CHAPTER II

PRE-MODERN DRAMA OF SCIENCE IN ENGLAND

CHAPTER II

PRE-MODERN DRAMA OF SCIENCE IN ENGLAND

2.1 Introduction

Pre-modern drama of natural science is a fascinating area of study. In view of the dominant dramatic impulse embodied in these plays, they have been classified in two groups. Plays written between 1500 and 1558 humanize scientific ideas within a predominantly pantheistic world-view.[1] Plays written between 1558 and 1700 are grouped together as they share the view of Nature as an autonomous force. This leads to greater complexity in the Renaissance view of natural science. The science plays examine the scientist, scientific methodology and scientific products with greater vigour and scepticism. The allegorical framework of earlier period is retained in a modified form.

2.2 Humanization of Science or Science Personified

English science plays written between 1500 and 1558 are the earliest records of written drama of science. In these plays the medieval playwrights have accommodated science in the pantheistic Christian world-view. Within the framework of this religious world-view, the playwrights have expressed excitement

in welcoming new scientific learning. This excitement is a result of a strong sense of limitless possibilities science poses. It could improve navigational skills, help man learn the mysteries of the physical as well as biological processes and redefine his 'selfhood'. The humanistic ambitions spill over the religious framework.

The medieval science-plays are a crucial milestone as they develop the most durable trends in science-drama, thematically as well as structurally. Subsequent discussion of these plays will show how the allegorical structure of science-plays retains its popularity as a device to concretize ideas and to make them entertaining. Thematically, the co-relation between knowledge of natural science and efficacious survival in the biological as well as political domain, is echoed time and again in latter historical stages. It is interesting to note, however, that the medieval science moralities develop the form and content in an unselfconscious manner. They are truly plays of a homogeneous community. They voice new concerns that were going to disrupt 'the chain of being',[2] of medieval consciousness.

The development of English drama was a medieval achievement. Interestingly, science theme figures quite prominently in these earliest recorded plays of English language. While discussing the origins of English drama, George Sampson in The Cambridge History of English Literature conclusively points out:

> Nothing resembling drama, as ordinarily understood, can be shown to have existed as a form of old English literature. Dialogues there may have been, but dialogue is not drama. Dialogue is the interchange of speeches. Drama means spiritual conflict (tragedy) or social complication (comedy). Stories in old English are narrative, not dramatic.[3]

English drama was born within the portals of the Church. Christianity at that time had pan-European features. Hence it formed a common source of inspiration for the European imagination. Based on the content-analysis of English and foreign plays, Sampson observes :

> Resemblances between English and foreign plays indicate, not any mutual indebtedness, but a common source of inspiration. The community of religious thought and ideas in the whole of European society during the Middle Ages is something the reader must never forget. There was a 'matter of Christendom' irrespective of national boundaries.[4]

Religious drama celebrated Christian faith through miracle plays. Much like our own Indian forms of religious theatre - Ram Lila, Kirshna Lila etc.[5] - the drama had symbiotic relationship with institutionalized religion. Within a sacred, hagiographic frame, the life of religious figures was represented, reenacted for strengthening religious faith.

With time, the language of these Christian miracle plays changed from Latin to English, to reach a wider, non-literate audience. The content and form too underwent

transformation : morality plays were written in order to educate the general populace in religious and ethical matters. Legouis and Cazamian, the French literary historians, indicate the emergence of a new type of morality-drama :

> Moralities on the other hand, did not only continue to be much appreciated, but were also modified and renewed in accordance with circumstances. Those produced until about 1520 were Christian and no more. They may be said to have had neither place nor date. But the moralities came to be impregnated with the spirit of the Renascence or the Reformation. Two distinct groups of them appeared which voiced respectively humanist and Protestant tendencies.
>
> Amongst plays of the humanist category the spirit of the Renascence is much more clearly marked. They are inspired neither by the usual moral lesson nor by religious faith, but by the love of knowledge. Manifestly they were born in academic circles in which knowledge is the ideal goal and in which the devil is named Ignorance.[6]

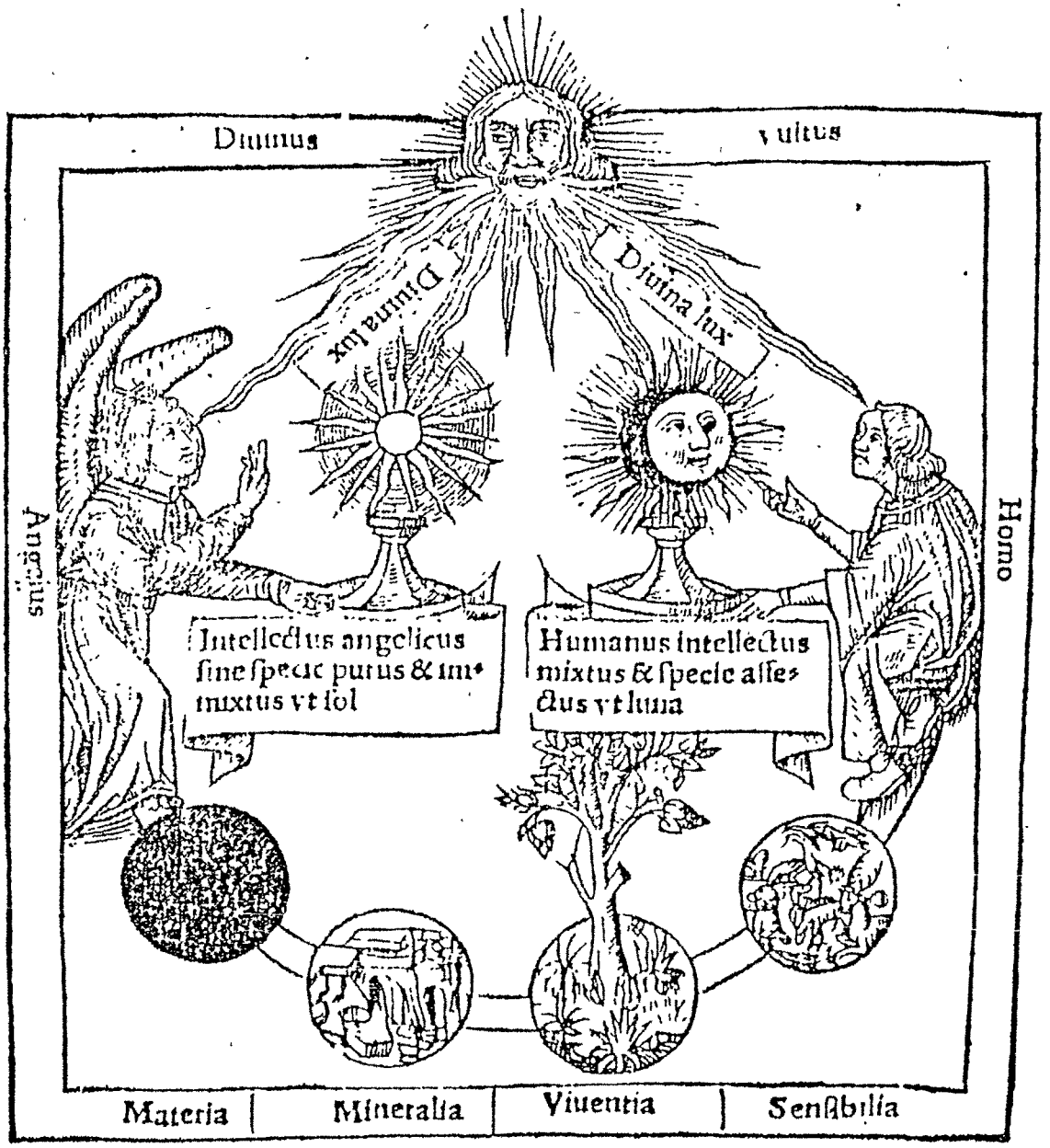
By the 15th century, the amateur performers of town or guild and the minstrels turned professional producers of religious drama. Around 14th century, a secular form of drama, called the Interlude,[7] had already evolved; denoting a gradual thematic expansion of religious drama from the purely hagiographic concern to a more democratic concern with spiritual life of lesser characters. The sacred liminal frame of drama was slowly turning secular, humanistic, 'liminoid'.[7] From the ritualistic process of confirming a well-defined religious, world-view, it began to posit new possibilities.

