CHAPTER I

DRAMA AND NATURAL SCIENCE : AN OVERVIEW

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1.1 Why Drama of Science?

Post-independence India has grown on the dreams of achieving modernization through science and technology. As an educated member of post-independence India, one was raised in a highly scientific, progressive culture. At home, in school, on the media, science and technology were referred to as weapons of economic and cultural progress. No country, no society could do without them. This deep trust and hope in the ability of the natural sciences to initiate a great social revolution, continues to this day. This study has evolved in response to these powerful, modernizing ideas of one's social background. It investigates the relationship between natural science and society through drama.[1]

Drama is one of the richest reservoirs of a culture's conflicts and self-view. No other form of writing or literature achieves a comparable act of collective mirroring of a society. The 'mimetic'[2] strength of drama stems from the capacity of the human race to look at itself narcissistically as well as

critically. Victor Turner captures the process of 'public reflexivity' that drama embodies, in this apt description :

> To look at itself a society must cut out a piece of itself for inspection. To do this it must set up a frame within which images and symbols of what has been sectioned off can be scrutinized, assessed and if need be, remodelled and rearranged.[3]

The main focus of this study is on Western Drama. That's because modern science has evolved in the Western culture. Every culture has its science and technology for the simple reason that man's relationship with Nature is umbilical : Natural science denotes the way this relationship is defined and then used for man's efficacious survival. Despite this universal tie with Nature, however, no other culture has been as persistent in its zeal to unlock Nature's mysteries as the Western culture. An important reflection of this persistent and obsessive concern, is observed in Western Drama. Right from the natal years of modern science in 1500 to the present day, plays on the theme of natural science have been written by Western playwrights.

An examination of Western drama of science over the last 500 years helps us understand the dialectics between scientific information and society as a growing process. Drama functions as a mediating agency between these two social processes. Instead of passively internalizing the ever new - or 'liminal' -

This intrusion of the anthropological explanation of the relationship between science and drama is wholly unnecessary + complicates the discussion without any advantage.

concepts of matter, time, space etc. that natural science offers, through drama, a society reflects on them freely. These two liminal forms (i.e. science and drama) intertwine in drama of science and achieve 'communitas' as an integral part of one culture.

Liminality has been described by Turner as a symbolic process which is 'not confined in its expression to ritual and the performative arts. Scientific hypotheses and experiments and philosophical speculation are also forms of play, though their rules and controls are more rigorous and their relation to mundane "indicative" reality more pointed than those of genres that proliferate in fantasy'.[4] The distinctive features of 'liminal process and states' are 'subjectivity, escape from the classification of everyday life, symbolic reversals, destruction - at a deep level - of social distinctions, and the like....'[5] Turner's anthropological observations reinforce the evolutionary features of liminal processes in general.[6] Drama of science goes a step further and combines two complex liminal processes and thereby bridges a crucial intercultural gap - that of scientific knowledge and its cultural assessment. In an extraordinary act of creativity, playwrights and performers of drama of science, after examining and then representing two liminal experiences, are able to reestablish 'communitas' or a new sense of community.[7]

Drama of natural science is, therefore, a crucial area of inquiry. Its evolutionary vitality can be discerned if we look at the way this relationship has grown over the centuries. The ancient Nature - rituals are the repositories of this relationship. A representative example of these rituals will suggest the potency of modern drama of science. In her definitive study, of ancient art in ritual, Jane Harrison points out :

> We know from tradition that in Athens ritual became art, a dromenon became the drama, and we have seen that the shift is symbolized and expressed by the addition of the theatre, or spectator - place, to the orchestra, or dancing - place....Ritual does not always develop into art, though in all probability dramatic art has always to go through the stage of ritual. The leap from real life to the emotional contemplation of life cut loose from action would otherwise be too wide. Nature abhors a leap, she prefers to crawl over the ritual bridge....[8]

relevance?

