THE UNIVERSITY OF
NORTHAMPTON

Thesis

Title: Accessible theatre: the application of human ethology and innate neurobiological systems to full-masked devised theatre practice

Creators: Cook, S.

Example citation: Cook, S. (2012) *Accessible theatre: the application of human ethology and innate neurobiological systems to full-masked devised theatre practice.* Doctoral thesis. Loughborough University.

Version: Accepted version

Official URL: https://dspace.lboro.ac.uk/2134/9879

Note: Doctoral thesis awarded by Loughborough University

http://nectar.northampton.ac.uk/5011/

Accessible Theatre:

The Application of Human Ethology and Innate Neurobiological Systems to Full-Masked Devised Theatre Practice.

By Sally Cook

Submitted in partial fulfilment of the requirements for the award of Doctoral Thesis from Loughborough University 01/06/12

<u>Abstract</u>

This thesis is concerned with the challenges of devising a full-masked theatre performance that is largely accessible to audiences of every age, social background and culture. The study is original and contributes to knowledge in two distinct ways; it is to this researcher's knowledge the only such research that examines the relationship between the devising processes of a full-masked performance, neurobiology, human ethology and the accessibility of audience reception (Bennett, 1994). Secondly, this is the first study to investigate how universal innate neurological processes can be used in the making and reception of stage performance to help ensure wide accessibility of information and meaning.

The thesis addresses the concept of accessibility by taking a phenomenological approach to devising and audience reception, with particular focus on the role of neurobiological systems and structures, in particular the mirror neuron system, the pleasure-reward system, and pattern recognition systems, in the communication and reception of performance meaning (McConachie, 2008).

The research is framed by the concept of a universal theatrical language proposed by practitioners Peter Brook and Tadeshi Suzuki, which has the potential to connect people 'at the deepest levels of their humanity' (Pavis, 1996: 6). Practical approaches adopted in the research are informed and supported by anthropological and human ethological claims of universality (Ekman, 1975; Brown, 1991; Eibl-Eibesfeldt; 2007 [1989]; Schmitt *et al.* 1997).

This thesis theorizes that human beings possess innate neurobiological systems that interact with culturally specific concepts, conditions and knowledge in such a way that when deployed appropriately, these innate neurobiological systems can be a platform for human cognition and for the designing of performances accessible to an audience of different ages, social backgrounds and cultures. It also proposes that innate neurobiological systems create a universal framework that makes it possible for the said broad-based audience to read and

receive a performance using similar codes of cognition and aesthetic reference irrespective of age, social and cultural backgrounds.

The research process led to the creation of an original full-masked theatrical performance and eighteen performances of this piece were given to different audiences in a range of venues and locations in Northamptonshire. Qualitative and quantitative data analysis of how the various audiences received the performance suggest that the devising methods employed did contribute to making the performance accessible to an audience with a 'broader constituency than theaters normally envision' (Pitts-Walker, 1994: 9-10).

This research enables practitioners for whom a wide audience and accessibility are an explicit focus to adopt devising approaches that will help to achieve the desired wide-ranging reception and accessibility in mixed audiences irrespective of race, age, gender and culture.

<u>Acknowledgements</u>

Contents

Appendices

Chapter One - Introduction

> We have come to admit within the field of performance not only behaviour(s) in everyday life but what used to be the disciplines by means of which we approached an understanding of behaviour, what the French call the Human Sciences: […] with conceptual crossovers into the biological domain of genetics, ethology, and brain science. (Blau, 1997: 265)

Purpose of Research

The aim of the research is to examine the relationship between innate neurobiological systems and the devising process of a full-masked theatrical performance. It hypothesizes that by allowing knowledge of innate neural systems and human ethology to strongly influence the dramaturgical decisions that inform the theatre-making process, the resulting devised performance should be generally accessible to a wide range of audience members. It responds to Bruce McConachie and F. Elizabeth Hart's contention that:

> Cognitive scientists working in neuroscience, psychology, linguistics, philosophy, and other fields have made rapid strides in the past 20 years in understanding perception, empathy, spatiality, emotions, meaning-making, and many other cognitive areas that are crucial to producing, enacting, and responding to performance on stage. Surprisingly, however, scholars in theatre and performance studies are just beginning to apply these findings to their field. (2006: i)

This thesis is the first research, to my knowledge, to consider neurobiology and human ethology in relation to the accessibility of full-mask devised theatre practice. This study's focus on reception, accessibility and how characters are deployed in masked performance interrogates Jennifer Foreman's proposition that 'masks in the theatre can communicate ideas, represent characters and symbolise the gods and nature, [yet] it can never be said that everyone in an audience is receiving the same message, no matter how specific in meaning are the shapes, colours and features' (1999: 19). The research investigates Foreman's opinion and the extent to which masked performances can indeed be widely accessible to audiences of various ages, backgrounds and ethnicities.

The Research Question

The overall research question focuses on the extent to which innate neurobiological systems can influence the creation of a full-masked theatre production so that it can be enjoyed and understood by anyone who watches it regardless of their age, social background or ethnicity. Sub-questions that link neurobiology and human ethology with relevant elements of performance are as follows:

> How can innate neurobiological states and conditions affect the design of the masks to help ensure that the facial features and expressions they portray are accessible to a range of ethnicities as well as being readable by children and adults?

> How can knowledge of innate neurobiological systems influence the narrative structure of the performance so that it is suitable for children to understand whilst still being engaging to adults from a range of ethnic and social backgrounds?

> What can be learnt from innate biological systems that would inform the design of the humorous content of the performance and enable it to operate on a level that is widely accessible?

> How can human ethology help inform the character types that should people the stage, the behaviour they should undertake and the non-verbal communication tools that should be employed by the actors to ensure maximum accessibility of the character portrayal?

In seeking to foreground innate aspects of human biology, this thesis does not intend to reduce the significance of culture and its important role in the formation of social concepts or mores, or to suggest that cultural influence can ever be removed from a performance. For as Eli Rozik notes, the origin of theatrical forms 'could have been a happy accident within a particular culture, even stemming from a particular use in a given ritual; but theatre's roots cannot be traced: they lie in the very structure of the human psyche' (2002: xiv). Clifford

Geertz also suggests a fundamental relationship between human nature and culture when he proposes that cultural activities such as religion and arts based practices are 'attempts to provide orientation for an organism which cannot live in a world it is unable to understand' (1973: 140-141). Yet, Ruth Benedict argues that although we may 'isolate the universal core' of any cultural practice 'it is still possible that the trait took its rise in a pronounced local form and not in some original least common denominator of all observed traits' (2005: 19). The complex relationship between culture and innate influences is discussed further in Chapter Three. This study proposes that this relationship has a bearing on the relationship between accessibility and audience reception. The hypothesis proposes that with a considered emphasis on innate human responses and behaviours in the devising process of a full-masked performance, it is possible to identify and deploy specific human and social features that would positively affect the accessibility of the resulting performance.

Definitions

The term 'accessible theatre' is fully interrogated in Chapter Two but a working definition is useful at this point. I do not mean accessibility in the disabilities sense; instead this thesis (and the performance at the centre of this research project) is concerned with levels of access in terms of engagement with, and understanding and enjoyment of, performance materials encountered by audience members in a theatre building, or indeed any location where a performance might be given. The concept of accessibility is regarded in this thesis as a continuum rather than an all-or-nothing affair. Different levels of accessibility can be achieved influenced by a range of factors and involving many possibilities and qualities, the most influential of which this thesis aims to explore.

The term accessible is used with similar intention in audience reception to those performances which fall under the umbrella term popular theatre whose 'creators aimed for a style, an audience and a repertory accessible to the greatest possible number of people' (Pavis, 1998: 279), and whose practices are 'principally concerned with the widest reach of audience available at a given moment and place' (Mayer, 1997: 263). However, there is a significant difference between the notion of accessibility as used in this thesis and the notion of accessibility within popular theatre. The content of popular theatre pieces is

described by Joel Schechter as 'associated with the democratic, proletarian, and politically progressive theatre' (2003: 3) and by Tim Prentki and Jan Selman as 'an expression of specific communities, stories, issues, knowledge and needs' (2003: 8). These descriptions suggest that popular theatre pieces are designed to be relevant and accessible to very specific communities, and as such do not address the breadth of audience reception and social backgrounds sought by this project. The definition of accessibility as used in this thesis is proposed by and demonstrated in the work of Peter Brook which has been described by Colin Counsell as being 'able to reach beneath the Babel of cultures to speak to all people equally, regardless of their diverse origins […]' (1996: 146), and by John Heilpern as 'a truly popular art: open to everyone' (1999: 22). Brook's work is underpinned by a belief that performance can 'articulate a universal art that transcends narrow nationalism in its attempt to achieve human essence' (Lamont, 1987: 33), and it is this human essence this project seeks to uncover through examining shared cognition systems that are common to humankind and to all human societies and cultures. Brook is discussed further in Chapter Two and Three. In summary, the concept of accessibility used throughout this thesis supports Bim Mason's understanding of universal theatre as 'something for everyone' (1996: 2). As such the practical element of this research study (a devised full-masked performance) aimed to achieve the understanding and enjoyment of all members of the audience, whether children or adults, from a wide range of social and ethnic backgrounds.

Human ethology is a term used throughout the thesis that is defined by Irenäus Eibl-Eibesfeldt as 'the biology of human behaviour' (2007: 6). This definition is expanded by Paul Bateson and Robert Hinde who differentiate psychology and human ethology in that psychology is concerned with 'the differences between human beings' and human ethology, is concerned with 'the characteristics they have in common' (1976: 499). Commonality is also central for George Michel and Celia Moore who propose that human ethology falls into two main categories of research activity which they describe as the 'identification of human behaviours that are similar in their patterning and social consequences across all cultures, [and] sophisticated descriptions of behaviour in typical human settings' (1999: 390). For example, Paul Ekman (1982) has noted there are universal facial expressions, Konrad Lorenz (1966) has noted that aggression is common to all humans, and Eibl-

Eibesfeldt (2007) has noted universals in behaviour such as nurturing children. Anthropologist Donald Brown's book *Human Universals* (1991) pulls together information known at that time regarding the universality of the human condition. Brown states that all cultures have music and dancing, their youngsters play and play fight, they distinguish between right and wrong, they have leaders, they have a social structure, and so on (130-141). Theatre practitioner Richard Schechner notes a link between the biological and the universal:

> I confess that I believe both in universals and singularities. How can that be? In a nutshell, biology provides humans with templates, building blocks, integers (you pick your term, your metaphor), while culture and individuality determine how these are used, subverted, applied, and "made into" who each person and each social unit is. For me, there are realities at all levels of the human endeavour; biological--evolutionary, cultural--social, individual. These overlap and interplay. To assert a connection between the ethological, the anthropological, and the aesthetic is not to deny local and individual variation and uniqueness. (1988: xii)

Schechner's notion of singularity celebrates the individuality of human creativity, but he also acknowledges the commonality and common origins of biological behaviours and their interpretations as cultural systems. These theoretical backgrounds suggest the need and place for this research to investigate how human ethology and innate neurological systems inform the making of a widely accessible piece of theatre as Brook and his collaborators sought in especially *Orghast* (1971), *The Shoe Show* (1972) and *The Conference Of The Birds* (1972-1973).

Research Background

Between 1981 and 1994 I worked in a small-scale theatre company called Trestle that devised original performances and toured them nationwide. In its early period the company used character masks that covered the whole head of the actor which meant the work that was created did not use speech, and so meaning was communicated to the audience through a range of non-verbal communication tools such as gesture and posture. Audience surveys of our toured productions consistently revealed that our audience demographic was largely white and of the age range 16 to 65. As a member of the artistic core of the company I was involved in discussions on how we might broaden our audience in order to extend our touring opportunities. The company considered making its work more accessible to a

younger audience but realized this would mean making changes to content and themes which we were not willing to do. We were more interested in how we could make our work more accessible to audiences from a range of cultural backgrounds in order to extend our international touring capabilities but this was never resolved satisfactorily. At the time, the style of theatre we produced was based on satirising those we observed around us, and we did not think it would be politically correct for an all white company to satirise other ethnicities in their work. Thus this challenge or concern was never taken into the rehearsal room. When I left Trestle I did not work with masks again for over a decade, but I was always intrigued by the question of how to increase the accessibility of character masked performance to different audiences.

Research Design

Peter Eversmann notes how audiences tend to respond physically to performances and states that these reactions range from 'being alert and sitting on the edge of one's chair […] to such behaviour as: feeling it in the pit of one's stomach, shaking, being breathless, being immobilised, shock experiences, cold sweat, laughing and crying' (2004: 156). Bernard Beckerman also notes the muscular tension experienced by audience members and proposes that audience response 'should be considered kinaesthetic' (1970: 150). It is precisely the lived, bodily experience of the audience that this project is interested in exploring in relation to innate neurobiological responses. This underpins the need for a phenomenological approach to the research which would emphasise 'the role of the senses in reception' (Allain and Harvey, 2006: 186). Phenomenological research is defined by David Gray as the 'search for how participants experience and give meaning to an event, concept or phenomenon' (2009: 579) and by Janet Salmons as research methods that 'provide a way to investigate human experience through the perception of research participants' (2010: 47). In their book *Interviews in Qualitative Research* Nigel King and Christine Horrocks make some suggestions for how researchers can 'become more sensitive to the embodied nature of the interview, and use this to gain greater depth in phenomenological research' (2010: 187). One of their suggestions for phenomenological research is that where researchers feel embodiment is likely to be an especially strong focus of their research they should 'consider the possibility of video recording interviews' (2010: 187). The process and nature of embodiment are clearly important to this study as it is

14

possible to record embodied behaviour in the audience during the performance itself, for example, smiles, bodily movement, and phatic cries (a verbal response with no specific meaning attached) which could be analysed at a later date. This view is supported by Uwe Flick who writes that a 'video recording is seen as most important for qualitative research' (2011: 129) because responses are 'unfiltered' and 'accessible repeatedly' and recording provides an 'unobstructed view of reality' (2011: 128-129). Likewise, J. Amos Hatch, writing about research in educational settings, agrees that video recording 'can provide a powerful means for capturing data that can improve the quality of many studies' (2002: 126) but recommends that 'video recording be used along with, not instead of, other data collection methods' (2002: 126). This explains the decision for the employment of video recording as one of the methods for addressing the question of whether the audience had enjoyed themselves, but these results would need support from other methods (considered below).

Patrice Pavis, who has influenced debate and practice on audience reception, might be critical of a research project trying to find a model for theatrical production that has the widest possible community of readers for he states that he has a 'healthy state of suspicion about any universal model' (1982: 9), but when he wrote this he was largely criticising a structuralist approach to the semiology of audience reception that provided 'charts and graphs' that could be considered 'too generalised' (Fortier, 2002: 25). Followers of Roland Barthes also might be critical of a piece of theatre that aimed to produce a specific, measurable response in the audience as it could be considered too 'readerly' in that it is closed to different interpretations. Barthes preferred the 'writerly' text (Bennett, 1997: 59), which 'opens up the possibility of a response that is beyond a narrowly semiotic set of codes and interpretations' (Murray and Keefe, 2007: 32). Yet in *The Pleasure of the Text* Barthes writes:

> Imagine an aesthetic (if the word has not become too deprecated) based entirely (completely, radically, in every sense of the word) on *the pleasure of the consumer*, whoever he may be, to whatever class, whatever group he may belong, without respect to cultures or languages […]. (1975: 59)

Here Barthes implies that creating a pleasurable experience for a wide audience might be possible in theory but goes on to propose that the results might be 'harrowing' (1975: 59), implying that in practice such work might not succeed in its aim. One focus of this research

project directly concerns the creation of pleasure and enjoyment in the audience as a positive experience. Simon Shepherd suggests that a physical approach might help achieve this when he writes in his book *Theatre, Body and Pleasure* that theatre 'generates and manipulates pleasure in relation to bodies' (2006: 1). Correspondingly, Anthony Jackson and Shulamith Lev-Aladgem locate pleasure in physicality when they suggest pleasure can be achieved through a performance 'that is grounded in elements such as "playing", "entertainment", "pretence", "physical experience" and "potential subversivity"' (2004: 207). But even if a physical approach to the devising process were adopted it would not necessarily guarantee the homongenous pleasurable experience of spectators from a wide variety of backgrounds, for it would be impossible for any artistic director to know each audience member individually and to predict what might induce pleasure in him or her. However, it might be possible to turn to neurology to discover how the innate mechanisms of the pleasure reward system might be manipulated to induce pleasure in all members of the human race in general and thus as members of a theatre audience in particular. Yet using the concept of 'pleasure' to analyse audience reception raises problems. Trying to stimulate a similar pleasurable response in every audience member would be difficult to achieve, for as Murray and Keefe write, '[c]ultural and other factors will clearly have a bearing on spectators' reception of work. Class, gender, ethnicity, age, education, knowledge of the piece and its references, for example, will be influential in clustering perceptions in particular ways, but this can never be reducible to one factor alone' (2007: 31). Similarly, Christopher Balme feels that all audience members are different and therefore will bring this difference not only to their enjoyment of the piece but also to their understanding of it which is another important line of enquiry in this study. According to Balme:

> The most crucial insight that has emerged from this tradition of research is that there is no such thing as "the spectator". The plethora of cognitive and emotional reactions, mental acts and interpretive intervention that come into play when watching a performance are all influenced by any number of differentiating factors. Apart from individual dispositions such as age, level of education and even attention spans, collective experiences determined by gender, class and ethnicity but also locale are also brought to bear on the way spectators make sense of performances. (2008: 42)

Any piece of theatre that could navigate its way through the many differences each audience member has in order to elicit a common understanding and enjoyment might well

be able to claim it is widely accessible. But the weight of evidence seems to be against such a condition or achievement. Indeed, Erving Goffman also highlights audience difference through his concept of 'frames', which he defines as 'principles of organisation which govern [social] events and our subjective involvement with them' (1974: 10). Because these frames are socially acquired they are 'culturally and class specific to a high degree' and thus will affect 'the way that spectators behave to each other and to the performance and performers on stage' (Balme, 2008: 37). This is supported by Eversmann who describes the personal, indirect context that a spectator brings to a performance as a 'wealth of expectations, previous knowledge and an individual value system' (2004: 167). All these elements have the potential to affect the common understanding and accessibility of the piece and therefore reduce the degree of shared experience. Does this mean it is impossible to create a piece of masked theatre that can be understood and enjoyed by a wide audience?