Within the framework of morality-drama : Henry Medwall's Nature written between 1516 and 1520 needs to be mentioned. Although it does not dramatize concerns related to natural science, it presents Nature as a dramatic personae; making it an integral and crucial part of the spiritual conflict of medieval man (and woman).

Medwall's Nature is an uneven play.[8] And yet a look at its structure and content would indicate the beginning of an aesthetic mould for pre-modern drama of natural science. This aesthetic mould is a direct result of the prevalent religious world-view and the place of Nature in this pantheistic teleology.

In order to understand this pantheistic 'weltanschauung' and its aesthetic representation, one should look at the map (given on the next page) drawn by a medieval intellectual Charles Bovillus.[9] In this map, Nature is presented as a manifestation of God.

If one juxtaposes the structure of Medwall's Nature with Bovillus' map, the cultural framework of pre-modern drama of natural science becomes clear. Medwall presents Nature as a 'worldly goddess' appointed by God to 'knit all living things together, and maintain them in their degree'.[10] In this enterprise, Reason assists Nature. It/He becomes an interpreter of Nature/Worldly Goddess in order to help man reach God/ Harmony/Salvation. The process is made complicated by man's



85. The medieval concept of the great chain of being. The divine light illumines both angel and man, who are connected by the kingdoms of unformed matter, minerals, plants and sentient creatures. From *De Intellecto* by Charles Bouelles Bovillus (*c.* 1470–*c.* 1550).

youth, which pulls him in the direction of sensuality. In Medwall's drama Nature counsels Man to subordinate sensuality to Reason and Innocence. However, Man disobeys Nature's advice, when he enters the world (Mundus). As a result he slowly becomes a victim of seven deadly sins. There is a return of understanding when in old age Man goes back to Reason and hence to understanding of Nature and thereby to God.

To see God and Nature together : pantheistically : is a hallmark of the medieval sensibility. As Medwall says :

> It is Nature
> Who taught the cok hys watche howres to observe
> And syng of corage wyth shyrll throte on hye
> Who taught the pellycan her tender hart to carve
> For she nolde suffer her byrdys to dye
> Who taught the nyghtyngall to recorde besyly
> Her strange entunys in sylence of the nyght.[11]

The aesthetic form it takes in Medwall is to refer to the omnipotence of God, but never having to bring God as a dramatis personae; whereas Nature is presented as a character, an ambassador of God : thereby concretizing and unifying pantheistic/animistic concerns. It is one of the great strengths of moralities that ideas are concretized through personification enabling the playwright to undertake the task of an educator of non-literate audience.

Nature sets a trail, so to say, for science-based moralities. These were written by playwrights who were exposed to University education. Despite the theological thrust, scientific learning found an important place in the medieval syllabus. In keeing with the 'great chain of being', it occupied a place second in importance to theology and philosophy. Rhetoric, logic, grammar or the skills of verbal communication was the only inferior subject in the hierarchy of medieval knowledge. As J.D. Bernal points out :

> The first three 'trivial' subjects were grammar, rhetoric, and logic, aimed at teaching the student to talk and write sense - naturally in Latin. Then followed the 'quadrivium' of arithmetic, geometry, astronomy and music. Only after this study could philosophy and theology be approached. It is significant to note that the basic study was not only secular but scientific.....[12]

The writers of science moralities seemed to cherish their learning which imbued them with a sense of limitless possibilities. Sharing this sense of potentiality must have proved irresistible. John Rastell's The Nature of The Four Elements, written between 1517 and 1527, is a rich document of various aspirations that had begun to converge on natural science : these include navigational exploits, commercial enterprise leading to colonization, study of cosmography as a way of enriching one's nation. Rastell is considered one of the most patriotic English playwrights, whose didactic

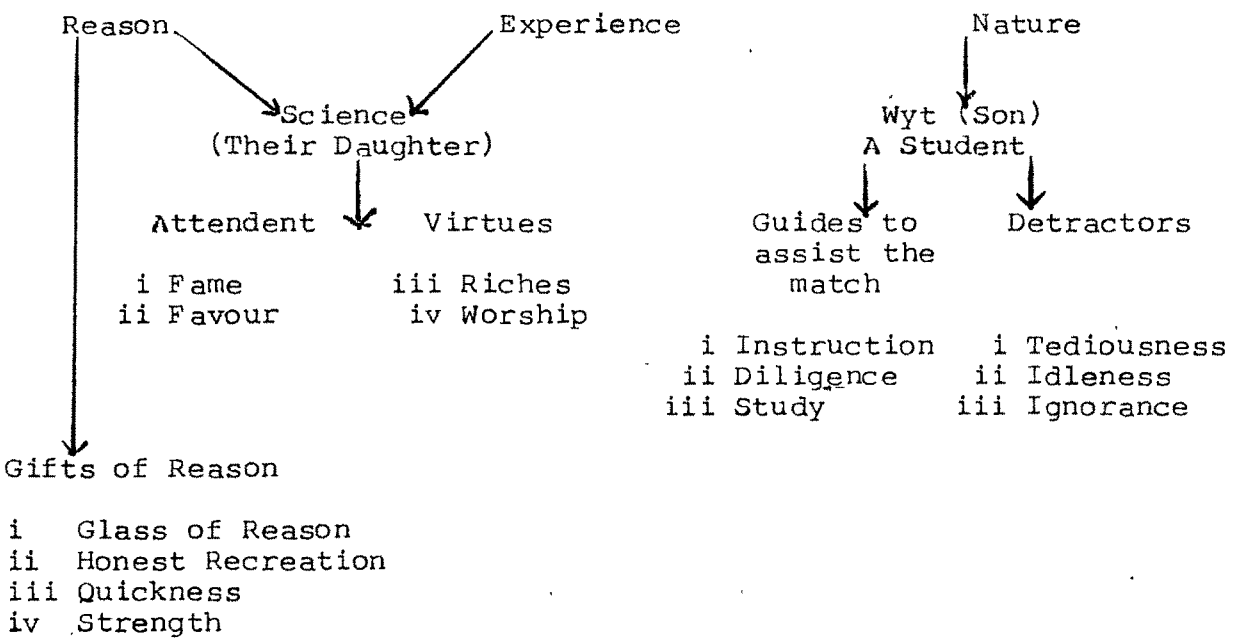
purpose in writing drama was to strengthen England's nationhood.