According to Harrison the Athenian spring ritual turned into drama when the audience lost belief in the efficacy of the ritual to alter the patterns of Nature. Nature rituals and drama of natural science indicate the primordial need of mankind to express their survival patterns vis-à-vis Nature. They indicate the level of knowledge of Nature mankind has achieved. Nature-rituals and drama of natural science provide a good index of the kinds of ~~problem~~s or conflicts mankind has had to

* this identification is too quick, unsupported & not convincing

resolve for their efficacious survival. The fact that these conflicts are metaphorically presented suggests another characteristic (as well as significance) of theatre in general and natural science drama in particular. Issues or conflicts are presented in drama so that these can be resolved by the performers and the audience in real life. Theatre in that sense has an educational role as it helps the audience to do group thinking. Somewhat like ritual-play in animals and play of pretense in human children, in a broad sense, through drama, man works out real life situations imaginatively or metaphorically.[9] Due to a unique blend of aesthetic pleasure and cognition, 'the Dionysian and Apollinian',[10] forces are equally strong in drama. This allows drama of science to aim at an integrated transformation of the consciousness of its audience. It examines given premises of natural science but it also affects its further growth.[11] It examines the ideas of science but also playfully creates sensuous images to help the audience relate to these ideas.

The vitality of drama of science can also be judged from the pervasive impact of science in shaping modern civilizations. J.D. Bernal provides a comprehensive definition of science in Science In History :

> Science may be taken as an institution; as a method; as a cumulative tradition of knowledge; as a major factor in the maintenance and development of production and as one of the most powerful influences moulding beliefs and attitudes to the universe and man.[12]

Professor Jacob Bronowski is more emphatic in highlighting the role of science in cultural transformation. In The Ascent of Man, he views science as an evolutionary metaphor and says :

> Among the multitude of animals, which scamper, fly, burrow and swim around us, man is the only one who is not locked into his environment. His imagination, his reason, his emotional subtlety and toughness, make it possible for him not to accept the environment but to change it. And that series of inventions, by which man from age to age has remade his environment, is a different kind of evolution - not biological but cultural evolution. I call that brilliant sequence of cultural peaks The Ascent of Man.[13]

Drama of natural science provides a unique insight into the conflicts faced by man in creating and assimilating scientific ideas. By studying the evolving pattern of science drama, we will be able to understand the reflexive, liminoid response of drama under different levels of knowledge of Nature. From this viewpoint, the material is arranged in chronological, historical order, as it would facilitate interpretation of the plays in the matrix of history of science, the dominant socio-economic, educational features of each period and the creativity of the playwrights.

1.2 Methodology and Summary of Various Chapters

This study initially started in search of insights into the process of 'modernization', which, in contemporary India is synonymous with scientific rationality. Since there are no independent, exhaustive studies of drama of science available, we decided to scan the field thoroughly. The most urgent task was to bring plays of different historical periods together. Plays that were written in English or translated into English were chosen for this enterprise.

Contemporary Western drama which is already a part of modern Indian consciousness, was chosen for in-depth study. On closer examination, modern Western drama of science turned out to be much more varied in its response to ideas of natural science. The study gained momentum because the area of inquiry touches a central concern of mankind. In pre-modern period, apart from the well-known plays on Faust, new medieval plays came to our attention, which explicitly dramatized concepts and issues related to natural science. Meanwhile, a plethora of new American and Indian theatre productions on the theme were written and produced during the course of this study. The study brings discussion of all these plays together.

The study is divided into three historical stages : pre-modern, modern and post modern. Pre-modern period covers plays written between 1500 and 1717. During this historical

Contradictory views on this page

phase, despite the great strides made by modern science, scientific insights are widely rejected. The pre-modern period is sub-divided chronologically into two sub-periods : medieval science plays written between 1500 and 1580 reaffirm the existing pantheistic world-view; whereas science plays written between 1588 and 1717 explore Nature as an autonomous force.