Writers with more awareness of advances in neuro-scientific knowledge express a different opinion. Schechner suggests that not all the means of processing our experiences are completely culturally acquired because all humans have some receptive mechanisms in common. He continues:

> All human behaviour [...] relate both the triune brain, its hemispheric frontal lobes, and current human history, as acted out in various cultural performances to a continuously recapitulated or laminated palimpsest of individual human experiences. Some of these experiences are crystallized culturally in art, religion, science, and so on, and some are encoded neurologically and physiologically in the body-brain of each individual. (1986: 365)

George Lakoff and Mark Johnson not only agree with Schechner but argue that innate schemas or conceptual systems are just as influential as culturally acquired knowledge in audience reception strategies. They propose that the mind 'is not merely embodied but embodied in such a way that our conceptual systems draw largely upon the commonalities of our bodies' as well as the environment to such an extent that 'much of a person's conceptual system is either universal or widespread across languages and cultures' (1999: 6). This is a more cogent and valid argument in relation to the possibility of creating a widely accessible piece of theatre. Further support for this position comes from McConachie and Hart who also acknowledge the role of innate structures in conjunction with cultural influences with respect to the commonality of experience:

> The biological and thus transhistorical condition of having a human body
> guarantees that people's minds will produce a certain number of unchanging,
> cross-cultural, perhaps even universal structures. However, the varying
> historical contingencies that situate all human bodies within specific contexts
> ensure that the structures of people's minds also reflect the culturally specific
> conditions of their given moments and places. (2006: 8)

It is clear that cultural influence will always be a factor in audience reception but through foregrounding the innate it might be possible to reduce specific cultural influences and to increase accessibility of meaning and signs for most members of an audience irrespective of age, class, and social background. McConachie and Hart point out that one innate structure common to all humans is the emotional system. Advances in cognitive studies have produced a Theory of Mind (ToM) whose advocates 'now understand simulation, the basic psychological mechanism that deploys empathy, as the major means of interpreting and predicting human behaviour and as more important than rational approaches to understanding others' (2006: 5). Martin Hoffman strongly argues that empathy is a universal human condition supported by 'the evolution argument and the brain and behaviour research' that evidences that 'empathetic distress is a universal prosocial motive' (2001: 21). This is supported further by Bryan Turner who observes that '[t]o accept the corporeality of human life it is not necessary to deny the fact that the nature of the human body is also an effect of cultural, historical activity' (2008: 48). These opinions suggest that there might be enough similarities within a socially and ethnically diverse audience to achieve a reasonable amount of material that has the potential to be accessible to all based on the fact that everyone shares a common biology. This study does not doubt that factors such as age, gender, class and ethnicity have an effect on audience reception. It merely explores the extent to which these effects can be minimised so that, despite their many differences as individuals, an unusually diverse audience can understand and enjoy the same piece of theatre with minor or no differences in perception and states of enjoyment. This raises further questions as to how to find out if the audience had understood the performance or not. It seems clear that the only way to address this is to ask the audience themselves.

Research has revealed that directly asking for the audience's opinion about a performance is unusual as Henri Schoenmakers and John Tulloch note:

> Those unknown people [the audience] who voluntarily have chosen to participate in theatrical events have only been studied marginally within theatre studies. Indeed, it has often been the theatre scholars and theatre makers who acted as spokesperson for those unknown people. These have suggested what audiences should have seen in the theatre, and which performances audiences should interpret as good, bad, joyful or meaningful. (2004: 15)

They are also critical of theatre scholars' lack of direct contact with what they call the 'actual audience or actual spectators' (2004: 16). They state that unlike television studies, 'theatre studies has tended to deal with audiences "from behind a desk", if any attention was paid to them at all' (2004: 16). They suggest that analysis of the audience was for long seen as a job for sociologists or communication scholars and that theatre scholars used analytical tools such as the 'ideal spectator' or 'implicit spectator' (Pavis, 1988), neither of which reflected actual audiences (2004: 16). Helen Freshwater goes even further in her book *Theatre and Audience* (2009) when she states that 'engagement with "ordinary" members of the audience is notably absent from theatre studies' (2009: 29) and that 'almost no one in theatre studies seems to be interested in exploring what actual audience members make of a performance' (2009: 29). She champions practice in the field of cultural studies that routinely engages in observation and questioning of its audience, and is critical of scholars who she suggests are mainly interested in 'how audiences interpret what they have seen' (2009: 30).

Balme suggests three reasons for the apparent lack of focus and studies on theatre audiences. He regards the most important to be that 'theatre studies by tradition has defined itself, like literature or art history, as a discipline investigating an aesthetic object: initially the drama, then the theatrical performance' (2008: 34). His second reason echoes Susan Bennett who argues in her book *Theatre Audiences: A Theory of Production and Reception* that with an emerging semiotic approach to theatre studies in the 1970s 'in more orthodox dramatic criticism, the spectator was neglected' (1997: 68). The third is the methodological difficulties that audience research poses. Balme states that to 'study the spectator individually or collectively implies a shift from interpreting an aesthetic object to studying the cognitive and emotional responses of actual human beings. This is the field of empirical psychology and sociology, and most theatre scholars do not possess this kind of scholarly background and training' (2008: 34-35). Freshwater laments that while 'academic theatre

studies continues to engage with hypothetical models of spectatorship, statistical analysis of historical audiences, or the writer's personal experience, theatre marketing departments are busy surveying the opinions and responses of real audiences through focus groups, interviews, and surveys […]' (2009: 29-30).

Freshwater suggests that this difference of approach between industry and academic studies is because the industry is more concerned with ensuring profitability and therefore the need to understand why a production appeals to its audience (2009: 29-30). Trestle Theatre Company used questionnaires continually to find out which aspects of their productions were most popular with the audience. For example, in one survey it was discovered that audiences particularly enjoyed the original narrative lines, and in response, these were developed over several productions. Tick boxes were used by the company as a quick and effective method of getting a good sample size from each audience. The same sort of questionnaire could be adopted for this project. A list of tick box questions (discussed in detail in Chapter Eight) that address the concepts of enjoyment and understanding could be distributed to the audience after the performance to capture the responses of as many audience members as possible. This would generate quantitative information with which to analyse audience response. But there are concerns that need to be considered with this type of quantitative data. According to Philip Taylor, 'within the academic community there are some who question the utility of quantitative research in theatre' (1996: 117), (see also Balme, 2008). However, John Somers writing about research in theatre in education states 'I do not dismiss the projects at the quantitative end of the spectrum--they can be of enormous value, so long as they are complemented by the kind of 'responsive' research that, in my view, offers more probing insights into audience experience, if within a smaller frame' (1996: 167). Isadore Newman and Carolyn Benz (2006) agree and argue that using both qualitative and quantitative methods may enhance the quality of the research. This suggests that the quantitative data would not be appropriate if used in isolation but as it would be complemented by the phenomenological research that observes the behavioural responses of the audience members, arguably some of the inherent problems in quantitative data may be mitigated to a reasonable extent.

The foregoing discussion suggests that there may be problems with the unfolding research design because the methodology of performing a piece of theatre to a wide range of different audiences, recording the audience response on camera and using a post-show questionnaire is not a true experimental research method as defined by Carl McDaniel and Roger Gates (1998). For them a true experiment is positioned as research 'using an experimental group and a control group, and assignment of test units to both groups is randomized' (1998: 208). Similarly, Sherri Jackson defines a true experiment as one where 'the researcher controls as much as possible to determine whether a cause-and-effect relationship exists between the variables studied' (2009: 18). However, not all research fits within those parameters neatly, for as Paul Heppner *et al.* point out '[i]n some field settings it would be difficult or even inappropriate to randomly assign participants to an experimental or control group' (2008: 178). Furthermore, as K.D. Broota argues:

> In behavioural sciences, especially in education and social research, it is not always possible to exercise full control over the experimental situation. For example, the experimenter may not have the liberty of assigning subjects randomly to the treatment groups or the experimenter may not be in a position to apply the independent variable whenever or to whomever he wishes. (1989: 8)

Robert Burns and Richard Burns point out that when 'a design does not meet randomization and control requirements necessary for controlling the influence of extraneous variables, a quasi-experiment is the second best choice […]' (2008: 88). A quasi-experiment is described by Jackson as one which 'has the intent and "flavor" of an experiment without being a true experiment' (2009: 318). Gordon Patzer goes into a more detailed definition:

> A quasi-experiment is a research project that approximates an experiment but lacks the control that permits comparison of effects possible with an experiment. Quasi experiments are not necessarily bad, as long as researchers and users of the research keep aware of the major limitation. This limitation is that conclusions about cause and effect relationships based on results from quasi-experiments cannot be made with the same level of certainty as when procedures and controls of an experiment are employed. (1996: 100)

The quasi-experimental design is a suitable method for this study where there would be no control over the composition of the groups being tested (the audiences) because they would be drawn from pre-existing community groups in the Northamptonshire area, and therefore there could not be a control group. It is also suitable because the 'quasi-experimental

method allows us to compare naturally occurring groups of individuals' (Jackson, 2009: 17), it is 'appropriate for field settings' (Heppner *et al.* 2008: 45), and researchers 'can still *observe* what happens, when and to whom' (Burns and Burns, 2008: 88). So what are the problems with using this methodology? It is usually considered a major concern with this design that the groups 'may differ in important ways that may influence the outcomes' (Crosby *et al.*, 2006: 98). Irving B. Weiner *et al.* agree that the 'fundamental shortcoming of this design is the validity threat known as selection. […] That is, the groups may have critical differences that cause subsequent differences on the outcome variable' (2003: 331). Similarly, Charles Reichardt believes that 'initial differences between the groups of participants […] are potentially a serious threat to the internal validity of the design' (2009: 55). However in this research project the quasi-experimental design and other methods discussed are appropriate for it is desirable for the groups to be completely different from one another because the focus of the research question is on the extent to which the audience responds in a similar manner *despite* the many differences inherent in the make-up of the groups. This does not mean that it would be appropriate to draw causal conclusions, because even through testing what appear to be inherently different groups the results concerning accessibility could still be affected by random uncontrolled biases that the researcher is not aware of. As Jackson points out, when using quasi-experimental methods 'results are always open to alternative explanations, or confounds--uncontrolled extraneous variables or flaws in an experiment' (2009: 325). Researchers do, though, persist in using such methods, not least because, as Broota suggests, despite the limitations there can be advantages such as making it possible to seek answers to 'those situations which cannot be handled by employing experimental design' (1989: 10). Paul Heppner *et al.* indeed give four specific reasons that might lead a researcher to choose a quasi-experimental design, namely, '(1) cost, (2) selection issues, (3) ethical considerations, and (4) unavailability of appropriate control groups' (2008: 178). Helletje Uys suggests that another advantage is that 'a large group of people can be involved' (1991: 45). Such advantages mean that quasi-experimental methods continue to be widely used, results though 'must be interpreted with caution' (Jackson, 2009: 325). Thus any research findings discovered in this project must be tentative in nature due to the design of the research.

Summary of Research Methodology

The methodology would necessarily entail a practice-based approach with an original devised performance at the core of the project. Due to the focus of research in theoretical areas such as human ethology and neurobiology and their conjunction in performance this study necessarily crosses boundaries between the humanities and human and social sciences. For this reason the research methodology also reflects an inter-disciplinary approach combining evidence drawn from personal experience as a theatre practitioner, data drawn from scientific studies of the brain and the results of statistical analysis based upon best practice within the social sciences. Detailed methodology is discussed in Chapter Eight which analyses the quantitative and qualitative findings. This decision was taken in order to help the reader make direct connections between dramaturgical decisions and their impact on performance materials and stage events and incidents. However, a summary of the methodology undertaken is useful at this point:

Research was conducted into neurobiology and human ethology and the findings informed the major dramaturgical decisions made by the research leader to determine the narrative structure, the character types, and the nature of the humour in the toured performance (see Chapters Four to Seven).

Knowledge of innate biological systems (mirror neuron, visual, pleasure reward) informed the design of the masks undertaken by the research leader (See appendices A, D, G, J, M, and O).

A two week period of creating performance material was undertaken by a company of actors working under the artistic direction of the research leader. The research outcome was a 25 minute performance called *The Magic Fruit* (see DVD Appendix W).

A one week touring period was undertaken during which the research outcome was performed to as wide an audience range as possible in eighteen different venues/locations. The audience was diverse and included children, senior citizens, Afro-Caribbean societies, Asian groups, family groups, university

students, white-collar council workers, youth clubs, and members of the general public watching performances in the street.

Qualitative data was collected by recording and analysing the audience reception during the performance to monitor any physiological responses that occurred as the result of innate biological mechanisms being stimulated, such as smiling, laughing, and phatic cries.

Quantitative data was collected through a post-show questionnaire conducted to determine the extent to which the audience found the piece accessible.

The results were analysed and the findings used to determine whether the hypothesis is true and thus acceptable or is unsustainable and thus outside the research frame.

If the hypothesis is correct then the application of human ethological and neurological phenomena to the devising process employed would have a marked effect on accessibility and the piece would be engaging to all audience groups. If the hypothesis is incorrect then the application would have little or no effect on accessibility and the show would fail to engage some audiences.

The Significance of the Research

The research contributes to original knowledge in its examination of the relationship between the devising processes of a full-masked performance, neurobiology, human ethology and the accessibility of audience reception. It contributes to the interdisciplinary conversations that have been emerging between theatre scholars and cognitive scientists over the last twenty years. McConachie (2006) points out that it is not usual for theatre practitioners to turn to cognitive science but he suggests it is potentially fruitful because cognitive science can 'offer empirically tested insights that are directly relevant to many of the abiding concerns of theatre and performance studies' (2006: x). For example, in his book *Engaging Audiences* (2008) McConachie provides a detailed introduction to theatre spectatorship in relation to cognitive studies. He argues that just as there is no 'Grand

Theory of Mind' in cognitive science (2008: 7), there can be no 'grand theory of cognition for performance' (2008: 7) but he does use cognitive science as a way of understanding the many different levels of engagement involved in spectatorship. He illustrates his points with examples from play texts, but with his focus on the audience there is no consideration of how to devise material with cognitive science in mind. In *Performance and Cognition* (2006), McConachie and Hart introduce several concepts which address neurological principles in theatre studies. The most interesting for this study is by John Lutterbie (2006) who discusses the relationship between neuroscience and creativity in the rehearsal room. His focus is on the actor's creative processes and the relationship between the intellect and emotion, and interestingly he explores the role of cognition in creating performative images. However, he does this from an actor's perspective and argues there are parallels in the rehearsal processes utilised by actors trained in different cultural environments. He does not consider the relationship between how performance images are created and how they might be received and understood by the audience. So this leaves unaddressed the question of how cognitive science might help inform the act of making theatre that is widely accessible. The use of biological and cognitive sciences to help inform devising is a method that is supported in theory by Stephen Di Benedetto who writes:

> Still, because we share a basic biology, artists can be certain that they can use some strategies to ensure a biological reaction to their work. Damasio's finding states, "[t]his is why in spite of the infinite variations to be found across cultures among individuals and over the course of a life span we can predict with some success that certain stimuli will produce certain emotions," and therefore they can be made use of in the creation of artistic stimulation. (2010: 7)

Ethel Pitts-Walker also supports in theory a research project that tries to create a performance for an unusually diverse audience, but notes that there are problems with doing so. She argues that if 'the audience includes a broader constituency than theatres normally envision, and if the mission of theatre is truly spiritual as well as social and political, then the composition of society demands true diversity, and artists must find mechanisms by which to work through the painful disagreements in order to construct workable models' (1994: 9-10). One such painful disagreement might be the intercultural theatre debate.