Like Medwall's Nature, in The Four Elements too, God and Nature are separated. Nature is 'nature naturate' and God is 'nature naturynge'. Understanding of Nature through reasoning is equated with virtue; ignorance is vice. Both Reason and Ignorance are locked in battle to conquer Humanitas. Studious Desire and Experience must instruct Humanitas in astronomy, cosmography, and natural phenomenon. Humanitas symbolizes Everyman, the playwright-cum-clergyman sees himself as an educator of the general public. The playwright views mastery over Nature as not only a virtuous but also a humanizing act :

> For the more thou desirest to know anything
> Therin thou seemest the more a man to be. [13]

Yet the task of teaching natural science is made complicated by enemies of Studious Desire and Experience, namely Sensual Appetite, and the rude beast Ignorance, two opposing traits or tendencies of Humanitas. Rastell views Man's talent for knowledge as a stoical activity. The drama of knowledge/ science, becomes internal. If man can conquer his desire for pleasure and redirect Dionysian energy for pursuit of knowledge, he will be better integrated with God.

Medwall's allegorical framework in which Reason is presented as Nature's good angel is humanized further in Wyt And Science, written by John Redford in 1930.[14] The following chart indicates the extremely well thought-out allegorical relationships that the playwright is able to sustain in this brilliant play.



Science is presented as the daughter of Reason and Experience. Wit/Intellect is Nature's son, he wants to marry Science. The play is an excellent explication of how science can be achieved : a lesson of sorts for both the scientist and the layman. Reason (Science's father) favours this union, and to help young Wit to overcome Tediousness (an enemy of Science) he presents him a mirror (a powerful dramatic device of self-view).

> Then in rememberance of Reson hold yee -
> A glass of Reson, wherein beholde yee
> Youre - sealfe to youre - selfe, Namely when ye
> Cum neere my dowghter, Science, then see
> That all thynges be cleane and trycke abowteye,
> Least of sum sloogyshness she myght dowte ye
> Thys glas of Reason shall show ye all; (1.1-7)

Reason sends Instruction, Diligence and Study to guide Wit, so that he can defeat Tediousness. However Tediousness strikes Wit. Wit nearly misses achieving Science, by the cruel stroke of Tediousness/anarchy which does not want Science to wed and be productive.

Yet Reason is keen on the union of Wit and Science. So he sends three rejuvenating spirits - Honest Recreation, Quickness and Strength to give a new lease of life to Wit. Yet Wit doesn't respond - 'shall I tell you trothe?/ I never loved her.'(I.297-298) and goes on to find an easier mistress, Idleness. She in turn invites another friend, Ignorance, to entertain Wit :

> Here she whystleth, and Ignorance cumth
> in (dressed in a fool's coat, and a cap
> with large ears and a coxcomb.) (I.441-443)

After a while Wit exchanges garments with Ignorance.

Meanwhile, Science is surrounded by loyal supporters - Fame, Riches, Favour and Worship.

Fame : Cum syrs, let us not dysdayne to do
That the world hath apoynted us too.
Favor : Syns to serve Science the World hath sent us,
As the world wylth us, let us content us.(1.619-621)

They tell Lady Science about their mission:

Fame : Ladye Science, to set foorth your name,
The World to wayte on you hath sent me, Fame.
Favor : Lady Science, for your vertues most plentye,
The World, to cherysh you, Favor hath sent ye.
Ryches : Lady Science, for youre benefytes knowne,
The World, to mayntayne you, Ryches hath thrown.
Woorshyp : And, as the World hath sent you thes three,
So he sendth mee, Woorshypp, to avawnce your degre.
(1.645-653)

And yet, Science is not happy without Wit. She confides to her mother - Nature (somewhat reminiscent of Prakrati in the Shiva-Parvathi conjugation) that she loves Wit. Much to her dismay, Wit appears in a fool's garb. She rejects him. Wit sees himself in the mirror of Reason and realizes what he has become. He laments the loss of Science :

Alas! that lady I have now lost
Whome all the world lovth and honoryth most!
Alas! from Reson had I not varyd,
Ladye Science or this I had maryd!
And those fower gyftes which the World gave her
I had woon, to, had I kept her favor;
Where now, in-stede of that lady bryght
Wyth all those gallantes seene in my syght, -
Favor, Ryches, ye, Worshyp and Fame, -
I have woone Hatred, Beggry and Open Shame (1.830-839).

However, Reason comes to help once again. With the help of Diligence, Instruction and Study, Wit is able to kill Tediousness who lives on 'Mons Pernassus'. Lady Science accepts him as her husband, with a fair warning -

Science : Well, yet I say, - marke well what I saye!-
My presence brynghth you a clogg, no naye,
Not in the kepynge of me onelye,
But in the use of Science cheeflye;
For I, Science, am in this degree, -
As all, or most part, of woomen bee:
Yf ye use me well, in a good sorte,
Then shall I be youre joy and comfort;
But yf ye use me not well, then dowt me,
For sure, ye were better then wythout me!(1.1033-1041)

Her mother chimes in:

> ..... yf Science here,
> Whych is Gode's gyft, be usyd meere
> Unto Gode's honor, and profyt both
> Of you and your neybowre, - whych goth
> In her, of kynd, to do good to all, - (1.1054-1058)

Science is the gift of God, therefore it should be used for everyone's profit. If she is used for evil purpose, God will withdraw Wit's talent to judge and discriminate. The medieval marriage is complete, bringing scientific knowledge to the doorstep of God.

The whole allegory is deeply and tightly knit, never losing its ideational, ethical and amorous strands. To eroticise the learning of science in this allegorical frame-work, must have achieved good results for medieval science!