The medieval plays on natural science are an exciting discovery. These are some of the earliest written plays in English language. They evolved from the oral tradition of Christian miracles and mysteries. The plays were mainly written by playwrights who were exposed to University education. Despite the theological thrust of University education of this predominantly Christian society, scientific learning found an important place in the medieval syllabus. The writers of 'science moralities' shared the new learning with the non-literate audience of that period. In these moralities, the information content of science is placed in the broad framework of allegorical characters such as Nature, Reason, Sensuality, Science, Idleness etc. In tune with pantheistic teleology, Nature is presented as a 'Worldly goddess'. Comprehension of Nature, through Reason/Natural Science is viewed as a spiritual act that takes one closer to God. Ignorance/Sensuality/ Idleness are seen as antagonistic forces/characters which distract the protagonist from greater knowledge and humanization. In dramatic structure, science-allegories use the moral

code of medieval society, but the materialistic, colonial ambitions of Renaissance too find expression. The allegorical characters are urged to study various facets of Nature in order to exploit Nature for man's use and to help the British become stronger for victory over other geographical terrains.

The English, medieval science-plays don't seek to achieve any social revolution. Scientists, navigators, merchants were making revolutionary forays in their respective field of activity. They, instead, integrate these activities for 'public reflexivity' or shall we say public exhortation in order to make England a strong colonial power. They hardly prepare one for the turbulent tragedy of Dr. Faustus - 'the Overreacher'[14] par excellence.

The second part of pre-modern period covers plays written between 1588 and 1717. In the history of science, this is considered an exciting period because with the publication of Vesalius's anatomical drawings and Copernicus's heliocentric astronomy, the scientific revolution was created. Great strides were made by Galileo, Kepler, Newton in giving further explanations about the cosmos.

Despite these peaks in the 'ascent of man' Western society at large, was sceptical about the gains of scientific knowledge. Christopher Marlowe placed natural science in opposition to religion in The Tragical History of Dr. Faustus.[15]

Marlowe used the dramatic framework of medieval allegory to personify science, the scientist and the scientific process with greater complexity. Marlowe identified with Renaissance aspirations of greater control over Nature, he intuited that this ambition (personified by Dr. Faustus) has compulsion which is akin to evolutionary fervour; yet he could not help ruminating if man would be able to use it wisely. This Faustian ambivalence is revoked time and again in modern and post-modern Western drama, giving it the status of a central play in the study of science theme. Other plays of this period echo the sceptical view of natural science.

The view of science is much more positive in the modern period. The scientific revolution, had changed man's self-view. Darwin offered his developmental study of the evolution of species from preceding animal stages taking the edge from a religious view of the origin of man. Many other natural scientists were successful in revealing the inner pattern of matter through observation, experiment and verification. Gradually man was successful in transforming Nature for generating greater power and energy for the use of mankind. After the industrial revolution science and technology were accepted as revolutionary forces in the West.

The modern playwrights in the first phase of modernism (starting in 1870s) responded to the great, liberating power of

natural science. In fact the Naturalistic school derives its name from its great faith in the study of Nature. Unlike the pre-modern science-plays, science in the modern period is not only a theme for dramatic presentation but also an ideational force that began to make in-roads in the philosophy of drama. Naturalists like Emile Zola, Henrik Ibsen, Anton Chekhov, August Strindberg wrote plays within the rational, deterministic framework. However, despite peripheral references to science and scientists and implicit assumptions about the impact of scientific ideas on the consciousness of modern characters, the Naturalists did not produce any noteworthy play on the science theme.

The only pre-World War I playwright to take this theme seriously was the surrealist playwright Alfred Jarry. Instead of simply celebrating scientific revolution, Jarry attempted to relate available scientific concepts to the existing notions of time, space, matter, meaning, and selfhood of man. This relationship is explored at length in his quixotic novel Faustroll. In Ubu Cocu, Jarry dramatizes this theme for theatre presentation. In this play the bourgeoise scientists and their scientific activities are not only satirized but also presented as harbingers of destructive forces. It is also suggested that the cumulative effect of natural science philosophically, would lead to an absurdist vision of reality. This absurdist, satrical vision of natural science colours the tragi-comic

perceptions of other playwrights like Samuel Beckett, Eugene Ionesco, Richard Foreman, JoAnne Akalitis. It becomes the most important reference point for non-naturalistic presentation of the modern and post-modern science-drama and a deeply sceptical view of natural science as a philosophical model.