The Intercultural Theatre Debate

Creating an accessible performance for an extremely diverse audience including those from different ethnic groups would inevitably be problematic. In this research project the artistic director would be a white, female, English practitioner who, in order not to appear to favour one ethnic group over another might have to 'borrow' from other cultures' performance material in order to present an original performance that could be widely accessible to a range of ethnic groups. Claudia Nascimento writes that '[a]lthough the performance of one's ethnic heritage is commonly welcomed and almost always elicits praise, critics often look with suspicion at the use of foreign or multiple cultures on the stage, whether by a single performer or an ensemble' (2009: 24). Furthermore, Rustom Bharucha states that 'the increasing accessibility and use of Indian theatre have occasionally resulted in a subtle exploitation of its traditions and conventions' (1990: 13). He criticises cross cultural borrowings as 'cultural tourism' (1990: 13) and describes the 'use' of other cultures as 'a naïve and unexamined ethnocentricity' (1990: 14). Would the performance created in this research project be received with suspicion or worse, might there be an accusation of exploitation? There could potentially be a danger that any 'naïve borrowings' from a range of cultures in order to be widely accessible might upset the audience, be meaningless and prevent the desired sense of enjoyment and shared pleasure. John Martin sees the positive dividend derived from tackling such problems:

> In short the ability of artists to be excited by other ways of presenting material is endless and their ability to allow their work to reflect this excitement is the essence of their creativity. It has existed throughout history as an inevitable product of the meetings of people, and has led to many of the cultural forms we now perceive as classical. (2004: 3)

In contrast, Richard Knowles is particularly critical of theatrical works that are intercultural in nature and therefore tour internationally but operate on the 'assumption that artistic inspiration transcends what are considered to be the accidental historical and cultural context, that it speaks across various kinds of difference to our common humanity' (2004: 9). Marvin Carlson is equally suspicious of trying to produce theatre for audiences from different cultural backgrounds when he writes that the 'problem with apparent praiseworthy transcultural enterprise remains what it has always been, that the initiating culture risks always imposing its own value systems upon others in the name of human brotherhood and

universal concerns' (1996: 91). On the other hand universal concerns are central to the
work of Brook:

> Brook accords much importance to the idea that his productions can be
> performed in many widely different cultures. He takes the view that every
> theatrical tradition is composed of elements which can be employed even in the
> context of other traditions. Brook is working towards a theatre of the future in
> which the individual elements, though they may derive from different traditions
> and cultures, can function, be understood and assigned meaning as theatrical
> elements in any chosen culture. This conscious and productive encounter with
> foreign cultures must lead--in Brook's theatre programmatically [...]--towards
> the development of a "universal language of theatre." (Fischer-Lichte, 1996:
> 33)

The problems he has encountered, along with theatre practitioners Tadashi Suzuki (1995)
and Ariane Mnouchkine (Miller, 2007) who are also interested in universality, are explored
and critiqued in Chapter Two which considers the nature of accessibility. However, suffice
to say, none of these practitioners appear to have taken a scientific approach to the creation
of their work. Di Benedetto supports this method when he point out that an 'understanding
of physiology and neurology of the human body as a receiver of outside stimuli can assist
the artist in using sensorial stimuli to compose a live theatrical event [...]' (2010: 1). By
considering innate behaviours that 'appear in the absence of learning' and are not affected
by the 'immediate environment' (Salter, 1995: 119) it might be possible to navigate some
of the problems posed by intercultural theatre ventures. This places the concept of the
innate central to this project and thus it is given further consideration in Chapter Three.

The Universal Problem

The very idea of trying to create a piece of theatre that is so widely accessible that some
might deem it universal is an anathema to those who subscribe to postmodern thinking:

> Scholars disagree among themselves as to what postmodernism involves, but
> they have reached a consensus on one point: this phenomenon marks the end of
> a single, universal worldview. The postmodern ethos resists unified, all
> encompassing, and universally valid explanations. It replaces these with a
> respect for difference and a celebration of the local and particular at the
> expenses of the Universal. (Grenz, 1996: 11-12)

Here, the rejection of the principles of universality is clearly stated, and supports the
philosophy of Jean-François Lyotard (1984), an early authority on postmodernism, who
called for the rejection of metanarratives such as patriarchy, the nation state and rational

logic. It is easy to see why postmodernists might reject universal theatre as a unifying concept which does not respect different cultural theatrical traditions. However, Brown argues that this incredulity towards universals arose because the term was used for a long time without being properly defined and that the implicit definition was 'a trait or complex present in all individuals (or all individuals of a particular sex and age range), all societies, all cultures, or all languages--provided that the trait or complex is not too obviously anatomical or physiological or too remote from the higher mental functions' (1991: 42). This implicit understanding of the term possibly led early anthropologists to dispute the existence of universals precisely because they spent their time studying and documenting cultural difference (Stevens, 2002: 26). This 'nature versus nurture' debate resonated across many disciplines in the early half of the twentieth century. The prevailing belief was that humans were the way they were solely because of the cultural influences on them (Gander, 2003: 2-3). However, Noam Chomsky, a linguist, found it difficult to separate the two concepts of nature and nurture and challenged this prevailing belief. He put forward a different concept of universal grammar (1957), arguing that the capacity to develop language is innate. His views were in opposition to those of anthropologists who argued that language must be a cultural phenomenon as each culture has its own language. Chomsky insisted that the fact every culture had a different language supported the theory that language has innate biological roots by arguing it was merely the outward manifestation of this innate capacity which created the cultural difference.

Yet research by some early anthropologists revealed the universality of human biology such as that undertaken by Clark Wissler (1923) who published a list of human universals, and Franz Boas who noted that universals 'may be interpreted as determined by human nature' (1940: 109). Similar findings were observed by anthropologist Robin Fox (1975) who noted a difference between substantive universals, those openly manifested, and universals at the level of process, which operate at a much deeper level. He proposed that '[t]he potential for culture lies in the biology of the species' (Fox, 1975: 20) and qualifies this by stating:

> I am not positing that initiation ceremonies or male rituals are instinctive, in any old sense of that term. I am positing that they are an outcome of the biology of the animal because he is programmed to behave in certain ways that will produce these phenomena, given a certain input of information. (1975: 253)

Fox's focus on programmed behaviour suggests that given the right conditions, other programmed behaviours might also exist. This is supported by Claude Lévi-Strauss (1969a) who addresses the concept of universality through behaviours associated with the incest taboo. He argues that despites its local diversity it points back to a common base, a global structure of kinship which 'most nearly approaches universality' (1969a: 124). However, the concept of universalism is complex and thus is considered in further detail in Chapters Two and Three which examine the term in relation to accessibility and the innate, but for now suffice it to say that the word universal is consistently used in this thesis in relation to relevant fields such as human ethology, anthropology and neurobiology. It is also to be found in quotations from many academics and practitioners who use the term unapologetically and without feeling any need to justify or qualify it despite the weight of academic opposition, and so I have allowed their opinions to support the argument for accessible theatre when required.

Outline of the Thesis

Chapter Two examines the concept of accessibility in relation to theatre practice. It initially focuses on three areas that are important for their effect on accessibility: attention, memory and empathy. The following section explores the nature of culture before considering problems with accessibility in intercultural contexts. To this end the chapter focuses on intercultural exchange and the political and aesthetic ramifications of such exchange in order to consider the effect ethnicity might have on accessibility in relation to audience reception. This section particularly focuses on Brook, Mnouchkine and Suzuki all of who aim to achieve wide accessibility of meaning and reception in their work.

Chapter Three considers the concept of the innate and details the basic ethological and neurological systems relevant to the study. It briefly looks at the role of the innate in theatre practice before reviewing the work of theatre practitioners who directly acknowledge a consideration of innate biological systems within their practice. It also considers practitioners who describe aspects of their work as 'universal' to discover whether innate biological systems could possibly be involved in explaining that particular label, and Brook, Mnouchkine and Suzuki are revisited in this context. The chapter focuses on the place of the innate in masked theatre practice and discusses the work of two companies that

29

have used contrasting styles of mask in their work, Mummenschanz and Trestle Theatre Company. It ends by critiquing the role of the innate in relation to claims of universalism and outlines a range of political and ethical problems associated with using the term innate.

Chapter Four considers how the application of innate neural mechanisms might inform decisions about broad structural, stylistic and thematic issues in devised performance. It considers the concept of pattern recognition, an innate mechanism used by humans to interact successfully with the environment for survival purposes, in relation to theatre as a constructed environment. The processes involved in visual pattern recognition are directly related first to the viewing of visual theatre and then the reception of narrative in general, as well as narratives in theatre and narrative in relation to myth. Auditory pattern recognition is explored in relation with music and dance to see how ritualistic elements might be used to help increase accessibility.

Chapter Five examines the biological systems that influence the nature and reception of comic elements in performance. It starts by discussing the relationship between laughter and humour then considers theories of comedy (relief, superiority, incongruity and play) in relation to the neural systems involved in audience reception. The chapter focuses on the innate nature of play and argues its link with the worldwide phenomenon of clowning. Key aspects of this performance form will be analysed, such as satire and slapstick, and related to neurobiological systems involved in processing visual information for the audience. Audience reception of clowning will be related to innate neurological mechanisms involved in laughter. This will determine which elements of play and clowning can be considered most widely and universally accessible and therefore most suitable for this study. Telic and paratelic states of mind will be considered with regard to the audience's reception of comic material suitable for young and old alike.

Chapter Six concerns the application of human ethology to the creation of character types and examines the expression of the body through non-verbal signs used to portray character on stage and the extent to which cultural background affects the audience reception of these signs. It will analyse the use of gesture and posture in non-verbal communication to see if either of the two is viewed as innate by ethologists. The main concern of the chapter will be

the expression of the body through behaviour and how this might help depict character on stage by examining Carl Jung's (1959) notion of the archetype and its link to what he terms the 'collective unconscious'. Jerzy Grotowski's (2002) pedagogical application of archetype will also be considered and related to ethological studies which have discovered innate human behaviours. Mythology will be examined for evidence to support the existence of widely similar character types and links to innate behaviour will be sought. There will be a brief discussion of external appearance that relate to elements of costuming that could be considered extensions of body language.

Chapter Seven describes how neural mechanisms can inform mask designs. It starts by considering the style of the masks using Vilayanur Ramachandran's (2003) universal laws of art. These laws, such as, the peak shift effect and the laws of isolation and symmetry are informed by neural processes involved in visual perception. The problem of how to create facial features that have reduced cultural specificity is informed by the work of ethologist Ekman (1975, 1982 and 2003) which focuses on what he calls universal facial expressions. The problem of how to decorate masks to further increase accessibility is informed by how the brain processes colour information. Finally, the design challenge in how to give the masks 'life' so that they have a good stage presence is addressed using principles of visual perception.

Chapter Eight details the research methodology and justifies the study's phenomenological approach in relation to innate mechanisms involved in audience reception. The chapter briefly addresses the general criteria underlying the design of the questionnaire before moving on to the main body of the chapter, which is divided into three sections. It outlines the working hypothesis for each section in relation to the research questions, presents the results and analyses the findings. The sections are: 1) Audience reception of character, incorporating all signifiers such as behaviour, mask, costume and music; 2) the sense of enjoyment experienced by the audience produced by the innate release of 'feel good' chemicals into the nervous system as a result of innate processes and; 3) the audience's ability to understand a masked performance through the stimulation of innate pattern recognition mechanisms affecting the form and structure of the piece. The chapter includes ethical considerations when they specifically arise.

The final chapter draws together the findings from the research to form an overall conclusion. It outlines areas of theatrical practice where by implication the findings of this research might be useful, such as for community theatre practice and the promotion of harmony in areas of social tension. It details the limitations of the research and suggests how future research might overcome these limitations to help further knowledge in this area.

Chapter Two - Accessibility

> Disenchanted with a weak and elitist *status quo*, he [Brook] believes it is
> possible to discover the miraculous: a universal theatre. If so, the élitist barriers
> would fall. Theatre would at last become a truly popular art: open to everyone.
> For a piece of theatre would make total sense, regardless of language or class,
> wherever in the world it was played. (Heilpern, 1999: 22)

The term accessible is widely used in relation to theatrical performance but there is little overall agreement as to exactly how accessibility might be achieved and measured by those whose explicit aim is to produce widely accessible work. For example, through Clive Barker's description of the work produced by *Theatre Workshop*, who performed classics to a wide range of audiences, we learn that in order to be accessible, theatre must not be elitist (2000: 116). Similarly, in Romain Rolland's opinion, for popular theatre 'to be accessible to the workers', it must not be 'pompous or exclusive' (Carlson, 1993: 317). Howard Barker, who is highly critical of accessible theatre, is disparaging when he describes the dictate of accessibility as 'Be understood or Perish [sic]' (1993: 85). In contrast, Tadashi Suzuki has a more positive view of accessibility and he actively strives to produce theatre that is universally comprehensible (Fischer-Lichte, 1997: 149). But exactly how do you avoid pomposity and elitism? What frameworks can be referred to in order to help create theatre that can be widely understood? This chapter explores the nature of accessibility and reviews some of the theatrical contexts where accessibility has been a relevant consideration for the theatre makers. It will argue that in order to achieve wide accessibility, the theatre must first capture the attention of the audience and then sustain that attention in an act of engagement. According to Bruce McConachie it is this act of engagement that allows 'performative communication' to occur (2008: 1). Hans van Maanen draws attention to the role of the perceptive system and faculty in making sense of what happens between and among people during theatrical communication (2004: 247). The connection he makes to biological systems is echoed by George Mounin who proposes that theatrical communication involves a 'very complex type of stimulus response' (cited in Carlson, 1993: 494). This chapter proposes that this complexity involves many interrelating elements such as attention, engagement, memory, familiarity and emotion. It examines

these elements using specific examples to illustrate how each either directly or indirectly affects the accessibility of material presented on stage. Throughout, the chapter attempts to highlight the correlation between underpinning biological and neurological functions utilized in the act of theatrical engagement and the effect this might have on accessibility. The examinations of accessibility in this chapter help determine the parameters of accessibility that implicitly underpin Chapters Four to Seven.

Attention and Engagement

Marco De Marinis argues that before an audience member can start to access the meaning of and/or the aesthetics involved in performative communication the spectator's '*selective* attention' must be given to the performance (1987: 106). Attention is similarly important to Eugenio Barba who proposes that giving life to a performance it is not simply a matter of plotting actions and tensions but also 'to structure the audience's attention' (1991: 70).