It is interesting to find Nature and Science being equated to womanhood. Does it indicate a typical western outlook? Or is the outlook universal? The question can be fully answered after we examine modern and post-modern drama of natural science. However, it is pertinent to note down the feminist perception of Simone de Beavois in this regard, as it explains the deep cultural roots of this symbolism. In her seminal study The Second Sex, Beauvoir expounds the following view-point :

> Man seeks in woman the Other as Nature and as his fellow being. But we know what ambivalent feelings Nature inspires in man. He exploits her, but she crushes him, he is born of her and dies in her; she is the source of his being and the realm that he subjugates to his will; Nature is a vein of gross material in which the soul is imprisoned and she is the supreme reality; she is contingence and Idea, the finite and the whole; she is what opposes the Spirit, and the Spirit itself. Now ally, now enemy, she appears as the dark chaos from whence life wells up, as this life itself, and as the over-yonder toward which life tends. Woman sums up nature as Mother, Wife and Idea; these forms now mingle and now conflict, and each of them wears a double visage.15

Based on the four representative examples of science - plays, the following characteristics of medieval science-drama emerge : medieval drama of science externalizes the view of Nature through humanized symbols; it is pantheistic in its religious outlook : community oriented in the way it wants to utilize science and nationalistic in the new political aspirations it includes within the Christian framework. Moreover, it is joyous yet reflexive, celebratory yet contemplative, Dionysian as well as Apollonian.

2.3 The Materialist View of Natural Science or the Drama of the Separated Self

Pre-modern drama written between 1588 and 1717 indicates a breach between the Christian world-view and the autonomy that natural sciences demanded. In the history of science this

period is considered revolutionary. The scientific revolution had already started in 1543 with the publication of the anatomical drawings of Vesalius; the first translation of the Greek Mathematics and Physics of Archimedes; and the book by Nicolaus Copernicus, The Revolution of The Heavenly Orbs.[16] By the time Newton published the Principia in 1687 scientific knowledge had taken great strides.[17] However, as the plays of this period indicate, scientific work and the scientists were viewed with suspicion and disapproval. That's why the plays are grouped together as part of pre-modern period. Greater acceptance of scientific knowledge, respect and awe for the scientist, are a phenomenon of post-industrialized society.

The second phase of pre-modern drama, covering the years 1588 to 1717, moves away from pantheism of the earlier period. The ardent faith in Nature as both the revelation of deity and deity itself[18] is questioned. Instead, the protagonists of the new renaissance drama want to "get a deity"[19] by exploring Nature as an autonomous force. Two new dramatic forms evolved out of the mythic depths of this attitude, tragedy narrated through poetic drama (exemplified by Marlowe's Dr. Faustus), and black comedy filtered through the satirical vision of Ben Jonson in The Alchemist and John Gay in Three Hours Before Marriage.

Like a 'pentimento',[20] Marlowe's Tragical History of Dr. Faustus, published in 1588, refers to layers and layers of legendary and historical accounts of Western personages who challenged God in order to be more powerful. Marlowe shaped his play from the English Faust book, The Historie of The Damnable Life And Deserved Death of Dr. John Faustus by P.F.[21] transforming it into a tragedy. The English version in turn was inspired by the stories of Simon Magus who tried for supernatural power by challenging God. The presence of an actual early-sixteenth century Faustus who had a contract with 'the devil' is suggested; which in turn, links the story to sixth century story of Theophilus of Syracuse. According to some scholars, the resemblance between Faustus and Paracelsus cannot be denied too.[22] Marlowe's Dr. Faustus presents the intersection of myth and history.

Christopher Marlowe, with his own personal atheistic point-of-view, reinterpreted the conflict with God in terms of Faustus' desire for more 'power and knowledge'. As Faustus in this famous 'interior monologue' says :

> Oh, what a world of profit and delight,
> Of power, of honour, of omnipotence,
> Is promis'd to the studious artisan!
> All things that move between the quiet poles
> Shall be at my command : emperors and kings

Are but obey'd in their several provinces,
Nor can they raise the wind or rend the clouds;
But his dominion that exceeds in this
Stretcheth as far as doth the mind of man;
A sound magician is a demi- god;
Here tire, my brains, to get a deity! (I.1.51-62)

This sentiment is steeped in the Renaissance spirit of unbridled inquiry and political ambition. Faustus goes on to voice the latter :

I'll have them fly to India for gold,
Ransack the ocean for orient pearl
And search all corners of the new-found world
For pleasant fruits and princely delicates, (I.i.81-84)

Faustus' command to Mephistophilis, 'the servant to great Lucifer', who has rebelled against God, is as follows :

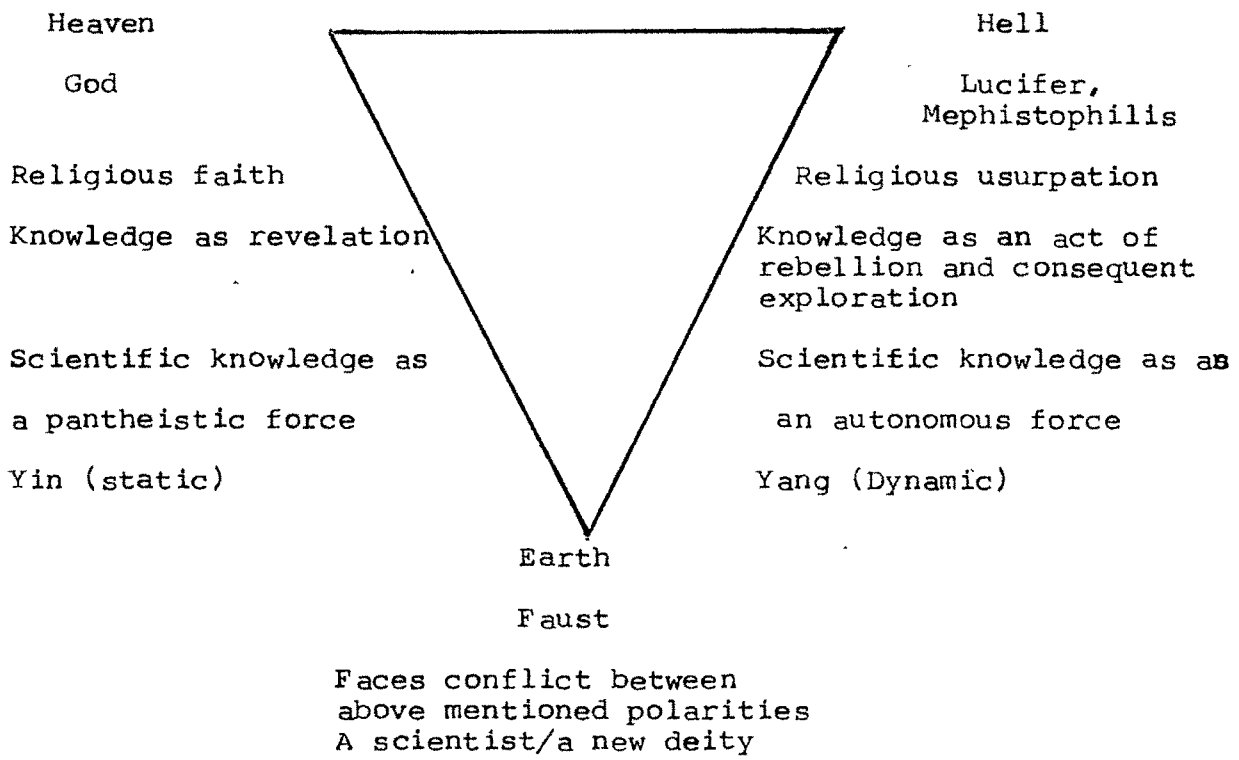
I charge thee wait upon me whilst I live,
To do whatever Faustus shall command,
Be it to make the moon drop from her sphere
Or the ocean to overwhelm the world (I.iii.38-41)

