geometry of Boethius, the Roman writer. Although this book was of little scientific value, it is of great importance in history because, at that time, it was the principal book from which European scholars could learn the elements of geometry. Gerbert studied it with zeal and, as a result, wrote a letter to the Bishop of Utrecht discussing a simple mathematical problem solved by geometry. Cajori [Ref.34:115] points out that, even though this may seem unimportant, it was, in effect, the first mathematical paper of the Middle Ages which deserves the name.

Gerbert wrote a couple of minor works, one on arithmetic and one on the abacus but, more importantly, made a careful study of the arithmetical works of Boethius, the Roman mathematician. It was as a result of this that, in the tenth century, the West came into
possession of all the mathematical knowledge of the Romans, scanty as it was. Cujori [Ref.34:118] tells us that, "By his great erudition and phenomenal activity, Gerbert infused new life into the study, not only of mathematics, but also of philosophy. Pupils from France, Germany and Italy gathered at Rheims to enjoy his instruction". When they became teachers themselves they taught geometry, arithmetic, the use of the abacus and what little of the work of Aristotle which could be gleaned from Boethius. This led to a demand for the complete works of Aristotle but there were no Greek texts. Having heard that the Arabs had also been great admirers of Aristotle's works, the scholars at Rheims in about 1100 C.E. finally began to seek out and translate Arabic manuscripts.

The Translation of Arabic Texts.

In the first quarter of the thirteenth century, a Latin scholar, Athelard of Bath, travelled extensively in Asia Minor, Egypt and probably also Spain, acquiring the language and science of the Muslims. He made one of the earliest Latin translations from the Arabic of Euclid's Elements. He also translated the astronomical tables of the great Arabian scholar, Al-Khowarizmi. One of Athelard's contemporaries, Plato of Tivoli, translated the astronomy of the Arab, Al-Battani, and the Sphaerica of Theodosius. About the middle of the twelfth century a group of Christian scholars in Toledo, the contemporary capital of Spain, also busied themselves translating Arabian texts, especially Aristotelian philosophy. In 1175, Gerard of Cremona went to Toledo and translated the important work of Ptolemy, The Almagest, based on the astronomical work of the West Asian scientist, Hipparchus. Inspired by the richness of Islamic literature, Gerard devoted himself up to its study and translated into Latin over seventy Arab works including the fifteen books of Euclid. In the thirteenth century the zeal for the acquisition of Arab learning continued, sponsored by some of the royal heads of Europe. Indeed, astronomical tables compiled by two Jews from Arab sources constituted the basis of all astronomical calculation in Europe till the sixteenth century.

About 1260, Giovanni Campano brought out a new translation of Euclid which formed the basis of the first European printed editions.

At the middle of the twelfth century, the West was in possession of the so-called Arabic numerals and at the close of the century, the Hindu methods of calculation began to supersede the cumbersome methods inherited from Rome. Algebra, with its rules for solving linear and quadratic equations, was now finally available to Latin scholars.

It is important to note that no work, either in mathematics or astronomy, was translated directly from the Greek into Latin before the fifteenth century and so modern Western science owes Islam a great debt for its Arabic translations. [Ref.34:120]

Leonardo of Pisa, also called Fibonacci.

At the beginning of the thirteenth century appeared a man "to whom we owe the first renaissance of mathematics on Christian soil". He was Leonardo of Pisa. Having travelled widely in Asia Minor, Egypt, Sicily and Greece, collecting as much knowledge as he could on mathematics, he published his great work, Liber Abaci, in 1202, which was a collection of most of the knowledge of the Arabs in arithmetic and algebra. However, he was not merely a compiler or slavish imitator of the style of the original work. Leonardo was the first great European mathematician to advocate the use of the "Arabic notation", including the use of the zero. For centuries, the Liber Abaci was the main source from which European authors copied material for their books on arithmetic and
algebra. In 1220, Leonardo published a further book entitled *Practica Geometriae* which contained all the knowledge of geometry and trigonometry transmitted to him [Ref.34:124].

One would have thought that after such a promising start, the sciences transmitted from Muslim to Christian soil would have enjoyed a steady and vigorous development but this was not the case. Unfortunately, during the fourteenth and fifteenth centuries no great mathematician or teacher appeared to inspire students and so because the study of mathematics was maintained at the universities in a half-hearted manner mathematical science in Europe remained almost stationary.

Perhaps the main result of the influx of Arabic learning into Europe was the establishment of universities that would eventually take up the challenge to advance science.

Printing in the West.

Between 1453 and 1456, Johann Gutenberg of the German city of Mainz produced an edition of the Bible using movable type. This is usually quoted as the first use of movable type in the West, however some historians accord this honour to the Dutch printer, Lourens Janszoon Coster, who is said to have used movable type as early as 1420 [Ref.6:83]. As explained under “Printing in East Asia” in portrait No.3, the use of movable type combined with European languages using a small alphabet gave the West an invaluable tool to escalate the dissemination of knowledge on a huge scale. Nevertheless it must be remembered that this occurred four centuries after movable type came into use in China and would not have been possible without the use of paper which was also invented by the Chinese more than fifteen centuries before. There is still some doubt as to whether the actual idea of movable type came to the West from China or whether it was an independent development from the Chinese invention of block printing. Robert Silverberg [Ref.6:86] considers that "there was just enough contact between East and West in the time of Gutenberg and Coster for news of the movable metal type of Korea (already developed from the Chinese idea) to have made its way to Europe. Korea was a prosperous country visited by many merchants; Mongol caravan routes continued to run from Korea as far west as Samarkand (in West Asia) even in Ming times". It is very likely that news of "books printed in Korea from metal type" may have "inspired certain block printers to cut type of their own" [Ref.6:83]. On the other hand, the Chinese Academy of Sciences gives a different version [Ref.23:391], "In the Yuan dynasty (1279-1368) block-letter printing (movable type) was being used by China’s minority nationalities. Based on the Uyghur rules of spelling (using an actual alphabet) the Uyghurs made printing type of complete words rather than individual letters. These were perhaps the world’s earliest block-letter printing for a language using an alphabet. In time, the Chinese block-letter printing spread from Xinjiang to Europe through Persia and Egypt". After the Mongols conquered most of Asia they controlled everything from Northern China to the Black Sea and caravans could move safely under their protection through the whole length of the Silk Road between Eastern Asia and the West. Many ideas spilled out of China at that time and printing was evidently one of them.

By Marco Polo’s time in the second half of the 13th century, a fair amount of block printing was being done in Europe, especially in Germany. The first European block prints were pictures, usually of a religious nature accompanied by a few lines of text (as used in China).
The contribution of Asia to the development of the West has been acknowledged by several important historical figures. Karl Marx, for example, in his letter to Frederick Engels in January, 1863, referred to the discovery of gunpowder, the compass and printing (all Chinese inventions) as “prerequisites of bourgeois development” [Ref.23:391].
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