The second, war-time phase of modernism is marked by positivist tendencies again. Bertolt Brecht is the most influential playwright of this period, which is shaped by the unsettling experiences of World War I and World War II. Science was increasingly being used by political powers to wage wars of destruction. There was dire need to examine the potential and limitation of scientific products and their use. Brecht examined the creative as well as destructive application of science. He felt that science would become a creative activity if it is used to improve the quality of life of the oppressed masses. This view-point pulsates through much of the anti-illusionistic, epic theatre of Brecht which he modelled on scientific scepticism. The science theme is handled explicitly in The Flight of Lindberg, The Life of Galileo and the incomplete script on Einstein. The dialectical, pedagogic model of The Life of Galileo has inspired many theatre practitioners in the developing countries in their search for meaningful theme and structure for drama of science. Bertolt Brecht initiated intercultural exchange, by adopting the loose episodic structure

Relevance of this dimension of the discussion in the following chapters is highly questionable.

(interspersed with song, dance and stylized acting) of traditional Asian dance-drama and in turn, by creating an enduring impact on the contemporary Asian playwrights because of his powerful drama of the liberation of the oppressed.

The third section of modern period, highlights plays written after the second World War. In the second world war, the use of nuclear bomb created an unprecedented situation for mankind. Scientific creativity/liminality had invested man with the capacity to fathom Nature and to transform it in a wide variety of ways. This great power was used by mankind for selective destruction of his own species and of his environment in a much more brutal fashion than ever before in the history of mankind. With the threat of destruction of the human species itself and the biosphere, mankind has undoubtedly reached a turning point in their history. In response to the paranoia created by nuclear warfare, plays written between 1950 and 1970 deal with nuclear science. Heinar Kipphardt used the naturalistic framework in his documentary drama - In The Matter of J. Robert Oppenheimer, to explore the role of this great nuclear scientist in allowing the destructive use of nuclear energy. The ethical thrust of this play is present in the surreal drama of suspense created by F. Dürrenmatt in The Physicists. Dürrenmatt posits the possibility that great scientists could save mankind by self-imposed silence or exile. He rejects this possibility

because of the fear that scientific truth would create its own momentum and trap mankind in any case.

The post-war period is marked by a new awakening regarding the role of theatre to become a conscience-keeper of society. Jerzy Grotowski - the Polish theatre director - is in the forefront of this aspiration. Interestingly, for his theatre of spiritual initiation of modern man, Grotowski chose the investigative model of scientific research in frontier areas of nuclear science. Through the application of this liminal, investigative model, he reinterprets every aspect of theatre to understand the locus of modern man's anguish. He aims to reach spiritual transformation in theatre, giving it the atavistic status of ritual. Marlowe's Dr. Faustus is reinterpreted by Grotowski to present Faustus as a saint because of his desire for pure truth. Grotowski's Faustus seems to berate himself for not being able to sustain the spiritual use of science. The reinterpretation of Faustian myth is undertaken with lesser theatrical creativity and vision by the Particle Physicists themselves. The annual production of Neils Bohr's Institute of Particle Physics, Faust : Eine Historie is a remarkable play because it presents the self-view of the nuclear scientists and their highly complex concepts. It is noteworthy that the concepts are presented in the allegorical framework. These plays prove that Faustian framework remains an operative frame of reference for modern theatre practitioners too.

This study traverses medieval and Renaissance English drama, modern European drama and concludes this cultural journey in post-war or post-modern American Drama. Since U.S.A. initiated the destructive use of nuclear energy, it becomes important to find out the way theatre practitioners have come to grips with this historical fact.

The American response to the problems of nuclear warfare and the science society interrelationship is sharp. In both commercial, and non-profit theatre, science plays of modern period have been staged and new plays on the theme have been written and produced. Some important plays of experimental avant-garde are studied because of a new fruitioning of the science theme in experimental theatre.