The demand seems like an outrageous act of Pride or empty bombast. And yet this is the very kernel of scientific ambition which has driven mankind to gain greater mastery over Nature and to unravel its deep mystry. In the Renaissance

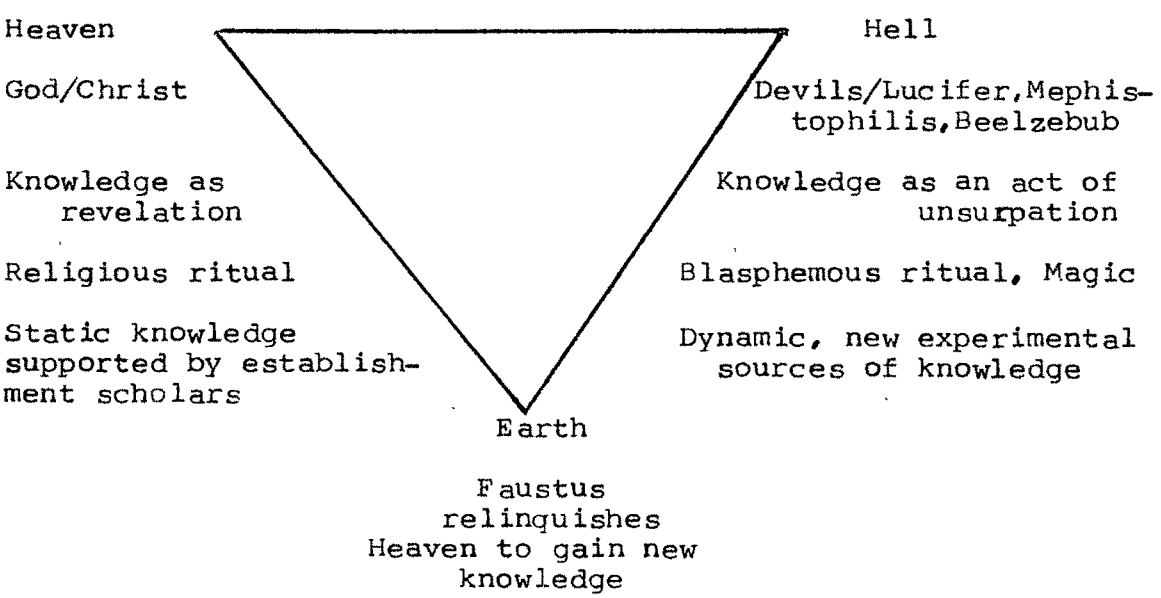
frame of reference, the impulse indicates scientific and political ambition of the period. Scientific learning had led to navigational adventures making England a strong colonizing force.[23] It may be pertinent to point out, that Faustus' grand aspirations to strech the limits of knowledge has something of evolutionary fervour : the intense intuition that we can free ourselves from Nature by redefining it.[24]

In deference to the popular imagination however Marlowe uses the medieval, Christian mythological world view for the act of reinterpretation. In this world-view, God is the creator and purveyor of the universe. Any act which interferes with the functioning of the cosmic order and the social order is an act of transgression for which the agent of disturbance is punished. Lucifer, Beelzebub and Mephistophilis are rebels as they interfered with God's cosmic design. By relinquishing established religious path to knowledge of Nature, Faustus too becomes a rebel. His deep study of esoteric texts of magic and necromancy becomes an act of blasphemy. For Marlowe (and the scientific mind) the moot question is : what would be the theological consequences of secularized scientific process and its resultant power?

The theme of new knowledge is so crucial to the drama that each act and scene depicts various facets of new learning. The whole schema can be represented in the following diagrams :



A map of Faust as a scientific allegory : the attending ritual or methodology of knowledge.



The play can be broadly divided into three parts. The first part dramatizes Faustus' vascillation regarding the merits of new knowledge vs. old knowledge and his final commitment to the former. Scene vii to Scene xvii show Faustus misusing his newly gained knowledge. The final part shows the tragic end of Dr. Faustus. The following scene by scene description of the play will indicate its sustained concern with knowledge of Nature, and the method of obtaining it. Despite the dispute about the authorship of various scenes,[25] for us the play retains its significance as a document of western pursuit of knowledge of the 'materialist world'.[26] In Wyt And Science, mankind was warned that science should be used for everyone's good. In Faustus, the very pursuit of science cannot be undertaken without admitting a sense of evil.

The content of the twenty scences is as follows :

Scene 1 : Faustus debates the merits of theology vs. knowledge gained through necromancy and magic. The good angel and evil angel-voices of his own conscience - plus repositories of public opinion give contrary advice. Valdes, Cornelius - two advocates of the emerging, nascent sciences, encourage Faustus to undertake pursuit of new knowledge for extraordinary power.

Scene 2 : Visit of two scholares who support the established academic norms of their times. They indicate Faustus' break from established view of theology as the queen of knowledge.

Scene 3 : Faustus invokes Mephistophilis with the help of the spirits of Fire, of air, of water. Mephistophilis explains to Faustus that Lucifer is a rebel angle. Due to aspiring pride and insolence, God banished him from Heaven. Faustus sings a paen of materialist achievements that Mephistophilis can help him achieve.

Scene 4 : Parody of Fauste and his desire to use magical power.

Scene 5 : Faustus vascillates between damnation (pursuit of new knowledge) and faith in God. The good angel and bad angel give contrary advice. When the Evil Angel reminds him of honour and wealth that is assured him through pursuit of new knowledge, Faustus is prepared to sign an agreement with Mephistophilis. While signing the contract with his blood, the blood congeals inculcating fear of God's disapproval. However the contract of 24 years' power over Mephistophilis is signed.

Faustus' first question is about the validity of Hell. The second request is to have a wife. Instead Mephistophilis gives him an encyclopaedia

of knowledge that would help him make gold, invoke natural phenomenon like tempests, lightening,etc., gain mastery over the understanding of the movement of various planets and get information about earth's flaura and fauna.

Scene 6 : Faustus despairs about his act again. However, he overcomes despair and conducts a long discussion on astronomy, leading to the most crucial question - '... who made the world?' No answer is given. Lucifer and Beelzebub visit Faustus to curb his constant pangs of religious sentiment. As a parting gift, Faustus is given a book that can help him transform himself into any shape he wishes for.

The first part of the play remains the most explicit statement of the playwright's scientific concern, and the sense of evil he seems to associate with it.