> The spectator's attention appears to be the product of a certain type of psychophysiological disposition which, in the appropriate scientific literature, goes under various names: arousal, excitation, curiosity, interest, etc. Among other things, this disposition is signalled by several neurophysiological activities, such as characteristic changes in electroencephalogram levels (EEG), sweating, changes in heartbeat, muscular tension, pupil dilation, etc. This state leading up to the actual focusing of attention can be termed a "state of interest." (De Marinis, 1987: 109)

Selective attention is defined by Mark Bear *et al*. as 'the act of differentially processing simultaneous sources of information' (2001: 659), and by Bernard Baars and Nicole Gage as 'the ability to select information for cognitive purposes' (2010: 276). But what are the dramaturgical strategies that might capture attention beyond and above other incoming stimuli? James Scully suggests that emotional arousal helps direct and capture our attention (2008: 162):

> When it is said that we attend to what interests us it is meant that we attend when our feelings are touched, that is, to objects or ideas which directly or indirectly excite feeling. We may thus be said to be interested when we experience a sense-feeling, and our attention is determined to the object or to the action that excites this. (2006: 162-163)

This can clearly be related to theatre practice where stage action might have an emotional content and thus has the potential to capture the audience's interest. However, Baars and Gage disagree that it is changes in emotional states alone that trigger voluntary attention

and suggest that as well as emotion it may also be shaped by 'motivation and salience' (2010: 276). McConachie also notes different elements potentially involved in attracting attention and lists 'form, colour, movement, timbre, pitch, rhythm' (2008: 26), all elements important to the act of creating theatre. Once attention has been attracted, theatre practitioners are faced with the problem of sustaining the audience's attention. Paul Woodruff highlights the centrality of the performer in sustaining attention when he writes:

> The players seek to engage the audience in what they--the players--are doing, or if not in what they are make-believe doing, during the measured time and within the measured space that is the stage. The players seek to hold the attention of their audience by exciting them, catching their intellectual interest, or making them care about something. There are heaps of ways of doing this, and they have just this in common: the players try never to let the audience become bored by what they, the players, are doing for the whole of the measured time. (2008: 39)

De Marinis agrees that the performance must in some way surprise or amaze the audience but goes on to suggest that the performance might also 'put into effect disruptive or manipulative strategies which unsettle the spectator's expectations' […] (1987: 109). An example might be Peter Handke's 1966 play called *Offending the Audience* that grabbed and sustained the audience's attention through direct verbal insult and 'an emphatic assault on conventions of stage representation' (Blackadder, 2003: 185). However, in such cases as this the audience's attention is not necessarily sustained through voluntary attention but is more likely to be sustained through a series of automatic or involuntary responses which can occur when presented with sudden stimuli, or unexpected events (Baars and Gage, 2010: 276). There are many other examples when shock and surprise are used to grab the audience's attention indeed futurism was partially defined by its 'audience provocation techniques' (Sheppard, 2000: 215). However, the result of breaking audience expectations is not necessarily pleasurable for the audience and indeed some audience members find such tactics frustrating and the performances inaccessible (Bennett, 1997: 90-91). De Marinis proposes that the key to maintaining theatrical pleasure lies in appropriately managing audience expectations:

> The fragile balance is kept between the pleasure of discovery, the unexpected, and the unusual, on one hand, and the pleasure of recognition, *déjà vu*, and the anticipated on the other. To upset this balance in either direction means threatening the success of the complex communicative interaction which constitutes the very life of theatrical performance. (1987: 112)

The combination of staging material that is familiar balanced with unfamiliar elements that might surprise is an important consideration for accessible theatre. We learn from Baz Kershaw that community theatre practice uses creative processes that are 'fundamentally influenced by a desire for accessibility' (1992: 143):

> The devising/writing process often included "research" into the nature of the target community's history and/or contemporary problems, in order to make shows and projects more 'relevant', authenticating conventions more readable. In an effort to appeal to a broad constituency within the community, the traditions of popular theatre were frequently drawn on to provide rhetorical conventions. Moreover, work across a range of venue types encouraged groups to develop skills in such forms as puppetry, circus techniques and outdoor performance styles. (Kershaw, 1992: 143)

Community theatre practice clearly strives to achieve a balance between the pleasure of recognition and the pleasure of discovery. 7:84 theatre company wanted to make sure the subject matter of their socio political shows 'was relevant and accessible' (McGrath and Holdsworth, 2002: xiv). In doing so they employed recognizable 'popular cultural forms such as variety, live music, stand-up comedy, satire, caricature and song to engage and entertain the audience' (McGrath and Holdsworth, 2002: xiv). But what are the underlying neurobiological principles that have indirectly informed these decisions? Are there neurological systems that might help explain the success of these choices? These questions lead the research to the role of sensory stimuli in the production of meaning in the memory systems of the human brain and an exploration of how this can affect accessibility.

Memory

Daniel Schacter and Elaine Scarry argue that meaning can only be generated because we have memory systems in the brain. They state that without memory, 'our awareness would be confined to an eternal present and our lives would be virtually devoid of meaning' (2001: 1). The brain is adapted for making meaning out of the aspects of its environment that have warranted attention. When this environment is the artificially created environment of the stage performance the same memory processes help the audience to create meaning, as the present is made sense of through 'integrating immediate stimuli with past categories in the mind/brain' (McConachie, 2008: 35). The relationship between memory and meaning involves accessing stored information:

> In a complex brain, memory results from the selective matching that occurs between ongoing neural activity and signals from the world, the body, and the brain itself. The synaptic alterations that ensue affect the future responses of the brain to similar or different signals. These changes are reflected in the ability to repeat a mental or physical act in time and in changing context. It is important here to indicate that by the word "act", I mean any ordered sequence of brain activities in a domain of perception, action consciousness, speech, or even in a domain of meaning. (Edelman and Changeux, 2001: 52)

The neural systems involved in memory building are very complex. According to Elizabeth Wilson connectionism is the key. She describes cognitive processing as the 'spread of activation across a network of interconnected neuron-like units [called nodes]. It is the connections between these units, rather than the units per se, that take on the pivotal role in the functioning of the network' and suggests that 'knowledge is implicit, stored in the connections rather than the units' (1998: 6). Sheryl Feinstein also acknowledges the complexity of the brain processes involved in meaning making but suggests the brain has the capacity to produce novel meanings by 'constructing conceptual models' (2006: 363).

When discussing the creation of meaning it must be remembered that the network of neural connections are unique to each individual due to environment-based learning which is an individual experience. June Edmunds and Bryan Turner write that '[t]heories of identity formation or socialization tend to conceptualize memory as part of the development of the self or personality and tend to locate that process within an individual, with the aim of understanding human actions and their emotional basis' (2002: 57). The individuality of memory begs the question whether a piece of theatre can ever be similarly accessible to all audience members and thus allow for a collective experience. For as Roland Barthes suggests in *The Death of the Author* (1977) there is no one true meaning as we all perceive things differently. Indeed, as Helen Freshwater acknowledges, '[r]egular theatre goers know that post-show discussions reveal how widely responses can vary, even among friends who might be expected to bring similar ideological perspectives and cultural experiences to the event' (2009: 6). This is supported by James Wertsch who believes that 'even if members of a group have experienced the events being remembered, they typically do not interpret or remember these events in the same way' (2002: 25). These positions seem to suggest that a collective response is not possible, yet Simon Murray and John Keefe disagree:

> All theories of reception suggest there is inevitably a cultural fluidity in the way in which theatre is perceived. There are many variables ranging from the mode of the theatre piece itself, the spatial contexts and rules of its location, and the socio/cultural/psychological composition of its spectators. A corollary of these propositions is that no one spectator experiences and perceives the work in question in exactly the same way as another. However, this is not to suggest that there is no 'community' of spectators, and clearly if the reception of a theatre piece was purely an individual transaction, then it would be impossible even to talk about theatre, let alone theorise it, in any meaningful way. (2007: 31)

The possibility of a communal response to a piece of theatre is supported by theories of collective memory which suggest that as long as the audience come from the same cultural, educational and social background and are of a certain age group then this might be possible:

> Alongside these individual-focused accounts of memory have existed a concern with collective identity and with "how societies remember" (Connerton, 1989) with roots in Durkheim's notion of collective consciousness. Here collective memory is defined as recollections of a shared past "that are retained by members of a group, large or small, that experience it" (Schuman and Scott, 1983: 361-362) and passed on in either an ongoing process of what might be called public commemoration, in which officially sanctioned rituals are engaged to establish a shared past, or through discourse more specific to a particular group or collective. (Edmunds and Turner, 2002: 57)

The duality of individual and collective response has been echoed by Tim Etchells who writes that '[w]atching the best theatre and performance we are together and alone' (2007: 26), and goes on to highlight the phenomenological experience involved in spectatorship:

> [W]e're aware of the temporary and shifting bonds that link us both to the stage and to our fellow watchers, plugged into the group around and in front of us, the communal situation sensing the laughter, attentiveness, tension or unease that grip us collectively, in waves and ripples, in jolts, jumps and uncertain spirals or in formations that do not yet have a name. Sat watching we spread-out, osmose, make connections. But at the same time, even as we do so, we feel our separateness, our difference from those around us, from those on-stage. (2007: 26)

The communal aspect of audience membership that Etchells describes is understandable because humans are social animals and evolution has equipped our species with sensitivity to and the facility for co-operation with others as part of everyday life and it is interesting to note that social behaviour relies on the same principal cognitive mechanisms as many other types of behaviour such as 'learning and memory' (Easton, 2005: 76) and thus these are important to audience reception as well.

All spectatorship involves highly complex neurobiological workings involving memory recall which are 'robust, dynamic, associative, and adaptive. […] every act of perception is to some degree an act of creation and every act of memory is to some degree an act of imagination. Biologically memory is creative and not strictly replicative' (Edelman and Changeux, 2001: 56). This suggests memory has an active role in audience reception. But what is the nature of this activity? Marvin Carlson suggests that creating new meaning is linked to previous experience:

> This complex recycling of old elements, far from being a disadvantage, is an absolutely essential part of the reception process. We are able to "read" new works--whether they be plays, paintings, musical composition or for that matter new signifying structures that make no claims to artistic expression at all--only because we recognize within them elements that have been recycled from the other structures of experience that we have experienced earlier. (2008: 4)

The role of memory in producing meaning has led to the concept of the 'familiar' in audience reception in that we can only make meaning out of something if we have encountered it or something like it before. Herbert Blau in *Eye of Prey* notes that 'at the uttermost consummation of performance […] we are seeing what we saw before' (1987: 173), while Richard Schechner writes about 'restored behaviour' as 'the key process of every kind of performing' (2002: 28). He argues that recalled from memory a behaviour restored is not necessarily fixed to the contexts that it was initially encountered in '[b]ecause it is marked, framed and separate, restored behavior can be worked on, stored and recalled, played with, made into something else, transmitted and transformed' (2002: 28). Although Schechner is discussing *performing* of restored behaviours, it can be argued that the audience reception of such restored behaviours also requires memory to access the inherent meaning, that is, the recognition of behaviour encountered in a different context.

To what extent might familiarity be an important factor in the concept of accessibility? Certain frames of reference, the cultural frame of language for example, might be familiar to all audience members from the same cultural background (intercultural performance projects raise a number of problems that will be dealt with later) so these frames should be equally accessible to all with either direct or indirect experience of that culture. But even within a particular frame, such as language, knowledge of the language might depend on

the age, education, and experience of each individual, which would clearly affect accessibility. In *Theatre Audiences* (1997) Susan Bennett gives a good example through different receptions of Harold Pinter's play *The Birthday Party* as the audience became familiar with the codes and conventions necessary to access and engage with the play. This is supported by Raymond Williams (1954) who introduced the term 'structure of feeling' to describe an experience which is 'of an apparently personal order but which is nevertheless shared, and hence social' (Counsell and Wolf, 2001: 193). Williams writes:

> But while we may, in the study of a past period, separate out particular aspects of life, and treat them as if they were self-contained, it is obvious that this is only how they may be studied, not how they were experienced. We examine each element as a precipitate, but in the living experience of the time every element was in solution, an inseparable part of a complex whole. And it seems to be true, from the nature of art, that it is from such a totality that the artist draws; it is in art, primarily, that the effect of the totality, the dominant structure of feeling, is expressed and embodied. (Williams and Orrom, 1954: 21)

The effectiveness of staging material familiar to the audience might be biologically explained by the brain's ability to process familiar information more quickly than unfamiliar information (Mukundan, 2007: 201). For example, at a crowded party full of many different conversations and loud music the brain is able to filter out much aural information so that people can attend to the conversation they are having with one person, but if someone in the room says an individual's name then the familiarity of the incoming stimuli will increase the arousal at that moment, the attention of the individual may be drawn to their name and he or she may become conscious of the fact their name has been spoken. This is called the cocktail party effect (Nairne, 2009: 181). Furthermore, if two people say your name at the same time one of whom you know and one of whom you don't know, then your attention is more likely to be drawn to the more familiar voice (Beneli, 1997: 2).

However, Linda Streit is critical of the familiar when she writes that '[h]abit is the enemy to change, and an effective method of altering perspectives is the defamiliarization of familiar situations' (2004: 377). She implicitly suggests that staging only the familiar is a bad habit, and defamiliarisation is an improvement. But what impact does altering perspectives have on accessibility? Bennett suggests that the unfamiliar is unsettling for the audience when she equates Viktor Shklovsky's discussion of defamiliarization in literature

with defamiliarization in theatre and describes it as 'a means by which the perspective processes of the reader (audience) are challenged […]' (1997: 28). However, this challenge is presented as a positive rather than a negative outlook. James Brandon has also observed that the audience actually desire new experiences and suggests that one explanation for the rise in interest in Asian and African theatre forms is because we may 'deliberately want to have totally new unfamiliar experiences. We may be sick and tired of the familiar […]' (1990: 94). His implicit suggestion that the familiar might become boring leads to consideration of the role the unfamiliar might have to play in accessibility. It is arguable that when the broad frame of reference is unfamiliar, that is, outside the prior experience of sections of potential audience members, then that theatre is open to a charge of elitism because the content is inaccessible in some way, such as, on an emotional or cognitive level. For example, critics often accuse the plays of contemporary playwright Howard Barker of being inaccessible and obscure (Barker, 1993: 85-87), but Barker deliberately uses the unfamiliar to break audience expectations, such as, 'the unfamiliar cadences of a new language, whose rhythms and syntax are not those of common speech' (1993: 81). It is possible that there is too much unfamiliar material in his work to sustain engagement.

Charges of inaccessibility seem to have occurred throughout European theatre history. For example, in early twentieth century France Jean Vilar challenged the dominant stage aesthetics of the time and rejected 'ornamental, operatic stagecraft' preferring theatre that was 'unsophisticated, straightforward and accessible' (Pemble, 2005: 177), and founded a theatre 'for the people' in Paris. Before then, in the sixteenth and seventeenth century plays were considered inaccessible because they had lost touch with the popular masses by adopting Greek and Roman aesthetics accessible only to the educated elite (van Erven, 1988: 6). Furthermore, in 1897 Leo Tolstoy criticized the Russian theatre of his time for being inaccessible to some of the population and not others:

> To thoughtful and sincere people there can therefore be no doubt that the art of our upper classes never can be the art of the whole people. But if art is an important matter a spiritual blessing, essential for all men ("like religion," as the devotees of art are fond of saying), then it should be accessible to everyone. (1962: 72)

Tolstoy was challenging the aesthetic theories of his time that defined art in terms of good, truth and beauty, and he noted a relationship between the contents of plays that eschewed

these principles and the accessibility of the material to those not educated in such elitist aesthetic principles such as the working classes. Thus the content of any such play would not command sustained voluntary attention because 'prior experience, as well as our perception of the stimuli influences our arousal level' (Beneli, 1997: 4). Many different practitioners have addressed the problem of making the content of a performance accessible through studying and analysing the prior experience of its intended audience. For example, Constantin Stanislavsky's work reflected the concept of naturalism because it mirrored the everyday experiences of ordinary people that he felt would therefore make the content accessible to them. He founded the Moscow Art Popular-Accessible Theatre (as it was first named), and wrote 'we are striving to create the first rational, moral and public-accessible theatre' (cited in Leach, 2004: 54). Similarly, 7:84 Theatre Company who worked extensively with Scottish working class audiences believed 'the work should draw on the local history, experience, political activity, struggles and contradictions in working class attitudes and behaviour to ensure that the subject matter of the shows was relevant and accessible' (McGrath and Holdsworth, 2002: xvi). In Sierra Leone, Krio theatre, pioneered by Thomas Decker, used the local Krio language instead of English to promote a 'more open and easily accessible theatre which those not highly educated or literate in English could enjoy and feel at home in' (Okagbue, 2002: 691). Writing about popular forms Victoria Alexander discusses how popular theatre uses familiarity of previous experience as a key to engaging the audience, and points out the importance of situating texts in the receivers' knowledge of schema, conventions and semiotic codes. She asserts that 'conventions *do* create meaning, but the conventions must be shared between audience members and the creators of art' (2003: 271). It could be argued that a mixture of familiar and unfamiliar elements might offer the most effective way to positively elicit and help guarantee engagement from a neurobiological viewpoint.