The most daring science-play of experimental avant-garde has been written by Richard Foreman. In Particle Theory, Foreman uses concepts of particle physics to develop the dramatic structure as well as theme of the play. Through an unusual blend of images, gestures and words, Foreman presents post-modern concepts of space, time, matter. This is a totally new type of scientific aesthetics and an absolutely new kind of meaning generating scientific allegory.

The most powerful play on the science theme, however, is Dead End Kids : A History of Nuclear Power conceived and directed by JoAnne Akalitis for Mabou Mines. In a highly

innovative manner, Ms. Akalitis manages to recreate the history of nuclear science. Through the 'multiplex'[16] method Ms. Akalitis fuses the pre-modern and modern concepts of science. Mythic and legendary scientific figures like Dr. Faustus, Oppenheimer, Einstein, Madam Curie are presented through the anti-nuke sensibility of Ms. Akalitis. She beautifully links the science-society relationship by constantly evoking images of children who can easily become either the victims or perpetrators of nuclear destruction.

The aim of Akalitis is to achieve transformation of the consciousness of her audience by making them see the destructive and dehumanizing impact of nuclear warfare. She amply succeeds in achieving this aim. Plays like Dead End Kids, reaffirm the role of drama in not only depicting survival-issues but also in aiding the process of cultural evolution whereby contemporary man is able to understand that with scientific liminality alone, mankind cannot survive : in order to evolve further, mankind needs to strengthen global, ecological vision.

From Western plays on the science theme, the focus shifts to contemporary Indian plays on this important theme. As indicated earlier, the contemporary Indian view of natural science is shaped by the positivist educational model that the British colonizers introduced in India.

The contemporary Indian playwrights respond to the gains of scientific rationality, much like the pre-war Western Naturalists. Traditional Indian drama has hardly responded directly to scientific concerns. However, if scientific ideas and products begin to infuse Indian life very deeply, this mythic theatre could very well accommodate its conflicts. The most persistent efforts to dramatize science have been made by, what Prof. Gunwardhana calls 'the intermediary theatre'.[17] Intermediary theatre has been highly political in pre-independence India too. It retains its political, proletariat outlook. Playwrights of intermediary theatre, such as Utpal Dutt have incorporated the science-theme within the framework of the Jatra model. But a new kind of intermediary theatre has evolved in recent years, which primarily aims to give science-education to the illiterate masses. Kerala Sastra Sahitya Parishat has been the most consistent educational group to use science-drama for giving scientific information and to depict the politicisation of science. Interestingly, these plays are collaborative efforts in which educated scientists interact with uneducated artisans, farmers, labourers to collectively write and produce science-drama. The response to this drama is powerful because it highlights crucial survival needs of the audience in language, images, symbols and dramatic structure which has indigeneous roots.

Contemporary modern playwrights, like Badal Sircar, too, have responded to scientific ideas. He has written science-fiction plays as well as problem plays on science. In the Calcutta-quartet science is placed as a crucial factor in the historical framework that his middle-class characters need to understand. In Tringsha Shatabdi, Sircar puts Einstein, American military personnel and the Indian middle-class on trial in order to generate a strong sense of responsibility in the Indian middle class towards international issues such as the nuclear attack on Hiroshima coupled with greater concern towards national issues such as poverty, hunger, disease, ignorance. The middle class can aid the process of transformation without which scientific liminality will remain dehumanized.

1.3 Drama of Science : General Characteristics and Future Role

Thus, through the survey of science-drama, we find that the Western and Indian playwrights have responded to the possibilities as well as limitations of scientific concepts, and its social application. The evolving pattern of science-drama helps us understand the reflexive, liminoid, playful response of drama to strides made in the natural sciences.

Through this study some general characteristics of drama of science emerge. Right from the medieval period to the post-modern period, we find that the allegorical framework has been used by most playwrights of science. That's because drama

only drama of science?

of science is predominantly drama of ideas. Use of allegorical framework helps in the interpretation of these ideas. Within the broad, allegorical framework, however, large variety of drama of science has been created. The ancients incorporated ritualistic features in drama : wherein they presented scientific ideas through the morality framework in which the characters suffered due to the conflict between religious and anti-religious values, the resolution of suffering too was in tune with the dominant religious beliefs of the audience.