This is deeply intriguing in the context of Marlowe's atheism and love of new knowledge. In terms of future history of Western Civilization however, his view of science as potentially evil, seems prophetic. It is a mark of Marlowe's dramatic genius that he presented the case of scientific knowledge in an operative cultural format. Perhaps the act of writing this play was like testing a hypothesis dialectically.[27] The mythological framework gives extraordinary power

of evocativeness to this scientific allegory. The morality framework is retained in Faustus in a modified form. Heaven and Hell represent two contending forces. Heaven represents God/faith/statis/static/yin/union with Nature/Harmony. Whereas Hell represents Devils/Scepticism/turmoil/dynamism/ yang/separation from Nature/chaos. Or, in a nutshell, Heaven is security of old, established knowledge and Hell is the fear of new unknown knowledge and its consequences.

In consonance with these two polar opposites, their attendent ritual or methodology of knowledge too is different. Instead of knowledge through deep study of religious text based on saintly revelations, the study of esoteric, forbidden books of necromancy and magic are undertaken. This is sheer blasphemy which 'involves also, consciously or unconsciously, the magical assumption that signs can be identified with what they signify.'[28] In other words there is a method in this act of blasphemy.

This can be understood better if we read this play as a scientific allegory.[29] In the allegorical framework, Faustus is the new scientist who tries to 'get a deity.' Mephistophilis personifies the process of natural science which is a 'materialist link'[30] between man and nature. He divulges to Faustus intricate symbols which will help tap nature's resources.

Hold; take this book, peruse it thoroughly;
The iterating of these lines brings gold;
The framing of this circle on the ground,
Brings thunder, whirlwinds, storm and lightening;
(I.v.159-162)

Reminiscent of the great scientific tracts of Marlowe's times, Faustus asks Mephistophilis for three different texts in order to sharpen his knowledge :

Fau. Thanks, Mephistophilis; yet fain would I have a book wherein I might behold all spells and incantations, that I might raise up spirits when I please.

Meph. Here they are in this book. There turn to them.

Fau. Now would I have a book where I might see all characters of planets of the heavens, that I might know their motions and dispositions.

Meph. Here they are, too. Turn to them.

Fau. Nay, let me have one book more, and them I have done, wherein I might see all plants, herbs, and trees that grow upon the earth.

Meph. Here they be. (1.v.166-178)

However, Mephistophilis/process of natural science, parts with this wide-ranging knowledge of Nature, only after Faustus signs a contract with the prince of Evil, relinquishing

his soul. Lucifer, Beelzebub and Mephistophilis ensure that Faustus would be single-minded in his devotion to Hell. Due to this single-minded devotion to Lucifer/natural science, Faustus would lose the ability to understand the ethical consequences of natural science. Lucifer symbolizes the amoral, autonomous power of scientific pursuit.

This allegorical reading of the play is justified if we compare Marlowe's scientific sophistication with P.F.'s The History of The Damnable Life And Deserved Death of Doctor John Faustus, on which Marlowe's The Tragical History of The Life And Death of Dr. Faustus is based. Whereas in Scene 5 of Marlowe's play, Mephistophilis enumerates various methods of manipulating Nature, in P.F's text, the description goes :

> Mephistophilis .... brought with him a book in his hand of all manner of devilish and enchanted arts, the which he gave Faustus, saying, 'Hold my Faustus, work now thy heart's desire.' (x.22)

Later on, in scene 6, the difference in scientific vision is discernible again. According to P.F. xviii,

> Doctor Faustus .... called unto him Mephistophilis, his spirit, saying ..., when I confer Astronomia and Astrologia, as the mathematicians and ancient writers have left in memory, I find them to vary and very much to disagree. Wherefore I pray thee to teach me the truth in this matter. (xviii.22)

Marlowe's discussion of astronomy is much more well-defined :

Fau. Come, Mephistophilis, let us dispute again,
And reason of divine astrology.
Speak, are there many spheres above the moon?
Are all celestial bodies but one globe
As is the substance of this centric earth?

Meph. As are the elements, such are the heavens,
Even from the moon unto the empyreal orb,
Mutually folded in each other's spheres,
And jointly move upon one axle-tree,
Whose termine is term'd the world's wide pole;
Nor are the names of Saturn, Mars, or Jupiter
Feign'd, but are erring stars.

Fau. But have they all
One motion, both situ et tempore?

Meph. All move from east to west in four-and-twenty hours upon the poles of the world, but differ in their motions upon the poles of the zodiac.

Fau. These slender questions Wagner can decide:
Hath Mephistophilis no greater skill?
Who knows not the double motion of the planets?
That the first is finish'd in a natural day;
The second thus: Saturn in thirty years,
Jupiter in twelve, Mars in four, the sun, Venus, and

Mercury in a year, the moon in twenty-eight days. These are freshmen's suppositions. But tell me, hath every sphere a dominion or intelligentia?

Meph. Ay.

Fau. How many heavens or spheres are there?

Meph. Nine: the seven planets, the firmament, and the empyreal heaven.

Fau. But is there not coelum igneum? et crystallinum?

Meph. No, Faustus, they be but fables.

Fau. Resolve me then in this one question: Why are not conjunctions, oppositions, aspects, eclipses all at one time, but in some years we have more, in some less?

Meph. Per inaequalem motum respectu totius (I.vi.33-70)

It has been suggested that Marlowe, like Redford, had pedagogical intentions in discussing astronomy in his play.[31] If that were so, it will remain a matter of speculation as to why he did not present the Copernican astronomy which had created an uproar in 1653 whereas Marlowe wrote his play either in 1592 or in 1588.[32] The Copernican astronomy had presented a heliocentric/heliostatic rather than a geocentric or geostatic view of the cosmos.[33] During Marlowe's time, perhaps, the educated view of cosmos comprised an advanced model of Ptolemy, which established that each planet had its

own 'intelligence' and that instead of being the centre of the cosmos, the earth was somewhere on the side.[34] The question still remains - why didn't Marlowe present the revolutionary Copernican world view? Surely, he was erudite enough to undertake this study at Cambridge. With his own rebellious, atheistic convictions the Copernican system would have been far more conclusive in rejecting the medieval notion of earth-centred and God-centred cosmos. But perhaps Marlowe felt that his audience still operated within the medieval, mythological framework, and instead of presenting a God-less world-view, he presented a deeply questioning, sceptical view of the cosmos, and tied up Ricius' modifications with the possibility that God's position is not central to the universe. And yet it is very difficult to reconcile this well-controlled reasoning with the outrageous, outright abusive rejection of institutionalized religion.