Empathy

A common emotional response involved in audience reception that has the potential to be communal is empathy. Nancy Eisenberg and Janet Strayer define empathy as 'an emotional response that stems from another's emotional state or condition and that is congruent with the other's state or situation' (1987: 5). Simon Shepherd and Mick Wallis importantly distinguish between sympathy which you feel 'for' someone and empathy that you feel

'with' someone. They propose that emotion 'is not combined with understanding' (2004: 195). Antonio Damasio disagrees and argues that emotions are influenced by understanding because they are 'sandwiched between the basic survival kit […] and the devices of high reason' (2000: 54). This is supported by Mark Johnson who argues that '[e]motion and feeling lie at the heart of our capacity to experience meaning' (2007: 53). So what is the relationship between empathy and accessibility? Vittorio Gallese *et al.* argue that the ability to empathise is an innate human trait because it is positively related to prosocial behavior and our 'survival and success depends crucially on our ability to thrive in complex social situations' (2004: 396). This is supported by Martin Hoffman who believes the modes of empathic arousal are universal and that humans from all cultures can be similarly empathetically aroused and moreover this arousal is 'automatic and involuntary for primitive modes such as mimicry' (2001: 21). This suggests that empathetic situations could potentially be accessible to a wide range of audience members when presented on stage. In opposition are C. D. Batson *et al.* (1997) who argue that empathy is largely a conscious role-taking ability which uses cognitive resources. However, whilst not disagreeing with Batson, Jean Decety and Philip Jackson propose that empathy can be both unconscious and conscious:

> Depending on how the empathy is triggered, the automatic tendency to mimic the expressions of others (bottom-up processing) and the capacity for the imaginative transposing of oneself into the feeling and thinking of another (top-down processing) are differentially involved. (2006: 54)

McConachie proposes that empathy created in the theatre uses bottom-up systems such as the mirror system when he writes that empathy links 'the emotional entanglements of actor/characters to the mirror neurons and chemical changes in the brains of audiences' (2008: 95). Naomi Rokotnitz states that the discovery of mirror neurons has far reaching consequences for theatre studies by allowing us to understand processes such as 'intersubjective communication, mind reading, and empathy' […] (2006: 135). Mirror neurons allow the audience to access the actor/characters emotions by replicating these in the viewer's own body as explained by Gallese *et al.*:

> In our brain, there are neural mechanisms (mirror mechanisms) that allow us to directly understand the meaning of the actions and emotions of others by internally replicating ('simulat-simulating') them without any explicit reflective mediation. (2004: 396)

Paula Niedenthal *et al.* call this internal replication 'embodiment' and propose that our actual bodily states change (posture, facial expression, prosody) when perceiving an emotion and this is largely unconscious until drawn to the conscious attention and 'articulated as a feeling' (2005: 23-23). Some theorists call this process an "as if" position, that is, "there is a minimal differentiation between self and others when empathizing" (Eisenburg and Strayer, 1987: 5). Damasio explains that '[i]t is "as if" the body has really been changed, but it has not' (2000: 281) because humans use both humoral signals (chemical messages conveyed via the bloodstream) and neural signals (electrochemical messages conveyed via nerve pathways) and thus it is possible to by-pass the bodily response' (2000: 281-282). Mirror neurons are further addressed in Chapter Three.

McConachie suggests that the processes of understanding a character's emotional experience on the stage are no different to how people understand emotions in real life and to achieve this 'spectators simulate the experiences of actor/characters in their own minds' (2008: 66). He asserts that our ability 'to empathize with the experiences of others through mirroring is the cognitive hook that impels spectator interest in the activities of actor/characters and engages us in the unfolding narrative' (2006: 18). For John Dewey 'emotions are processes of organism-environment interactions' (cited in Johnson, 2007: 66) indicating that we are continually processing our world through subconscious emotional mechanisms. Our world can be defined in terms of the culture we live in and this has an effect on meaning and our emotional response. According to Jeremy Rifkin 'empathy occurs in every culture' because 'the drives for affection, companionships and belonging are paramount' (2009: 451). Damasio notes that despite cultural differences there are similarities in emotional response across cultures and it is 'the similarity that makes cross-cultural relations possible and that allows for art and literature, music and film, to cross frontiers' (2000: 53). It follows then that a brief examination of the nature of culture is required before analysing intercultural theatre in relation to accessibility.

Culture

Raymond Williams (2006) distinguishes between three levels of culture.

> There is the lived culture of a particular time and place, only fully accessible to those living in that time and place. There is the recorded culture, of every kind,

from art to the most everyday facts: the culture of a period. There is also, as the factor connecting lived culture and period cultures, the culture of the selective tradition. (2006: 37)

In exploring and analysing culture Williams seeks to articulate the shared values and outlooks that define any particular culture. His book *Culture and Society* concludes with a call for culture to be accessible to all. He introduces the idea of a 'common culture' in which 'equality of being is always necessary' (1958: 317). He writes that 'the most that can be done is to transmit the skills, which are not personal but general human property, and at the same time to give open access to all that has been made and done' (1958: 318-319).

Sigmund Freud believes that cultural expression could only exist if 'instincts were repressed' (2005 [1929]: 84) as does Camille Camilleri who states that 'cultural order is artificial in the proper sense of that term, that is, made by human art. It is distinct from the natural order' (cited in Pavis, 1996: 3). The idea that culture and the innate are not intrinsically related is disputed by evolutionary psychologists such as John Tooby and Leda Cosmides who believe that 'human variation results from genetically transmitted information that is evoked by environmental cues' (Boyd and Peterson, 2006: 25) but that underpinning these variations are 'universals' which constitute a 'single human metaculture' (Tooby and Cosmides, 1992: 91). Similarly, Claude Lévi-Strauss proposes that 'cultures result from the interplay between the outer world and the possibilities of man's nervous equipment' (Wintle, 2009: 453). This view is similar to those expressed by the interactionists who suggest that culture is a combination of genetic and environmental factors and both have a dialectic relationship in that they are causally connected and changes in one necessarily entail changes in the other (Reynolds, 1993). Richard Lerner explains this succinctly when he writes that, 'from this view heredity and environment do not add together to contribute to behaviour, but rather development is seen as a *product* of nature-nurture interaction' (2002: 89).

Adaptationist beliefs differ slightly in that they think the goals (or ultimate ends) that underpin culturally bound behaviour are all innate (Barash, 1979). Others, such as

Peter Carruthers *et al.* (2007), agree but suggest that not all are innate. They believe that 'while there certainly will be many ultimate ends that are innate, universal, and relatively fixed, there will also be certain ultimate ends that arise via the operation of social learning mechanisms, and that are susceptible to significant degrees of cultural determination and cultural variation' (2007: 328). In complete contrast, Tracy Novinger disputes the role of the innate within culture and feels that instead of behaviour determining culture it is the other way round and 'culture organizes the psyche, how people look at things, behave, make decisions, order priorities, and even how they think' (2001: 15). Novinger believes that what we might think are innate controls are in fact learned ways of interacting that have sunk below the surface of the mind and become hidden so we experience them as innate because 'they are ubiquitous and habitual' (2001: 15).

Despite the different views as to the exact nature of the relationship between genetic and environmental factors in the role of creating cultural difference, the majority seem to agree that culturally specific material is learned through a process of enculturation. What is being learnt is 'a system of signification which allows a society or a group to understand itself in its relationships with the world' (Pavis, 1996: 2). This process starts the minute a baby is born (some would even argue that environmental factors can even affect the baby in the womb) and continues beyond adulthood:

> Through enculturation every person learns the socially appropriate way of
> satisfying the basic biologically determined needs of all humans: food, sleep,
> shelter, companion ship, self-defence and sexual gratification. It is important to
> distinguish between the needs themselves, which are not learned, and the
> learned ways in which they are satisfied--for each culture determines in its own
> way how these needs will be met. (Haviland *et al.*, 2005: 38)

Stein Bråten describes how enculturation, with specific reference to language, would not be so efficient if it were not for innate mechanisms supported by 'a phylogenetically afforded and adapted resonant mirror system' (2007: 30). Their importance to enculturation is echoed by India Morrison who states that 'mirror neurons are also likely to play a part in the sharing of mental representations essential for the transmission of cultural information from one person to the next' (2002: 331). Behavioural neurologist Vilayanur

Ramachandran also believes that mirror neurons may play a role in cultural transmission for he argues that culture 'depends crucially on imitation of parents and teachers' (2003: 44). Similarly, Thomas Metzinger supports the argument linking mirror neurons to cultural evolution as plausible due to the long period of infantile dependency. He notes that the longer the period of dependency 'the greater the opportunities to develop complex emotional and cognitive strategies of communication. Increased communication in turn fosters cultural evolution' (2010: 180). But Trevor Marchand is critical of a reliance on mirror neurons for explaining cultural development:

> Explaining phenomena at the socio-cultural level in terms of the patterns of activation of neurons in individual brains is analogous to explaining a computer hardware failure in terms of the atomic structure of the materials of which it is composed. It is at the level of the psychological mechanisms, processes, regularities and biases that constitute (and may be constituted by) the individual and distributed ideas, expectations, intentions, behaviour, beliefs, feelings, attitudes, and so on, that make up a socio-cultural environment that we will potentially discover factors that meaningfully account for macro-cultural.
> patterns (2011: 190)

It makes sense then that cultural roots are not only geographically defined by space and location but also by lifestyle and world-view, for according to Colin Counsell and Laurie Wolf '[m]eaning does not exists in the material world, it is a human product, a product of *culture* and the interpretation of plays and paintings, novels and films requires a reader who is culturally competent' (2001: 177). This brings into focus the problems of how the theatre of one culture can be accessible to another culture at similar levels of perception, meaning and reception.

Intercultural Theatre
Intercultural theatre is not a new phenomenon. Asian theatre has been an inspiration for directors including Jacques Copeau (1879-1949) who was influenced by *Noh* theatre, Bertolt Brecht (1898-1956) by Chinese theatre, Antonin Artaud (1896-1948) by Balinese theatre, Jerzy Grotowski (1933-1999) by Indian theatre, and more recently Peter Brook (b. 1925) and Barba (b. 1936) by a number of different Asian forms. Cláudia Tatinge Nascimento explains that intercultural theatre grew out of 'a balance between the desire to "make it new" and the need to keep familiar (and thus recognizable) elements for the viewer' (2009: 3). She goes on to point out that the 'fascination for the Other balanced with

a reaffirmation of familiar elements became a marked trend in all branches of the performing arts' (2009:3) not just theatre. However, making the theatre of one culture accessible to another culture through intercultural theatre practice is not straightforward. Mark Fortier points out that 'mixing different dramatic traditions […] is a practice fraught with aesthetic and political pitfalls' (2002: 202). Similarly, Patrice Pavis believes intercultural theatre is problematic when he writes:

> The difficulty is not so much to understand the foreign as to take into consideration both the familiar and the foreign, to measure the distance from myself to the other, to engage in the dialectic of the universal and the particular, of transcendental philosophy and of country-to country ethnology. But here is an unhappy paradox here. By calling into question Western universalism, in order to give greater respect to cultural differences and their relativity, one comes to lose all sense of value and to level all cultural practices. (1996: 12)

He suggests that in making the unfamiliar familiar in order to make it accessible, the audience might have to rely on universal systems which are reductionist and therefore unsatisfactory. One of the greatest critics of intercultural theatre is Rustom Bharucha who argues that a genuine exchange between cultures is not possible due to Euro-American economic and political domination of cultural capital (1990: 2):

> If interculturalism in the theatre is to be more than a vision, there has to be a fairer exchange between theatrical traditions in the East and the West. At the moment, it is westerners who have initiated (and controlled) the exchange. It is they who have come to countries like India and taken its rituals and techniques (either through photographs, documentation or actual borrowings). (1990: 38)

Many practitioners who use performance techniques and/or theatrical signs and symbols of other cultures in their work may do so with the greatest respect for the source culture and because they 'look for ways in which to place on the stage the performative traditions that they find personally and professionally stimulating, but theatre critics have frequently interpreted cultural border crossing either as touristic or as a neocolonialist practice' (Nascimento, 2009: 24) and thus not necessarily a positive experience for all the audience. Such 'cultural tourism' has been criticized by Bharucha on two counts. Firstly, when Eastern cultural rituals are travestied in the West and secondly, and in his mind far worse, when the rituals that are meant to be performed to Gods lose their significance in their own country when they are performed to tourists and the reward is money instead of the customary sacred food (1990: 37). Catherine Diamond distinguishes between culture as process as 'the goal of tourists seeking authenticity and meaning through their tourist

experience' (2001: 220) and culture as product that leads to 'the creation of cultural products specifically for tourist consumption' (2001: 220). An example of this might be the translation of the Balinese *Barong* in its traditional site of performance in Balinese villages as part of cultural ritual practices which 'reveal and control' the world of *niskala* (unseen black magic) (Coldiron, 2004: 220) into a form suitable for tourists in purpose built western style theatres where the performance is on an end-on raised stage with no Balinese in the audience. This suggests the Barong is of no interest to the Balinese when it is stripped of its cultural context.

Pavis supports the notion that intercultural theatre is not an equal exchange accessible to all when he writes:

> The notion of intercultural performance professes to be universal, applicable to any cultural context. In actual fact, it comprises a primarily Western vision of exchange that elides the reality of socio-economic and cultural relations in favour of a schematic model of symmetry and reversibility set up between the two poles of exchange. According to this model, any culture would be free to ally itself with any culture whatsoever, as if we were dealing with some sort of mathematical equation or a mechanically inverted hourglass. (1996: 25)

One of the most controversial pieces of intercultural theatre was Brook's version of the Indian epic *The Mahabharata* which was accused of having the western vision and practice Pavis describes. Bharucha complains that 'Peter Brook's *Mahabharata* exemplifies one of the most blatant (and accomplished) appropriations of Indian culture in recent years' (1990: 68) and goes on to say that he 'has taken one of our most significant texts and decontextualized it from its history in order to sell it to the West' (1990: 68). In an attempt to make it accessible and familiar to a western audience much of the sacred material was removed, which for Bharucha meant all that was left was a story which 'read like a rather contrived and overblown fairy-tale' (1990: 68). For Brook, it was not just a question of making the work accessible to the West in particular, as his work has been a constant search for universal theatrical form and language that is accessible to all cultures. According to Brook, '[w]hat you can say is that we are searching for theatre forms that are freer, more open, more accessible and which, in their first level, communicate to anyone' (Gibson and Brook, 1973: 50). Counsell points out that 'Brook's first step in attempting to create this universal language is the elimination of all that is culture-bound, and his key concept in this respect is the 'empty space' (1996: 146), whereas Min Tian argues that

Brook's work is infected by his 'Western humanistic view of culture, ideology, politics as well as theatre, which is by no means universal' (2008: 13). Issues surrounding the politics of Brook's work will be returned to later to see how they apply to the proposed performance at the centre of this study but he is not the only practitioner who aspires to create universally accessible work.

Ariane Mnouchkine (artistic director of Théâtre Du Soleil) is another such practitioner who has a history of creating intercultural theatre. Masks are an integral part of her work so she is a relevant case study whose practice might help inform research into the creation of a piece of accessible masked theatre. She says that Théâtre Du Soleil look for a basis for their work in Asian theatre 'because that's where the very origin of theatrical form is' (cited in Williams, 1999: 93), and she remarks that 'from a theatrical point of view, everything draws me toward Asia. It is the very cradle of theatrical art, of the actor' (cited in Pavis, 1996: 89). The company was created by Mnouchkine 'in reaction to what was felt to be a hyper-commercialization of theater and thus a loss of theater's ability to move and instruct audiences' (Miller, 2007: 6). She felt that what Asian theatre had to offer was 'powerful iconic visual imagery, physical acumen based on intensive training and imitation of master players, joyous and direct contact with the audience for whom the experience of theater is as necessary to life as water' (Miller, 2007: 6). Her most controversial work, *L'Indiade*, has been criticized by Carlson as being 'not essentially different from the experience of India one might encounter in a theme park' (Carlson, 1996: 86). Carlson criticised Mnouchkine for trying to make Indian culture accessible to the Parisian audience stating that such devices as serving authentic Indian food, using ushers in Indian clothing and a woman begging from the audience 'only create the impression of immersion in another culture, but the semiotic of the Soleil itself dominates and conditions all of these elements' (Carlson, 1996: 86). The semiotic of Soleil includes mask-work, which has been an integral part of the company aesthetic since its beginnings. Interestingly Mnouchkine does not approach mask-work from an Asian perspective but through her own encounters with Lecoq. She suggests that one reason that mask-work is their core discipline is because of the relationship masks produce with the audience:

> An actor produces a kind of writing in the air, he writes with his body, he is a
> writer in space. Now no content can be expressed without form. Many different

forms exist, but in order to obtain some of them, there is perhaps only one discipline. I believe that theatre is a back-and-forth between what exits at the deepest, least known levels inside us and its projection, its maximum externalisation towards an audience. The mask requires precisely this maximal internalisation and externalisation. (cited in Williams, 1999: 110)

She uses both Commedia dell' arte masks and Asian masks for her rehearsal process whether masks are to be part of the final performance or not. Using two culturally different forms is not an issue with her as she believes that 'the rules of theatre which apply themselves to masks are valid everywhere' (cited in Williams, 1999: 168) and have led her work to be termed universal (Miller, 2007: 37 and 19).