The moderns on the other hand have incorporated scientific activity more radically. Both, in terms of the theme of the plays and the underlying philosophy of theatre, scientific concepts and the scientific process become the prime model. Plays are performed in the spirit of scientific experimentation : reality is observed, tested, verified; new causal explanations are given for the dynamic nature of reality and attempt is made to arrive at new formation of human consciousness.

This is a widespread and significant trend. Both in the West and the East, in the highly industrialized and industrializing nations, drama of science is performed for dealing with man's survival problems at micro and macro level. Gradually, artists, scientists, social thinkers and the common audience have begun to understand that scientific liminality/creativity in itself does not lead to man's efficacious survival. Man

needs to excercise his humanistic, creative sense in order to make use of science for the healthy survival of mankind.

We live in a period of crucial global, ecological issues. 'Liminoid',[18] symbolic forms like drama, films, education, mass-media face their biggest challenge. Through public reflexivity of symbols and images of natural science that have been cut off for scrutiny, liminoid forms can achieve a collective transformation of mankind in their ability to relate scientific/technological/ideational achievements to the survival of Man and Nature.

In order to achieve, what could very well be a crucial step in man's cultural evolution, drama of science will have to be exchanged interculturally. Interculturalism is an ancient, raw process.[19] We need to refine it further so that at micro and macro levels we are able to understand the kinds of conflicts and issues knowledge of natural science has generated, in a form that is accessible to every strata of society. The time is ripe for the intercultural process to humanize mankind. Depending on the visionary power of drama, a new kind of theatre and society can be created. Otherwise sooner or later, Apollo would be burnt with the 'laurel bough'. As the chorus lamented in The Tragical History of Dr. Faustus :

> Cut is the branch that might have grown full straight,
> And burned is Apollo's laurel bough
> That sometime grew within this learned man.
> (Epilogue, 11, 1-3)[20]

Perhaps Marlowe did not realize the magnitude of his own words. Apollo's laurel bough symbolizes the integration of scientific knowledge with humanistic concerns. As a matter of fact, in retrospect, Apollo and the laurel bough gain crucial human and ecological symbolism. If Apollo was the god of 'music, poetry, philosophy, astronomy, mathematics, medicine and science,'[21] his laurel bough symbolizes the union of the arts and the sciences.[22] This notion goes back to the ancient fable of Daphne turning into a laurel tree (on being chased by Apollo to satiate his love), which Apollo adopts as his own.[23] The symbol resonates with Man and Nature, Man and Woman polarity that we need to redefine.[24]

'Nature' too easily identified with science. Naturalism or naturalistic misused to mean scientific

NOTES TO CHAPTER I

1. The term 'drama' and 'theatre' have been used synonymously. Although this study is based on the hermeneutical method; the dramatic text is seen as an integral part of theatre presentation. For detailed classification Richard Schechner's taxonomical definition is useful. See Richard Schechner, 'Drama, Script, Theatre and Performance, Essays on Performance Theory 1970-1976. (New York : Drama Book Specialists, 1977), p. 44. According to this definition '...the drama is what the writer writes, the script is the interior map of a particular production; the theatre is the specific set of gestures performed by the performers in any given performance; the performance is the whole event, including audience and performers (technicians too, anyone who is there). It is hard to define "performance" because the boundaries separating it on the one hand from the theatre and on the other from everyday life are arbitrary.'

2. The term 'mimesis' has been debated extensively by contemporary theatre practitioners. It is used here, to denote, both the 'imitative' as well as 'constructed' acts. For further elaboration see Bernard Beckermann, Drama', Dynamics of Drama : Theory and Method of Analysis, (New York : Alfred A. Knopf, 1970) pp. 19-20.

'In referring to drama, I have used the phrase "imagined act" and avoided the terms "imitation" or "mimesis". Aristotle defined tragedy as an "imitation" of a certain type of serious action. His use of the notion of "imitation" arose from a philosophical view of literature's relation to reality. Included in his use of the word is imitation of imagined events. Unfortunately, the concept of imitation is so closely linked to model and reflection that it seems best to avoid the word. The imagined act includes both imitative and constructed acts, because even in its most documentary state drama subjects historical experience to reconstruction through the operation of the imagination. Drama occurs when one or more human beings isolated in time and space present themselves in imagined acts to another or others.'