Marlowe's play was written when natural and physical sciences were not fully established as an organized body of knowledge. Science was tied up to magic and fantasy. That is why Faustus makes no distinction in asking for scientific knowledge and fulfillment of his male fantasy. Through his newly acquired magical powers he manages to have Helen as his paramour and vicariously evokes the grandeur of Alexander the great. Even when he is more clearly scientific in his aspirations, he presents a holistic rather than a specialist

view of science. In his heroic effort to study Nature, he is a physician, a physicist, a biologist, a navigator, a magician. Hence science gets linked to one more Renaissance fantasy-use of science for expansionist aims.[35]

In the Cambridge History of English literature Sampson has remarked - 'English drama grew with the development of the whole nation and attained its full stature when England had become decisively a power in the world.'[36] For us in India, with the history of British colonization that goes back to the 16th century, Faustus has added significance as a cultural text that shows us the deep value crisis of Western man before he armoured himself to conquer our land. Western man's ambivalent attitude towards science was to prove the most problematic frame of reference for modern times.

This Faustian sense of ambivalence about the ethical/moral/religious cost of scientific knowledge is absent in Ben Jonson's scientific drama The Alchemist.[37] In some ways, Jonson missed out the historical significance of alchemy. According to Jacob Bronowski, earlier alchemical experiments 'rank with the master invention of stone tools', as they discovered in fire a subtler tool for taking matter apart.[38] (This is in contrast to his response to astronomy. His masque titled Newes From the New World deals with Galileo's invention - the telescope.) Instead of responding to this experimental

incisiveness, Jonson highlighted the amoral materialist ambition that alchemy stood for in the popular as well as literary mind.[39]

Jonson seems to have studied alchemy in great depth before using it as an objective correlative of materialist transformation. The lowly, almost sub-human characters consider it a way of transforming their economic status. The rich characters too are equally interested in using gold to consolidate their wealth, power and health.

The most explicit account of alchemy is expressed by Subtle when he wants to buy Sir Epicure Mammon's confidence,

> ....Nature doth first beget th' imperfect, then
> Proceeds she to the perfect. Of that airy
> And oily water, mercury is engendered,
> Sulphur O' the fat and earthy part; the one
> Which is the last supplying the place of male,
> The other of the female, in all metals.
> Some do believe hermaphrodeity,
> That both do act and suffer. But these two
> Make the rest ductile, malleable, extensive.
> And even in gold they are; for we do find
> Seeds of them by our fire, and gold in them;
> And can produce the species of each metal
> More perfect thence, than nature doth in earth.
>
> (II.i.43)

Despite this deep sense of alchemical possibilities, Jonson has deliberately made his characters so manipulative, cynical and coarse that their understanding of alchemy doesn't emerge as a scientific activity. Jonson manages to project alchemy as a pseudo-science, which was being used rampantly in aid of the acquisitive instinct.

For example, in Act Four, Scene 1 when Dol Common, the prostitute, pretends to be a noble student of alchemy to perpetuate a hoax on Sir Epicure Mammon, himself a base character, who is in search of immortality, the following conversation emerges as a superb example of black humour -

Dol Common : Yes, sir; I study here the mathematics,
And distillation.
Sir Epicure Mammon : O'I cry your pardon.
He's a divine instructor! can extract
The souls of all things by his art; call all
The virtues, and the miracles of the sun,
Into a temperate furnace; teach dull nature
What her own forces are. (iv.1.85)

Time and again, in The Alchemist, Nature is viewed as a passive, inert force that can be improved upon by mankind. By the tongue-in-cheek description of the moral degradation of his characters, Jonson tends to convey the inability of these characters to understand the mysterious ways of Nature.

From Jonson onwards the modern emerging scientist was parodied or satirized in drama. (Interestingly the poetry of this period seems to celebrate contemporary scientific ideas much more directly. Andrew Marwell, John Milton, John Donne speak of the impact of scientific observation on their understanding of the world.) Till 1700s this trend continued. Notable examples are Jonathan Swift's attack on the scientific community in the third book of Gulliver's Travels[40] and John Gay's satire of Newton in Three Hours After Marriage.[41] The scientist, inspired by Newton, is tellingly called Dr. Fossile. A brief sample from this play will indicate the direction of scientific activity in 1700 :

Fossile : I am not at present dispos'd for experiments.

Plotwell: ... Do you deal in longitudes, Sir?

Fossile : I deal not in impossibilities. I search only for the grand elixir.

Plotwell: Vat do you tink of de new metode of fluxion?

Fossile : I know no other but by mercury.

Plotwell: Ha, ha. Me mean de fluxion of de quantity.

Fossile : The greatest quantity I ever knew was three quarts a day.

Plotwell: Be dere any secret in the hydrology, zoology, minerology, hydraulicks, acaustics, pneumaticks, logarithmatechny, dat you do want de explanation of?

Fossile: This is all out of my way.[42]

Plotwell's arrogance is explained by Prof. Bronowski as a critique of Newton's absolutist view of space. But it was also coloured by the playwright's anger against Newton's dictatorial conduct as the President of the Royal Society. Although 'Newton, with his prism and silent face' gave new understanding of light, colour and gravity,[43] he was hardly eulogized for this contribution in dramatic literature. By the time his ideas were popularly accepted, new scientific luminaries appeared on the Western Stage/horizon.

NOTES TO CHAPTER II

1. William Flint Thrall and Addison Hibbard, A Handbook of Literature, Revised ed. (New York : The Odyssey Press, 1960), pp. 337-338.

2. E.M.W. Tillyard : 'The Chain of Being', The Elizabethan World Picture, (New York : Alfred A. Knopf, Year of Publication not mentioned), pp. 25-28.

3. George Sampson, The Concise Cambridge History of English Literature, 3rd ed. (London : The English Language Book Society and Cambridge University Press, 1970), p. 193.

4. Ibid, p. 198.

5. Note that the traditional, religious theatre in India flourishes to this day. For modern account of Indian religious drama see Suresh Awasthi 'The Scenography of the Traditional Theatre of India', TDR, 18, No.4 (Dec. 1974), pp. 36-46. For structural analysis of Ram Lila, see Richard Schechner and Linda Hess, 'The Ramlila of Ramnagar (India)', TDR, 21, No.3 (Sept. 1977), pp.51-82. See Chapter IV for the comments on post-war interest in the semiology of Indian religious theatre. Interestingly, in their search for participatory, collective theatre, Western directors, theatre practitioners have turned to the collective appeal and metaphoric richness of traditional Asian theatre. However, often times, it is difficult to understand how, many of these important theatre practitioners reconcile their own radical, liberal, atheistic world-view with the religious, socio-politically conservative thrust of traditional Asian theatres.

6. E. Legouis And L. Cazamian,'The Theatre From 1520 to 1578, Humanism In Theatre', A History of English Literature, tr. Helen Douglas Irvine (London : The Aldine Press, 1926), pp.230-231.

7. L.A. Cormican, 'Morality Tradition And The Interludes', The Pelican Guide to English Literature; The Age of Chaucer, 1, ed. Boris Ford (Harmondsworth : Penguin 1966), p. 192. 'The term Interlude is used loosely of the sixteenth-century plays prior to the beginnings of English tragedy with Gorboduc (C. 1560). While their name suggests short pieces between other entertainments, some of them, like Udall's Roister Doister (C.1540), are almost as long as Macbeth. Their themes include science, philosophy, farcical situations, and even stories from the Mysteries.'