Another practitioner of intercultural theatre whose work has also been described as universal is Suzuki, whose work blends elements of traditional Japanese forms such as *Noh* and *Kabuki* with European works, most notably Shakespeare, Chekhov and Greek tragedy. Paul Allain comments on the accessibility of his methods:

Suzuki's intracultural introspection is skewed through the prism of cross-cultural casting and international collaboration, propagated by the diversity of performance texts with which he engages. His practical and theoretical sources and references points are eclectic and accessible, but rooted precisely in Japanese traditions and conditions. (2003: 8)

Here it is interesting to note that Suzuki seems to achieve a notable level of accessibility despite cultural specificity in his work. This shows that cultural specificity does not have to be eliminated in a search for accessible performance material as Counsell suggests Brook tried to do (1996: 146). Echoing this recognition of the accessibility of Suzuki's work Erica Fischer-Lichte writes that 'Suzuki starts with the idea or premise that body and language are to be seen and employed as the original universals of human expression' (1996: 33), and goes on to make a connection between the universal and the innate in his work. She suggests that the 'combination of western dramatic text and a performance style derived from the Japanese tradition should, because of the reduction carried out, be in a position to make the innate function of language and body transparent as universals of human expression and develop them to the highest degree of expression' (1996: 34). In his essay "Culture is the Body" Suzuki proposes that the key to accessibility is animal energy as utilized in cultural practices such as cooking and sports and he believes it is the energy of the actor alone that enables the actor to be accessible to so many people (Allain, 2003:

145). Suzuki himself states that the purpose of his method is to 'uncover and bring to the surface the physically perceptive sensibility which actors had originally, before the theatre acquired its various codified performing styles' wishing to create 'something we humans could share as a common property, beyond all differences in race and nationality' (1995: 155). Allain is skeptical as to whether the universal accessibility desired by Suzuki is actually achieved and even suggests that the audience might suffer from a lack of sufficient neurological stimulation to support a state of full engagement:

> Suzuki's desire to create universal theatre is not wholly assisted by his sourcing in Japanese culture.[…] Though universal is not simply a synonym for accessible, and universality is more an ideal then a simply achievable practice […], Suzuki's introspection and self-referentiality often precludes breadth of reception. His conceptual layering mystifies audiences as they are simultaneously struck by the performers' energetic clarity. (Allain, 2003: 39-40)

Suzuki himself admitted in 1993 that 'there is probably no such thing as a universal theatre but there is a possibility for theatre artists to address universal problems' (cited in Allain, 2003: 41). He is a supporter of cultural difference and believes that 'the way in which we use the animal energy in our bodies to communicate with each other and the richness of this form of communication are the foundations of culture and cultured practices' (cited in Sant, 2003: 152). He argues it is through the animal energy, which is common to us all, that his work becomes interculturally accessible. This is interesting for this research project because it suggests that some practical approaches to creating performance material might be able to interact with cultural boundaries in such a way as to help achieve a high level of accessibility when used in performance.

As we have seen above, Brook is one of the most controversial theatre directors who aims to make his work widely accessible. John Heilpern writes that 'Brook, perceived as *the* intellectual figure of theatre, is in practice the reverse. He is about accessibility. He wants to make theatre, whatever the complexity of the material, accessible to the widest human response without watering anything down' (1999: 2). In 1972 he set out on a three-month research project to Africa with a troupe of actors and revealed in an interview with Michael Gibson that he was 'searching for theatre forms that [were] freer, more open, more accessible and which, in their first level communicate[d] to everyone' (1973: 50). He went to Africa because he felt the audience were 'ideal' as they had 'not been conditioned in any

way by Western forms' (1973: 48) and that the 'African who has been brought up in the traditions of the African way of life has a very highly developed understanding of the double nature of reality' (1973: 48). This double nature was the acceptance of make-believe as an aspect of reality that Brook called 'the basis of the theatre experience' (1973: 48). This suited the nature of his work:

> [S]ome of the deepest aspects of human experience can reveal themselves through the sounds and movements of the human body in a way that strikes an identical chord in any observer, whatever his culture and racial conditioning. And therefore one can work without roots because the body, as such, becomes a working source. (1973: 50)

In trying to achieve his vision of an accessible theatre Brook produced intercultural works such as *The Conference of the Birds* based on an ancient Sufi manuscript. Brook describes his staging of this play as 'vaguely oriental to free it from any specific and familiar location' (Williams, 1991: 46). The implication is he wanted to denude it of cultural specificity but keep it familiar in the sense that the audience could perceive the 'otherness' about its setting without being able to give it a specific identity. Pavis describes this working process as a search for universal theatre:

> Brook is working towards a theatre of the future in which the individual elements, though they may derive from different traditions and cultures, can function, be understood and assigned meaning as theatrical elements in any chosen culture. This conscious and productive encounter with foreign theatre cultures must lead […] to the development of a "universal language of theatre." (1996: 33)

He similarly sought a universal language when working on *The Mahabharata* and approached this piece in the same manner as the *Conference of the Birds*. He tried to make the Indian tale accessible to a non-Indian audience by removing what he considered to be too specifically Indian and therefore potentially inaccessible to those with no experience of Indian Culture:

> We are telling a story which, on the one hand, is universal, but, on the other, would never have existed without India. To tell this story, we had to avoid allowing the suggestion of India to be so strong as to inhibit human identification to too great an extent, while at the same time telling it as a story with its roots in the earth of India. (Brook cited in Banu, 1991: 46)

Although the show was well received by Western audiences and critics (the Sunday Times wrote it was 'one of the theatrical events of this century' (Williams, 1991: 230)) it was a different story with Indian critics, the fiercest of whom was Bharucha:

> If Brook truly believes that the Epic is universal, then his representation should not exclude or trivialize Indian culture, as I believe it does. One cannot agree with the premise that *'the Mahabharata* is Indian but it is universal'. The 'but' is misleading. *The Mahabharata,* I would counter is universal *because* it is Indian. One cannot separate culture from the text. (1990: 70)

The stripping of what is fundamentally culturally specific in order to increase the accessibility of the performance to etic audiences is the heart of the problem with Brook's methodology. The theme of dissatisfaction with a supposed universal performance runs through David Williams's summary of the opposition to Brook's work from a number of different quarters:

> He has repeatedly laid himself open to understandable charges, not only of insensitivity but more damagingly of neo-colonialist paternalism and, in some circles, of cultural appropriation as theft. […] This is an instance not of intercultural exchange, we are told, but of wholesale plunder or rape, for behind his 'mask' of tolerant liberalism Brook is authoritarian and self-serving. As the self-appointed representative of a 'universal culture', it is suggested, he has pillaged world culture in search of new territories, then planted his own imperialist flag in the flank of the quintessential Hindu work, a work so vast that it has never before been staged in its entirety. (1991: 24)

Does this mean that all attempts at producing widely accessible theatre are doomed to failure? Will any exchange across cultures produce work that in its desire to be accessible to the etic cultures offends the emic culture because of the reduction of the culturally specific which appears to trivialize it? Carlson states that theorists such as 'Derrida and Blau have warned us, the universal, like the unmediated, can be and has been a dangerous and self deceptive vision, denying the voice of the Other in an attempt to transcend it' (1996: 91). Pavis suggests non-offensive intercultural theatre might be possible in his description of the work of Mnouchkine and Barba because they never 'reduce or destroy the Eastern form from which they gain inspiration but attempt a hybridization with it which is situated at the precise intersection of the two cultures and the two theatrical forms, and which is therefore a separate and complete creation' (1996: 4).

Barba in particular was interested in the expression of the human body that went beyond cultural difference. He uses the term Eurasian theatre not in terms of a fusion of Asian and European forms but as a means to explore 'the movement between East and West' (1995: 40). For Barba, 'intercultural performance does not consist of constructing collages of cultural details, […] but of finding universal pre-expressive principles common to different

54

traditions-beyond performance, beyond the visible' (Pavis, 1996: 217). Barba's concept of pre-expressivity will be returned to in more detail in the next chapter but it introduces the possibility of universal theatre. Fischer-Lichte writes:

> Even though the starting point, program, position, method of approach, and goal of the theatre artists in Europe, Japan, China, India, and Africa are individually wholly divergent, the conscious and productive encounters with elements of foreign theatre cultures, in general, serve similar functions: to create a "universal language of theatre" and to mobilize communication between members of different cultures. (1997: 145)

The concept of universal theatre is still controversial, ranging from those who deny its possibility such as John McGrath who writes: 'I do not accept the following assumptions: 1. that art is universal, capable of meaning the same to all people; 2. that the more universal it is the better it is [...]' (1981: 3), to those, such as Brook, who totally believe it is possible to achieve under the right conditions when 'it could uniquely touch on some universal, eternal sense' (Counsell 1996: 153) and to those who believe that certain aspects of performance are universal because they are just part of being human:

> Schechner suggests that if we behave appropriately, then we will feel appropriately, that actions generate emotions (and the reverse as well) irrespective of whether those actions are "really happening" or "skillfully pretended". Further, emotions are brought out in both performers and audience because there is a "universal language" of emotions, neurobiologically based, encoded in our nerve and brain processes. (Bruner, 1986: 26)

A neurobiological approach to the analysis of theatre production and reception which addresses commonalities between peoples has intrigued Williams who writes:

> Is there a tonal consciousness common to humankind? Are there conceptual 'deep structures' of a vocal or gestural kind--dynamic, instinctive and intercultural? If a genuinely collective expression of what was 'essentially human' in experience could be elaborated, Brook's utopian ideal of universal communication would be vindicated. (1991: 4)

This essential humanness could arguably be related to the innate capacities of all humans regardless of age, class, or culture. Thus, those behaviours and physiological structures that subconsciously affect our perception, understanding and creation of meaning on a daily basis are of central importance to this study.

Conclusion

The concept of accessible theatre is contestable, shifting and ambiguous. The neurological definition adopted in this chapter suggests that in order for a piece of theatre to be considered widely accessible it must be able to attract and sustain the attention of a wide range of audience members of diverse ages and cultural backgrounds in an act of theatrical engagement. Evidence indicates that this might be partly achieved through presenting images that are to some degree familiar, stimulating empathy, and including some elements of novelty and surprise to prevent boredom. This is problematic, given that each individual in the audience will have a unique personal, social and cultural history, which will affect their response as an audience member. Particular difficulties may occur when the audience comprises children and adults, as well as those from different ethnic backgrounds. In order to address some of those difficulties, the structures and processes surrounding the innate nature of some human responses to the social and cultural environment might offer methodological models for theatre devising process. Evidence suggests that cultural specificity does not have to be avoided to help widen accessibility as long as the innate roots to such performance material are accessible to the audience, for example, the emotion being portrayed might be familiar. Because the concept of the innate is complex, the following chapter explores its nature and role and examines potential problems when applied to a theatrical context.

Chapter Three - The Innate: Definition of Terms and Review of Practice

> The theatre of the future, according to Suzuki, will be a theatre built on universals that already exist in the biological construction of mankind, i.e. prior to any differences established by culture. (Fischer-Lichte, 1996: 34)

Innate neurobiological systems and their relationship to how humans navigate their environment (and thus the theatrical environment) are at the heart of this study of accessibility. Over the last few decades technological advances such as MRI scans and PET imaging have meant that neurologists have been able to gain detailed knowledge of the mechanisms of the central nervous system involved in stimulating innate behaviour and also the innate neural mechanisms involved in how behaviour is received by others watching it. These recent findings have made an impact on disciplines such as psychology, anthropology, cultural studies and linguistics. Anthony Stevens, a Jungian psychiatrist, writes:

> In the last twenty years the ethological perspective has fostered development of the new disciplines of evolutionary psychology and evolutionary psychiatry. These have moved ahead so rapidly in the past decade that it is clear that the human sciences are undergoing a dramatic paradigm shift. In the final years of the twentieth century this acceleration became dizzyingly impressive, with growing academic and media interest in the applications of evolutionary theory to economic, social, and political behaviour, as well as to psychology and psychiatric disorders. (2002 [1990]: 30)

This growing body of knowledge has also had an impact on theatre studies. This chapter focuses on the innate and how this concept is manifest either consciously or unconsciously within the theatrical environment and the implications this has for accessibility. It starts by documenting the basic innate systems most applicable to this study and introduces the scientific terminology that will be used throughout the thesis. It moves on to review some of the major practitioners that acknowledge innate systems and models in their practice either explicitly or implicitly through the concept of a universal theatrical language, and then focuses specifically on masked performance. It ends with the political and ethical problems that result when considering the concept of the innate in theatre practice. As such,

this chapter sets the framework under which the relationship between the innate and accessibility are considered in further chapters.

Innate Systems and Structures

The concept of the innate is defined by ethologists as any phenomenon that has been phylogenetically adapted (developed in a species through evolution). Irenäus Eibl-Eibesfeldt states that any behavioural and perceptual facilities can be considered phylogenetically adapted 'if their organic-physiological substrate (the nerve cells in their special connections with sensory and executing organs) develops under genetic control in a process of self differentiation to maturity' (2007: 23). Neil Salkind is more succinct when he writes that '[s]tated most simply, innate behaviors are behaviors that occur without the individuals having to learn them' (2004: 85). This is supported by Barbara Newman and Philip Newman who state that innate behaviours 'are present in some standard or shared form in all members of a species. They are expressed without previous learning and remain relatively unchanged by experience' (2007: 27). This concept is interesting for this study because it implies that all members of the human race have behaviours that, even though altered by their specific cultural environment, might remain familiar enough to facilitate wide accessibility if presented on stage. It is important then to determine the neurobiological structures and systems involved in innate behaviours.

The central structure concerned with innate behaviours is the brain. Paul D. MacLean (1989) proposes a triune model in which the brain evolved in three different phases, namely, the reptilian brain, the paleo-mammalian brain and the neo-mammalian brain, giving rise to three brain areas each with a distinct function. However, the latest research suggests that MacLean 'over simplified his case' (Stevens, 2002: 320) and each area that evolved was not distinct from the others. For example, Ann Butler and William Hodos criticise Maclean, suggesting he did not pay enough attention to natural selection and suggest instead that evolution can 'modify pre-existing structures and integrate them with new ones' (cited in Stevens, 2002: 320). This suggests the regions of the brain do not work in isolation. This is supported by John Lutterbie who explains that while 'the evolutionary development of the brain is not in question, the discrete functions thought to belong to each part are. Research indicates that the brain is not easily divided into regions linked to distinct

operations; rather, it is better understood as consisting of interlocking systems' (2006: 157). Antonio Damasio, who worked extensively with brain damaged patients, agrees with Lutterbie:

> From an evolutionary perspective, the oldest decision-making device pertains to basic biological regulation; the next to the personal and social realm; and the most recent, to a collection of abstract-symbolic operations under which we can find artistic and scientific reasoning, utilitarian-engineering reasoning, and the development of language and mathematics. But although ages of evolution and dedicated neural systems may confer some independence to each of these reasoning/decision making 'modules', I suspect they are all interdependent. When witnessing the signs of creativity in contemporary humans, we are probably witnessing the integrated operation of sundry combinations of these devices. (1994: 191)

Richard Frackowiak confirms this theory as his experiments with a drug called clonidine revealed the brain to be 'a network of areas that interact dynamically with one another to optimise behaviour under differing levels of arousal' (2004: 311).

It is widely believed by scientists that the reptilian brain or brain stem was the first region to evolve. This regulates vital bodily functions such as breathing, the control of body temperature, blood pressure, heart rate and houses simple reflex actions, fixed action patterns and taxis responses (explained in more detail on page 63). Behaviour governed by this region is very basic and largely instinctive such as gaining territory, mating and threat displays. Psychologist Kent Bailey argues that modern humankind's behaviour can still be influenced by this primitive region:

> The reptilian carry-overs provide the automatic, compulsive urgency to much of human behaviour where freewill steps aside and persons act as they have to act, often despising themselves in the process for their hatred, prejudices, compulsions, conformity, deceptiveness and guile. (1987: 63)

This is important because Kent proposes that some human behaviour remains, initially, outside conscious control and so is less likely to be greatly changed by the cultural environment and more likely to be framed by similarities that are recognisable and thus accessible if presented on stage. Stephen Di Benedetto interestingly comments that the brain stem controls 'the basic tools the actor uses to move across the stage, speak lines, and create character' (2010: 4), suggesting these tools are largely instinctive. This will be followed up in Chapter Five.

The next region to develop was the paleo-mammalian brain or cerebellum. This houses the limbic system which includes areas such as the hippocampus, the amygdala, the thalamus and hypothalamus. This system regulates moods and emotions, for example, hunger-satiation, sexual desire-gratification, thirst-fluid retention, sleep-wakefulness, fear-anger and fight or flight responses. Maclean describes three important behaviours that derive from evolution of this brain: nursing in conjunction with maternal care, audio-vocal communication for maintaining maternal-offspring contact, and play (1989: 16). Play is an important innate behaviour for this study because, unlike maternal care, it affects all humans rather than just females. It is also important because children experience this behaviour as well as adults and the wide accessibility being explored by this study includes being accessible to children. Maclean suggests 'the development of play behaviour may have served originally to promote harmony in the nest, and then, later in life, affiliation among members of social groups' (1989: 396). Johan Huizinga goes even further in 'a theory of culture according to which virtually everything that eventually developed into higher forms of cultural activity, including theatre, was originally a form of play or, rather, game' (Rozik, 2002: 226). This is important because it acknowledges all cultures would be familiar with the concept of play in some form. Brian Sutton-Smith challenges 'the constant modern tendency to think of play as some other more important cultural process (psychological or sociological)' (2001:106) and suggests that the 'most obvious function of play is the enjoyment of playing […]' (2001: 106). This important concept is discussed further in Chapter Five.