3. Victor Turner, 'Frame, Flow And Reflection', Performance In Post-modern Culture, ed. Michel Benamou, and Charles Caramello (Madison, Wisconsin : Coda Press, Inc, 1977), p. 35; the phrase 'public reflexivity' is discussed on p. 33.

4. Ibid, p. 33.

5. Ibid, p. 50.

6. Victor Turner, Dramas, Fields and Metaphors : Symbolic Action in Human Society (Ithaca and London : Cornell University Press, 1974), pp. 14-15. Turner's observations are central to the evolutionary potential of liminal acts. In his words, 'when one surveys large spans of social processes, one sees an almost endless variety of limited and provisional outcomes. Some seem to fall on the programmatic side of the scale, others eschew precise structural articulation. But the besetting quality of human society, seen processually, is the capacity of individuals to stand at times aside from the models, patterns, and paradigms of behaviour and thinking, which as children they are conditioned into accepting, and, in rare cases, to innovate new patterns themselves or to assent to innovation. There is nothing mysterious about these capacities if we are to accept the testimony of evolutionary biology. Evolving species are adaptive and labile : they escape the constraints of that form of genetic programming which dooms a species to extinction under conditions of radical environmental change. In the evolution of man's symbolic "cultural" action, we must seek those processes which correspond to open-endedness in biological evolution. I think we have found them in those liminal or "liminoid" (postindustrial-revolution), forms of symbolic action, those genres of free-time activity, in which all previous standards and models are subjected to criticism, and fresh new ways of describing and interpreting socio-cultural experience are formulated. The first of these forms are expressed in philosophy and science, the second in art and religion.'

7. Victor Turner; 'Liminality and Communitas', The Ritual Process : Structure And Anti-structure (Ithaca, New York : Cornell University Press, 1977) pp. 94-97. Turner offers a fresh, although atavistic insight into the dialectics of drama. According to him, liminality and communitas are two stages of symbolic social action. Liminality is a

state of human consciousness that pushes the playwright (and other theatre performers) to examine the nature of reality with great freedom from given social structure. Communitas or the sense of community is re-established after undergoing the liminal experience of 'separation, margin (or limen, signifying 'threshold' in Latin), and aggregation.'

8. Jane Harrison, 'From Ritual To Art', Sociology of Literature And Drama : Selected Readings, eds, Elizabeth and Tom Burns (Harmondsworth : Penguin, 1973),pp.323-325.

9. The educational role of theatre denotes the potency of performance/drama/theatre in sharpening man's survival abilities. For detailed discussion of these issues see Richard Schechner's point-of-view in 'Drama, Script, Theatre and Performance', Performance Theory, pp. 50-54, Notice Schechner's emphasis on 'survival value of performance'.

10. Friedrich Nietzsche, The Birth of Tragedy And The Case of Wagner, tr. Walter Kaufman (New York : Random House, 1967), pp. 33-38.

11. Alfred North Whitehead, 'The Origins of Modern Science', Science And The Modern World, (New York : The New American Library, 1948), pp. 8-11. Professor Whitehead points out the subtlety of the imprint of drama on science and science on drama in his remarks on ancient Greece.

12. J.D. Bernal, 'Aspects of Science,' Science in History (Harmondsworth : Penguin Books, 1969), I, p.31.

13. Jacob Bronowski, 'Lower Than The Angels,' The Ascent of Man (Boston/Toronto : Little, Brown and Company, 1973), pp. 15-19. Also see Professor Bronowski's comment regarding the thrust of this influential book, and the televison serial based on it.

14. Harry Levin has used this concept in Overreacher : A Study of Christopher Marlowe (Massachusetts : Peter Smith, year not mentioned).

15. In this section, number of plays are referred to in passing. Publication details of these plays are included in subsequent chapters, where they are discussed in depth.