8. F.P. Wilson, 'Earlier, Tudor Morality And Interlude,' The English Drama, 1484-1585 ed. G.K. Hunter (Oxford : Clarendon Press), p.7. 'As the author of Nature Medwall would barely merit a mention in the history of our drama, but as the author of Fulgens and Lucrece, the first purely secular English play that has survived, he is a significant figure.'

9. J.D. Bernal - 'Medieval Science', Science In History, 1 (London : Penguin Books, 1969), p. 304.

10. F.P. Wilson 'Earlier Tudor Morality And Interlude', p.6.

11. Ibid, p.6.

12. Bernal, 'The Church In The Middle Ages', p. 295.

13. See F.P. Wilson, p.10.

14. John Redford, 'Wyt And Science', Chief Pre-Shakesperean Drama : A Selection of Plays Illustrating The History of The English Drama From Its Origin Down To Shakespeare. ed. Joseph Quincy Adams (London : George G. Harrap & Co. Ltd., 1928), pp. 325-341. Subsequent references are made to this edition.

15. Simone de Beauvoir, 'Myths : Dreams, Fears, Idols'. The Second Sex, tr. H.M. Parshley (New York : Vintage Books, 1974), pp.162-163.

16. Jacob Bronowski, 'The Hidden Structure', The Ascent of Man, (Boston/Toronto : Little, Brown and Co., 1973), p.142.

17. Ibid, pp. 221-257.

18. Thrall & Hibbard, Handbook of Literature, pp. 337-338.

19. Christopher Marlowe, The Tragical History of The Life And Death of Doctor Faustus, ed. John D. Jump (Indian rpt, New Delhi : B.I. Publications, 1975), p.76. See this edition for subsequent references to the play.

20. Lillian Hellman, Pentimento : A Book of Portraits, (New York : New American Library, 1973), p.3. 'Old paint on canvas, as it ages, sometimes becomes transparent, when that happens it is possible, in some pictures, to see the original lines : a tree will show through a woman's dress, a child makes way for a dog, a large boat is no longer on an open sea. That is called pentimento because the painter 'repented', changed his mind. Perhaps it would be as well to say that the old conception, replaced by a latter choice, is a way of seeing and then seeing again'.

21. John Jump, Dr. Faustus, pp. 15-36. See this edition for subsequent references to P.F.'s book.

22. J.P. Brockbank, 'Perspectives of Criticism', Marlowe : Dr. Faustus, (London : Edward Arnold Ltd, 1962), pp. 9-13.

23. For pictorial illustrations, see The Encyclopedia of Discovery and Exploration : Pacific Voyages, (New York : Doubleday and Company Inc., 1973).

24. See Chapter 1.1 for discussion of Bronowski's comments about the role of scientific activities in man's cultural evolution. Also refer to Victor Turner's comments about the evolutionary possibilities of liminal and liminoid forms in the same Chapter.

25. Jump, Dr. Faustus, p.38.

26. The term 'materialist world' is used to denote nature as formed or consisting of matter. It also refers to the materialist instinct for acquisition of matter for economic and political power.

27. Scott Buchanan, 'Tragedy and Comedy', Poetry and Mathematics (1929, Midway rpt., Chicago and London : The University of Chicago Press, 1975), pp.142-156.

28. C.L. Barber, The Form of Faustus' Fortunes Good or Bad, TDR, 8, No.4, (Summer, 1964), p.98.

29. This interpretation has been influenced by the reading of Faust : Eine Historie produced by the particle physicists. For further discussion see Chapter 3.4.

30. See the explanation of 'materialist world' earlier in this Chapter.

31. Brockbank, 'Marlowe', p.46.

32. Ibid, p.46. 'It used to be thought that Marlowe not only ignored the helio-centric Copernican system (which was little known at the time) but also the widely accepted current modifications of the Ptolemaic geo-centric account. But F.R. Johnson has more recently claimed that he presents an unorthodox sixteenth-century modification of the current astronomy.

Marlowe's knowledge of astronomical theories, however, might have been wholly derived from the French Academy, whose third volume (published in English after Marlowe's death, but available in French) deals with Good and Evil Angels, the Celestial Spheres, elemental meterology, and the flora and fauna of the earth. Its astronomy is reasonably lucid and does much to illuminate the play'.

33. I. Bernard Cohen, 'The Earth And The Universe', The Birth of A New Physics (New York : Anchor Books, 1960), p.46. 'Apart from the fact that the Ptolemaic system worked or could be made to work, the fact that it fitted in perfectly with the system of Aristotelian physics also is pertinent. The stars, planets, sun and moon moved in circles or in combinations of circles, their "natural motion", while the earth did not partake of motion, being in its "natural place" at the centre of the universe, and at rest. In the Ptolemaic system, then, there was no need to seek a new system of physics other than the one which accorded equally well with the system of homocentric spheres.

Sometimes these two systems are described as being "geostatic", because in both of them the earth is at rest; the more customary expression is "geocentric", because in both of the two systems the earth is at the centre of the universe'.

34. Brockbank, Marlowe, p. 48. 'It is likely therefore, that Marlowe's astronomy was commonplace to the well-informed, the Academy would allow the devil's answers as probable enough, and indeed pious in accepting the "empyreal heaven", which was more the concern of theologians than astronomers. But it is possible, as Johnson argues, that Marlowe knew that by allowing only eight moving spheres and attributing an "intelligence" to each, he was approving the "advanced" theories of Ricius. Ricius rejected the crystal sphere because he saw that the "trepidation" it was supposed to account for was an illusory phenomenon owed to faulty successive measurements of the precession of the equinoxes. He also rejected the primum mobile or "first mover", which Aristotle had identified with the firmament and Ptolemy had separated off to account for precession, he preferred the theory of "intelligences" not because it was held by many theologians but because it seemed to him the simplest and most rational explanation of the several kinds of heavenly motion'.

35. The link between science and colonial instinct is noticed time and again. Since science is a storehouse of power, its link with generation of political power is obvious. This link is delineated in subsequent science drama. See Chapter 3.3, 4.2 and 5.3 for further discussion.

36. Sampson, Cambridge History, p.193.

37. Ben Jonson, 'The Alchemist', Three Comedies : Ben Jonson, ed. Michael Jamieson, (Harmondsworth : Penguin, 1966). For subsequent references to the play, see Ben Jonson, The Alchemist, ed. John I. McCollum, Jr. (New York : Barron's Educational Series, Inc. 1965). While referring to various quotes, instead of the line number, page number of the quote is mentioned.

38. Bronowski, The Ascent, pp.124-125.

39. Jamieson, Ben Jonson, p.181.

40. Bronowski, The Ascent, pp.236-240.

41. Ibid, pp.236-240.

42. Ibid, pp.236-240.

43. Ibid, pp.236-240.