The third region to develop was the neo-mammalian brain or cerebrum. It is the largest part of the brain and is responsible for cognition and sophisticated perceptual processes such as reasoning and analysis. A deep furrow divides the cerebrum into two halves called the right and left hemispheres and contemporary neurologists suggest that this division represents a fourth phase of evolution into the human brain. The right hemisphere is associated with creativity and the left with logic abilities and the use of language and speech. The cerebral cortex (or neocortex) is the outermost layer of the cerebral hemispheres and is divided into four lobes: the frontal lobe concerned with reasoning and planning, the parietal lobe concerned with recognition and perception, the occipital lobe concerned with visual processing, and the temporal lobe concerned with auditory stimuli and memory. It is in the

cerebrum that cultural and learned behaviour are processed. Stevens notes that the behaviour 'arising in the neocortex is usually described as "conscious", "voluntary", and "rational", reflecting the fact that there is a sense of personal control over such behaviour' (2002: 307).

For this study it is important to note that although all the different areas of the brain are interlinked through networks of neurons, certain brain functions can operate without conscious control through by-passing the neo-mammalian brain. For example, eyelid opening, papillary dilation, respiratory movements, cardiovascular changes are all involuntary and, most interestingly for this study, so are changes in facial expression (Coch *et al.*, 2010: 348). This is supported by Damasio who observes that 'a spontaneous smile that comes from genuine delight or the spontaneous sobbing that is caused by grief are executed by brain structures located deep in the brain stem under the control of the cingulated region. We have no means of exerting direct voluntary control over the neural processes in those regions' (2000: 48). This suggests that some human responses and behaviours can occur without any culturally embedded intervention, indeed '[e]lectrophysiological experiments prove that furious activity in legions of neurons can fail to generate a conscious percept or memory' (Koch, 2004: 3). This is in accord with Brian Sheldon who in his discussion of involuntary responses (also known as physiological reflexes) states that 'certain basic forms of emotion are inborn, for example, fear, crying, smiling and so on' (1995: 98). He asserts that the human face is 'the main source of information as to what an individual feels […]' (1995: 99). This is an important finding for its implication on the concept of accessibility, for it is arguable that some performance material might have the potential to stimulate a response in a range of people despite any differences in their environmental learning processes. Furthermore, any such response would manifest itself physiologically (for example, with an involuntary facial expression) which means the response could be noted, to some extent measured and through inference, a level of the accessibility of the performance material might be gauged.

Neurons

The brain contains billions of nerve cells called neurons. Each neuron has an axon that transmits impulses away from the cell nucleus and dendrites that act as receivers. Synapses

are gaps between interconnecting neurons. When neurons become active, known as firing, an electrical current, called an action potential, is transmitted down the axon. This current triggers the release of chemicals called neurotransmitters which enter the synapse, cross the gap and operate on receptors in the post-synaptic neuron. The activation of the receptors causes this new neuron to fire, produce its own action potential and in this way the impulse will continue to be transmitted throughout a network of interconnected neurons, (although some synapses have a prohibitory effect to block further transmission of the electrical impulse). Bruce McConachie and F. Elizabeth Hart relate how this 'movement of information results in physical activity, emotional experience, creation of memories and cognitive thought' (2006: 260). Di Benedetto describes neuron activity as 'like a giant stadium wave cresting and falling into a frenzy of activity. When fewer people participate, the wave dies out. All we sense and perceive relies on this chemical process, whose goal is cognition' (2010: 2). The main neurotransmitters relevant to this study are noradrenaline, dopamine and serotonin, those associated with arousal and pleasure which are further discussed below.

Specific groups of neurons that use a common neurotransmitter work together in networks. The autonomic nervous system is an extensive network of interconnected neurons that are widely distributed inside the body cavity. It is separated into two divisions that functionally oppose each other and use different neurotransmitters to send their messages throughout all parts of the body. These are called the sympathetic and the parasympathetic divisions. The autonomic functions are carried out automatically without any conscious control and both divisions help maintain homeostasis. The sympathetic division increases heart rate, increases blood pressure, suppresses digestive function and activates glucose reserves. It is called ergotropic, is excitory and promotes arousal in times of stress or emergency (the fight or flight syndrome). Emotions are strongly felt with a sympathetic reaction (Gross, 1996: 65). The parasympathetic division decreases heart rate and blood pressure, stimulates digestive systems, reduces the rate of breathing, stores glucose and the emotional response is less extreme (Gross, 1886: 65). It is called trophotropic and has an overall calming effect. Both these innate biological systems can affect mood and behaviour without conscious intervention.

Reflexes and Fixed Action Patterns

Very basic innate systems are called reflexes. An example in babies is sucking and grasping, in children and adults reflexes are evidenced by quickly snatching a hand away after touching a very hot object, blinking if something moves rapidly toward the eye or sneezing if dust particles enter the nose. A more complex system is called taxis which is 'an orienting or locomotory response to some stimulus' (Salkind, 2004: 86), for example human infants 'tend to cuddle or fold into the arms of the adults who hold them' (Salkind, 2004: 86); in adults this might be submissive behaviour from 'a slight nodding of the head to prostrating oneself' (Eibl-Eibesfeldt, 2007: 373).

Complicated innate systems are called fixed action patterns. These occur when a group of neurons work together in order to stimulate a specific, genetically determined behavioural response. In the animal kingdom this might manifest itself in behaviours such as mating rituals or nest building. In humans, fixed action patterns include certain facial expressions such as smiles, protecting the head with palms down in fear situations (Eibl-Eibesfeldt, 2007: 31) or more complex behaviors, such as caring for infants, all of which are important for survival (Eibl-Eibesfeldt, 2007: 23). For a fixed action pattern to occur an innate releasing mechanism must be triggered and the triggering only occurs if a sign stimulus is present. An example in the animal kingdom is that of seagull chicks. Their mothers have a red patch on their beaks, which is a sign stimulus. When the chick sees a red patch (whether the red patch is actually on their mother's beak or just painted on the end of a stick held by an ethologist) an innate releasing mechanism is triggered and the corresponding fixed action pattern of behaviour is undertaken, in this case pecking and calling (Avery, 2003: 30-31). In human ethology a sign stimulus for parents is their infant appearing in their field of vision. This triggers an innate releasing mechanism and the following fixed action pattern occurs, 'a slight retroflexion of the head, raised eyebrows, widely opened eyes, and slightly opened mouth, followed by a verbal greeting and/or smile' (von Cranach *et al.*, 1979: 467). Another example is the sign stimulus of an unexpected loud noise. This noise will trigger an innate releasing mechanism that releases adrenalin into the bloodstream, makes the heart beat faster and can cause a phatic response. The neo-mammalian brain makes no contribution to this process. However, it is important to note that the phatic response itself will not be identical for every person, for as Eibl-Eibesfeldt writes:

> A number of universals in human behaviour occur only in very generalised
> form. In some cases the behaviour patterns themselves vary considerably from
> culture to culture, but there are certain universal features. Some of these seem
> to have their origin in the fact that, due to innate releasing mechanisms, people
> react to certain stimuli in the same way all over the world. (1979: 22)

One of the most common results of innate releasing mechanism is the phatic response called a laugh. The exact nature of laugh will vary not only from culture to culture, but also from individual to individual. But its presence, whatever the actual manifestation, along with the presence of a spontaneous smile is evidence that an innate response has been triggered. This innate biological mechanism is of particular importance to this study because it produces some behaviours that ethologists have noted to occur in all humans regardless of their cultural background and is given further consideration in Chapter Five.

Pleasure Reward System

Pleasure is experienced mainly in two regions of the paleo-mammalian brain called the nucleus accumben and the ventral tegmentum. It is these regions that house neurons which release a neurotransmitter called dopamine into their synapses. Dopamine therefore stimulates feelings of enjoyment and pleasure. The pleasure reward mechanism operates without conscious intervention; in other words, you cannot deliberately choose to not feel pleasure once the mechanism has been triggered. This also explains why it is possible to feel pain and pleasure at the same time (Scitovsky, 1992: 59-61). The greater the stimulus, the more dopamine is released, and the more heightened the feeling of pleasure. Instead of having one specific sign stimulus, many different activities can trigger this mechanism and so it acts as a 'positive reinforcer' to 'selectively strengthen any behaviour contingently linked to it' (Schiffer *et al.* 2003: 849). Although this response is innate, the brain can learn which activities produce feelings of pleasure and can consciously choose to carry them out. It is arguable that cultural acts such as listening to music, dancing and watching theatre have developed purely because they give us pleasure (Dissanayake, 1995: 24). However, Mihaly Csikszentmihalyi and Rick Emery Robinson criticise the evolutionist approach to sensory pleasure for appearing reductionist in that it explains 'the enjoyment of art in terms of selective pressure operating below the threshold of human awareness and choice' (1990: 15) and yet they say it can also be viewed as 'emancipatory', because it indicates 'ways in which humans have been able to acquire new skills and new sensibilities' (1990: 15).

Pleasure has been linked to the theatre in many different ways (see Barthes, 1975; Ubersfeld, 1982; Shepherd, 2006) and this is considered further in Chapter Five.

Mirror Neurons

Mirror neurons are to be found in the frontal lobes in part of the brain called Broca's area. They were discovered in 1996 by an Italian neuroscientist called Giacomo Rizzolatti while he was working with monkeys. Evidence of 'mirror neurons in the human brain was provided in the mid 1990s by a series of PET and TMS studies on action execution' (Iacoboni, 2003: 109), which proved that as far as certain areas of the brain are concerned seeing and doing are the same thing. This learning process is essential for survival for young of any species can learn behaviours from their parents, such as foraging or hunting for food. But they are also 'a mechanism of connecting me with you, one person with another, and therefore may play a vital role in communication and social interaction' (Blakemore in Azar, 2005: 1). Their role in creating empathy has already been discussed in the previous chapter but there are also important considerations for understanding other aspects of audience reception in the theatre. Vilayanur Ramachandran writes:

> Mirror Neurons also permit a sort of 'virtual reality' simulation of other people's actions and intentions, which would explain why we humans are the "Machiavellian" primate--so good at constructing a "theory of other minds" in order to predict their behaviour. (2003: 44)

This ability to "read" the actions and intentions of those performing particular behaviours on stage is fundamental to a theatrical performance. The brain does this by giving the viewer the same experience from watching the action as they would get from doing the same action. In other words, meaning is created by the brain "living out" the actions of the actor they see on stage. Peter Eversmann writes:

> A spectator may involuntarily 'mimic' the expressions, the bodily postures and the movement of an actor, thereby experiencing more or less the same muscle impulses as those of the actor. This is not to say that these muscle impulses are truly acted out and would be noticeable to an outside observer, rather they are there in a subliminal form, giving the spectator some idea of what the actor/character is going through, without actually copying the movement or expression. (2004: 152)

This is supported by Naomi Rokotnitz who agrees that 'in order to interpret the actions or intentions of another, the observer must share the motor schema of the agent--share a bodily knowledge' (2006: 135). Mark Johnson explains further:

> Mirror neuron phenomena suggest that *understanding is a form of simulation*. To see another person perform an action activates some of the same sensorimotor areas *as if* the observer herself were performing the action. This deep and pre-reflective level of engagement with others reveals our most profound bodily understanding of other people, and it shows our intercorporeal social connectedness. (2007: 161)

This leads the research to hypothesise that if the behavioural patterns employed on stage are designed to stimulate innate neural networks in the audience, then the potential for audience members to find these aspects of the performance accessible could be increased regardless of their age, social background or ethnicity. Rizzolatti and Corrado Sinigaglia suggest this possibility in response to an interview given by Peter Brook:

> The players on the stage overcome all linguistic and cultural barriers to encompass the spectators in a shared experience of actions and emotions. The study of mirror neurons appears to offer, for the first time, a unitary experimental and theoretical framework within which to decipher this form of shared participation that the theatre provides and which is fundamentally the basis of our common experience. (2006: xiii)

The role of mirror neurons is an important factor in this research and will be returned to throughout the following chapters.

Pattern Recognition

One of the central innate processes concerned with perception is called pattern recognition. It is a theory which explains how we make psychological sense from the sensory information we receive from the external environment, and is defined as the '[p]rocess of recognising, identifying and categorizing objects' (Gross, 1996: 233). Nobody knows exactly how the process works but Roy Lachman *et al.* suggest that in 'both auditory and visual models, the best-matching memory code is used to represent the meaning of the stimulus' (1979: 522). David Marr (1982) proposes that pattern recognition involves a series of four computational processes: the image primal sketch (intrinsic images), a 2.5D sketch (viewer centred sketch map) and a 3D model. Irving Biederman (1987) suggests a recognition-by-components theory whereby understanding of visual data involves recognition of 36 geons (geometric icons) being matched with stored objects in the memory. Semir Zeki describes the neural mechanism of pattern recognition as 'an active process in which the brain, in its quest for knowledge about the world, discards, selects and,

by comparing the selected information to its stored record, generates the visual image in the brain […]’ (1999a: 21).

What is important to note for this study is that there are two types of processing: bottom-up, which deals only with incoming information and therefore occurs in the reptilian and paleo-mammalian brains, and top-down, which begins with incoming stimuli but also uses knowledge and understanding processed in the neo-mammalian brain (Lipscomb 1996: 138). This knowledge would have been gained from learning within a particular cultural environment. Research has shown that despite cultural difference ‘underneath the different conventions about esthetic expression there appear to be universal psychological mechanisms in the perception and appreciation of visual stimuli’ (Berry *et al.*, 2002: 220). Di Benedetto states that we are ‘designed to respond to sensory stimulation’ and relates this to viewing theatre by suggesting that ‘by recognising patterns, we pay closer attention to the details of the event and begin to make conscious our understanding of the objects’ (2010: 7). Pattern recognition is dealt with in more detail in Chapter Four.

The Innate in Theatre Practice

Theatre scholar Carl Niessen (1890-1968) proposed that ‘all human performative activities derive from a particular anthropological condition, namely the innate human urge to act out all kinds of spiritual, emotional and mental states physically by carrying out particular performative acts’ (Fischer-Lichte, 2003: 51). Although nowadays this might be considered overly simplistic others such as Bruce Shapiro agree, stating that performance is innate and that this innate phenomenon ‘is the basis of an actor’s ability to make dramatic performances’ (1999: 19). Similarly, Eli Rozik, drawing on studies by Jean Piaget and Damasio, claims that the innate concept of play is at the root of all theatre practice (Rozik, 2002: 281). Some contemporary theatre practitioners and directors refer to the innate, others utilise innate behaviours in their practice and some implicitly reference the innate through the concept of the universal or ethological concerns. This chapter now turns to such practitioners to ascertain what can be learnt from them to help inform this study.

Lecoq

Practitioner Jacques Lecoq articulates a notion of biological innateness in his work through a concept he calls *le fonds poétique commun* which is translated as the universal poetic sense. On the one hand he defines it as a culturally experienced phenomenon 'laid down in all of us by our various experiences and sensations, by everything that we have seen, heard, touched, tasted' (2000: 46) and paradoxically suggests that its dimensions 'are there inside us, and constitute the common heritage […]' (2000: 46). These words suggest something innate, something we are born with which is shared by all humans. The 'universal poetic sense' refers to abstract dimensions such as colour, light, space and sound. All of these are sensory experiences which are mediated by innate structures in the brain. Some, like colour vision, have special areas designated to this function alone (Zeki, 1999a and 1999b). We are born with the ability to respond to these environmental phenomena, but our experience of them is also affected by the cultural environment they are experienced in, which might explain the dualism articulated by Lecoq. Lecoq suggests he is more interested in innate response as he uses the phrase 'down into the depths' when describing the journey a student must take to connect with the 'essence of life' (2000: 46). The depths imply an internal discovery which goes beyond the conscious to the unconscious.

More fundamental to Lecoq's praxis is the notion of play, which is described by Franc Chamberlain as 'one of the most important qualities in Lecoq's pedagogical framework […]' (2002: 33). This concept also appears to have innate qualities because '[w]hatever the human cultural aspects of play, there are also biological aspects' (Schechner, 2002: 90). Similarly, Donald Winnicott argues that the ability to play is natural, universal and linked to health (2005 [1971]: 56):

> Much of the behaviour normally described as play can be thought of in terms of the drives for curiosity, exploration and manipulation; indeed play and exploration are often equated. The purpose of play from the child's point of view is simple enjoyment. (Gross, 1996: 111)

The proposition by theorists such as Tadashi Suzuki, Lecoq, Winnicott and Richard Schechner that we are all genetically disposed to play and have experienced play since childhood has implications for accessibility as defined in this study. Thus Lecoq's notion of play should arguably be an important consideration for the devising of material for this research project. Play is dealt with in more detail in Chapter Five.