16. See Chapter 4.2 for detailed discussion.

17. For the distinction between traditional, intermediary and modern Indian theatre see Gunwardhana. From Ritual to Rationality : Notes on the Changing Asian Theatre, TDR, 15, No.3 (Spring 1971), pp. 48-62. For further elaboration, see chapter 5.3.

18. Turner, 'Frame, Flow and Reflection', P. 50.
'Stage dramas are genres that I would be inclined to call "liminoid", "liminal-like", rather than "liminal"; that is, they are historically connected with and often displace rituals which possess true liminal phases, and they also share important characteristics with liminal processes and states, such as "subjectivity", escape from the classifications of everyday life, symbolic reversals, destruction - at a deep level - of social distinctions, and the like; nevertheless, liminoid genres differ from liminal phases in ways which indicate major differences in the societies of which they respectively constitute major modes of reflexive stocktaking.

Liminoid genres - which would include the writing of novels and essays, the painting of portraits, landscapes and crowd scenes, art exhibitions, sculpture, architecture, and so on, as well as individually written plays - contrast with liminal phenomena in the following ways. Liminal phenomena tend to dominate in tribal and early agrarian societies; they are collective, concerned with calendrical, biological, and social structural cycles; they are integrated into the total social process; they reflect the collective experience of a community over time; and they may be said to be "functional" or "eufunctional", even when they seem to "invert" status hierarchies found in the nonliminal domain. Liminoid phenomena, on the other hand, flourish in societies of more complex structure, where in Henry Maine's terms, "contract has replaced status" as the major social bond. Where people voluntarily enter into relationships instead of being born into them. Perhaps they begin to appear in what Georges Gurwitch calls, "city-states on their way to becoming empires" (of the Graeco-Roman, Etruscan and Umbrian type) and in late feudal societies. But they become really prominent mainly in Western Europe in nascent, capitalistic, societies, with the beginnings of industrialization and mechanization, and the emergence of socio-economic classes.'

19. See the editorial comments of Richard Schechner, 'Intercultural Performance', TDR, 26, No.2 (Summer, 1982) p.3. The following quote sums up the thrust of interculturalism, 'But even at a more fundamental level, interculturalism operates in the post modern world. I mean : peoples are going to have to learn to be intercultural if our species, and many of our sister species, are to survive. Clearly nationalism, and its rivalries, armaments, boundaries - culminating in the nuclear catastrophe of mass extinction - is something we humans are going to have to learn to get rid of.'

20. 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). The title of the thesis is inspired by Marlowe's reference to Apollo's laurel bough.

21. Robert Graves, 'Apollo's Nature And Deeds'. The Greek Myths, (Baltimore, Maryland : Penguin Books, 1955)I, p.82.

22. Rossell H. Robbins, ed., Dr. Faustus, by Christopher Marlowe (New York : Barron's Educational Series, Inc, 1948), p. 52.

23. Bryan Holme, ed. Bulfinch's Mythology : The Greek And Roman Fables Illustrated (New York : The Viking Press, 1979), pp. 43-47.

24. See chapter 2.2 for detailed analysis, especially the discussion of Simone de Beauvoir. Also see Carolyn Merchant, The Death of Nature : Women, Ecology And The Scientific Revolution. (New York : Harper And Row, 1980) p.xv. 'Women and nature have an age-old association - an affiliation that has persisted throughout culture, language, and history. Their ancient interconnections have been dramatized by the simultaneity of two recent social movements - women's liberation, symbolized in its controversial infancy by Betty Freidan's Feminine Mystique (1963), and the ecology movement, which built up during the 1960s and finally captured national attention on Earth Day, 1970. Common to both is an egalitarian perspective. Women are struggling to free themselves from cultural and economic constraints that have kept them subordinate to men in American society. Environmentalists, warning us of the irreversible consequences of continuing environmental

exploitation, are developing an ecological ethic emphasizing the interconnectedness between people and nature. Juxtaposing the goals of the two movements can suggest new values and social structures, based not on the domination of women and nature as resources but on the full expression of both male and female talent and on the maintenance of environmental integrity.