Grotowski

Jerzy Grotowski is another practitioner whose work is associated with the innate through his pedagogical interest in the concept of the archetype (Wolford, 1997: 1; Schechner, 1997: 490) and the collective unconscious (Styan, 1981: 157). James Slowiak and Jairo Cuesta write that Grotowski would first 'try to identify and confront the archetype in each text he directed' (2007: 64). Grotowski's methodology was to 'sift through practices from different cultures for what is similar among them, searching for the "first", the "original", the "essential" and the "universal"' (Schechner, 1997: 490). According to Eugenio Barba this approach or strategy seems to reveal a similar paradoxical tension between the cultural and the innate that Lecoq experienced when Barba describes Grotowski's use of archetype as a 'symbol, myth, image, leitmotif--something deeply rooted in a civilization's culture' (1997: 68), yet conversely writes that the archetype must be a 'sign which awakens associations buried in the audience's unconscious' (1997: 75). For Grotowski himself the cultural and the innate are not separate concepts but intrinsically linked. He writes that the 'total act' of an actor is 'like a step towards the summit of the actor's organism in which consciousness and instinct are united' (2002: 210). This concept is explained by Slowiak and Cuesta: 'If the actors and director retain their personal associations and private experiences while attempting to incarnate the myth (or archetype) in performance, then the connection to the roots, and both the relativity of today's problems and the relativity of the roots, become perceivable for the spectator' (2007: 45). Grotowski explains his particular focus on the innate when he writes that '[e]ssence interests me because nothing in it is sociological. It is what you did not receive from others, what did not come from outside, what is not learned' (1997: 375). Much of his work explored non-Western ritualistic qualities such as rhythm, tempo, movement patterns and sounds because he 'wished to create a modern secular ritual, knowing that ancient rituals are the first form of drama' (Barba, 1997: 678). Jade McCutcheon writes that Grotowski 'wanted to investigate the innate physical power known in the Hindi Tradition as "Kundalini", the sleeping energy at the base of the spine' (2008: 29) and I Wayan Lendra, an actor who has worked with Grotowski, reports that Grotowski himself used biological terms when describing 'innate energy'. Lendra writes that 'Grotowski described what I call innate physical power as the "reptile brain", the spinal chord and brain stem, with the "sleeping energy" at the very bottom of the spine. This unawakened energy source exists in every human being' (1997:

69

327). Slowiak and Cuesta even go as far as to say that Grotowski believed that through myth the audience could experience 'a universal human truth' (2007: 45). Grotowski's sifting of cultural material to find archetypal concerns, his interest in myth and aspects of non-Western ritual help direct theoretical research further and these concerns are dealt with in Chapters Three and Five.

Barba

Barba is a practitioner whose work is described by some as 'experimental theatre' (Schechner, 1993: 14) but Barba himself prefers the terminology 'The Third Theatre' (Watson, 1993: 19-20). Marco De Marinis writes that Barba's 'aim--though not always achieved--has been to create performances which might allow a real plurality of reception or viewings which are equal to one another' (1987: 104). This equality of viewing is an interesting notion to a study of accessibility. As a result of his research into how it might be achieved Barba has discovered a global similarity in the performers he works with from different cultures:

> The performer's various techniques can be conscious and codified or
> unconscious and implicit in the use and repetition of a theatre practice.
> Transcultural analysis shows that it is possible to single out recurring principles
> from among these techniques. These principles, when applied to certain
> physiological factors--weight, balance, the use of the spinal column and the
> eyes--produce physical, pre-expressive tensions. These new tensions generate
> an extra-daily energy quality which renders the body theatrically 'decided',
> 'alive', 'believable', thereby enabling the performers 'presence' or scenic *bios*
> to attract the spectator's attention *before* any message is transmitted. (Barba,
> 1995: 9)

As physiological responses are largely related to emotional responses (Ekman, 2003: 15), Barba has possibly noticed that performers get themselves into the same state of arousal in preparation to perform no matter what their cultural background and that this state is recognisable to the viewer. Barba developed the idea of transcultural phenomena during the late sixties and early seventies when he and his company developed movement '*etudes*' inspired by, but quite different to, Vsevolod Meyerhold's etudes. During their development the actors studied woodprints of *Kabuki* actors. Ian Watson noted how 'Barba and his colleagues observed that these prints conveyed a distinctive mood or character through emphasising a part of the figure's body, such as the position of the feet and hands or the angle of the spinal column' (1993: 46). In practice, actors from one culture were decoding

signs encoded by a different culture and drawing similar conclusions about character. Therefore it is possible to deduce that the images produced of the *Kabuki* actors were archetypal images which conveyed the character, and that these images consisted of changes in body position including feet, arms and trunk that were 'read' as character differences. This suggests that some aspects of posture might have their roots in innate mechanisms and could be a fruitful line of research for this project, particularly with respect to rehearsal processes regarding character portrayal. This will be dealt with in Chapter Five.

Brook

Chapter One has already shown that Brook is a practitioner whose theatre is driven by the desire to be as accessible as possible in order to reach a wide audience. Counsell writes of Brook:

> His work has been described as a search for a "universal language of theatre" and for the "wellsprings of drama". Either phrase will serve, for both express Brook's desire to return to a theatre which is deeper, more essential than the differences of class and nationhood which divide contemporary humanity […]. (1996: 146)

The 'universal language' that Brook aspires to is one that crosses both cultural and social boundaries, but he also desires theatre 'with a simplicity that could be enjoyed by a child' (Heilpern, 1999: 191). Brook is still searching for a theatrical form that fully satisfies this definition though, and he has not been completely successful with the forms he has tested, as his experiences of performing a show called *Orghast* proved:

> '*Orghast'*, in contrast, was to work viscerally, appeal directly to the body and the emotions, those human faculties often believed to be natural, untainted by culture and intellect. In this respect *Orghast* was not an unqualified success. While many spectators were moved, particularly by the company's vocal work, the story proved largely incomprehensible. This was particularly serious for Brook's theatrical project. He had attempted to create an event that was equally accessible to spectators of any cultural origin, but had succeeded instead in bewildering some and alienating others. (Counsell, 1996: 159)

Clearly Brook did not achieve equality of access with this production. Counsell blames his failure on the use of symbolic signifiers and theatrical conventions whose meanings were not shared by all the audience members arguing that, '[i]f shared cultural codes are not available, the audience will either be unable to read the event, […] or else interpret it using

their own codes' (1996: 167). One such theatrical convention was the creation of a new language undertaken by Brook in conjunction with Ted Hughes, who argues that 'there exists in the human race a common tonal consciousness, "a language belonging below the levels where differences appear"' (Roose-Evans, 1984: 177). However, critics who attended the performance 'professed bafflement when exposed to [the] incomprehensible speech sounds of *Orghast*' (Loney, 1998: 165). It is possible that the sounds were incomprehensible because audience members were actually trying to create meaning from them using the structures in the brain associated with the acquisition of language. However, although the acquisition of language is a universal phenomenon (see Chomsky, 1957 and 1988), the sounds involved are far from universal with over 10,000 different languages and dialects in the world (Bear *et al.*, 2001: 639). For every audience member it would have been like watching a performance in a foreign tongue of which they had no experience. Brook and Hughes did not want the audience reception of the language to be a cerebral one. They used the actors' voices like musical instruments with the 'intonations, inflections, pitches, tempos, and rhythms inextricably linked with the physical performance of the actor-speakers' (Loney, 1998: 165). As such, they wanted to touch the listener directly 'reaching out to a far greater emotional response--like music does' (Heilpern, 1999: 24). However, current research suggests a 'rejection of previous theories that sought to explain the emotive character of music solely as a result of music's mimicry of human vocal expressions of emotion' (Balkwill and Thompson, 1999: 59). This is supported by Isabelle Peretz who writes that because 'the neural organization underlying the recognition of vocal expression of emotions appears highly specialized, I find it difficult to conceive how it might also serve musical emotions' (2001:124). Clearly language, in terms of spoken text on stage, is not relevant to the devising process of a full-face masked performance. However, music is relevant, particularly in relation to ritualistic elements articulated by Grotowski and thus might be an element of performance that could be used to help direct the emotional response of the audience. This is considered further in Chapter Four.

Turner

Victor Turner (1990) concluded that there were theatrical concepts that could be termed universal and his ideas, particularly with regard to social drama, are included in Chapter Four which discusses narrative. Towards the end of his life he became increasingly

interested in neurology and the structure of the brain and its relation to performance. Unfortunately he died before he could explore these ideas fully, but he did write an essay called "Body, Brain, and Culture" (1987) in which he discussed MacLean's notion of brain evolution, and came to the following conclusion:

> But if one considers the geology, so to speak, of the human brain and nervous system, we see represented in its strata--each layer still vitally alive--not dead like stone, the numerous pasts and presents of our planet. […]. And even our reptilian and paleomammalian brains are human, linked in infinitely complex ways to the conditionable upper brain and kindling it with their powers. (1987: 177)

He argued that the interconnectivity of the brain was apparent in ritual, myth and play thus suggesting that the occurrence of theatre as a worldwide phenomenon is a direct result of archaic neurobiological processes finding cultural expression. His concerns with myth and play helped direct theoretical research further and both are considered in more detail in Chapters Four and Five respectively as being particularly relevant to accessibility.

Schechner

In his book *Performance Theory* (1988) Schechner dedicates an entire chapter to the relationship between ethology and theatre. He suggests that the similarity in the contents of taboo acts (often violent or sexual) performed in theatres as disparate as Papua New Guinea, Nigeria and Greenland might be the result of a need to dispel tension (catharsis) in the same way gorilla troupes discharge excitement through performative displays such as chest beating. He argues that 'if similar actions occur where there is no chance of cultural diffusion, these are evidence of the deep structures of human social, aesthetic, and biological organization' (1988: 237). He further argues that all theatre is a form of ritualisation rooted in biological functions. He uses examples from the work of ethologist Konrad Lorenz (1966) to conclude that 'theater is a model of, or an experimentally controlled example of, human interactions' (1988: 243). He supports the hypothesis that certain innate human behaviours would be widely accessible if presented on stage when he writes:

> Surely certain human behaviour sequences are enacted everywhere in the same way; these may constitute a basic repertory of mini-drama: the child running for protection into the arms of its mother; the open palm greeting; freezing in place when a suspicious noise or an unknown threat is perceived; taking cover by means of hiding, crouching, or flattening when an overwhelming force is

73

encountered. There is a large repertory of universally recognised situations eliciting equally recognisable responses. (Schechner, 1988: 261-262)

Schechner's argument concerning the wide recognition of certain human behaviour when considered in conjunction with knowledge of the mirror neuron system is useful when approaching wide audience understanding of material presented on stage and is considered futher in Chapter Six.

Most interestingly Schechner also notes that even the most avant-garde theatre steeped in cultural iconography such as the work of Robert Wilson, can still manage sometimes to touch a deep resonance with the audience:

> When working with [Christopher] Knowles on *Stalin,* other performers followed him, imitated him, played with him on his own terms: in this nest of experiences, people began to come out, showing idiosyncratic aspects of their own personalities. The gap between them and Knowles, and between each other, both grew and diminished. Paradoxically, these deeply private words proved "universal," a widely shared repertory of actions, many based on recognisable versions/distortions of ordinary experience slowed down or exaggerated. (Schechner, 1988: 249)

What is noteworthy about this description is that the behaviour being portrayed on stage does not have to be a 'realistic' representation for the audience to experience some level of engagement. The behaviour can be distilled, its pace disrupted, it can be submerged in cultural iconography, but still the human brain will be able to find a matching neural pathway, if one exists, and some level of connection will be reached, possibly due to the heuristic nature of the pattern recognition system described above and also because of the innate nature of play, emotion and human responses. This study aims for a broad level of cognitive understanding from a wide range of audience, so the avant-garde model will not be followed. But it is encouraging to note that the inclusion of culturally based iconography need not interfere with the broad level of understanding being investigated in this research.

Masked Performance

Sears Eldredge proposes that masks and mask making are global phenomena, though he notes they are not universal because aboriginal culture does not have masks as such but instead uses make-up and body paint to serve some of the same functions (1996: 3). Eldredge implies masks and masking function innately when he questions why humans

'felt a need for masks and masking, unless these objects and activities have been recognized as somehow necessary for survival' (1996: 3). This is supported by Gaston Bachelard who proposes that the mask seems to be 'the object of a veritable instinct of the human race' (1988: 157). In *The Mask of Medusa* (1964) Roger Caillois argues that in both man and animals masking and mimicry are natural and instinctive as a language for camouflage and protection, disguise and attraction, and intimidation and control (Smith, 1984: 2). Caillois goes on to state the importance of masks in many cultures:

> It is a fact that all mankind wears or has worn a mask. This enigmatic accessory, with no obvious utility, is commoner than the lever, the bow, the harpoon or the plough. Whole peoples have been ignorant of the most ordinary tools. They know the mask. Complete civilizations, some of them most remarkable, have prospered without having conceived the idea of the wheel, or, what is worse, without using it even if it was known to them. But they were familiar with the mask… There is no tool, no invention, no belief, custom or institution which unites mankind so much as does the habit of wearing a mask. (1964: 106)

One explanation for the global use of masks may lie in the way masks function. Herbert Blau states that 'the topology serves a metaphysic of psychological essence; it does not hide-- it proclaims' (1990: 178). Eldredge suggests masks 'externalise in a concrete fashion' an 'inner subconscious world' (1996:13). For Eugene O'Neill masks give a 'fresh insight into the inner forces motivating the actions and reactions of men and women […]' (1998: 154). Werner Muensterberger suggests:

> Rather than mirror nature in a photographic sense, the mask confronts us with a portrait more or less removed from the world of reality. It is a visible expression not merely of the human or animal face but a portrayal of an inner image responding more to the emotional needs of the maker, the wearer, and the community of spectators in general. Considered thus, as a spiritual manifestation the mask can be said to symbolize concretely what so frequently must be regarded as transcendental, or, as an observation, not of outer, but of inner nature; an effective bridging of the emotional experience through its visible manifestation. (cited in Eldredge, 1996: 5)

Carl Kerényi, in his Jungian study *Man and Mask* also highlighted the positive effect of masks on the community of spectators. He states that the 'principal function' of the mask 'is to transform and thereby to unite, or, perhaps more fundamentally, to unite and thereby transform' (1960: 155). Similarly, John Harrop suggests masks stimulate the inner life of the actor because it 'reflects, literally and metaphorically, stored aspects of the human condition sculpted to produce responses in the actor. The mask does not deal in prefigured

or predetermined attitudes; it produces responses from the deepest well spring of the actor's being' (1992: 67). Toby Wilsher makes a more explicit connection to the innate when he states that 'audience reception of a masked performance depends on human's innate capacity to read body language' (2007: 7). He suggests that masks have an 'immediacy and connection that crosses cultural boundaries and leaps centuries' (2007: 7). This evidence seems to suggest that masks are particularly suited to performance that explicitly wishes to be accessible to a wide audience. However, simply choosing to perform in masks does not instantly guarantee an accessible performance merely because masks seem to stimulate innate responses in both the actor and audience. Furthermore, there is far more to a masked performance than just the mask and many masked forms of performance have culturally specific aspects as discussed below. This is explored further in Chapter Seven.

Balinese Theatre

It is arguable that the accessibility of Balinese Theatre is limited to some extent because the majority of theatrical iconography it employs (language, gestures, postures) is deeply rooted in Balinese culture, suggesting only a Balinese audience would be able to decode all the inherent meaning, yet Daniel Meyer-Dinkgräfe proposes there are theatrical signs in the Balinese form that seem to transcend cultural boundaries:

> These signs function on an intuitive level. Because they are so strong and powerful, the spectator who is affected by them does not have to react on the logical, discursive level of language--his or her intuitive reaction is sufficient: indeed, it is this reaction alone that is aimed at in Balinese theatre. (2001: 69)

He argues that the signs employed in Balinese theatre operate on two levels, one cultural, and the other instinctive, by stimulating innate responses which are unconsciously processed and thus appear intuitive. Similarly, Antonin Artaud (who encountered a Balinese troupe at the colonial exhibition in Paris in 1931) noted 'signs shown on the stage function at an intuitive level' (Meyer-Dinkgräfe, 2001: 70). Artaud was very struck by this effect and called it 'a theatre that vibrates with instinctive things' (1958 [1938]: 43) and it informed his aesthetics to the extent that he aspired to recreate the same effect in his own work. He wrote that the true purpose of theatre was 'to create myths, to express life in its immense, universal aspect and from that life to extract images in which we find pleasure' (1958 [1938]: 192). The aspects of the Balinese theatre form which operate innately might be why it is very successful as a tourist attraction, playing to audiences from a wide range

of cultures. The masks are archetypal in nature, such as 'heroes, kings and ministers, apotropaic gods and demons' (Coldiron, 2004: 8), which helps break down cultural barriers. John Emigh notes that the dancers seem 'universally significant in their depiction of essentialized states sanctioned by the Balinese cosmos' (1996: 194), but more importantly he notes the inclusion of clowns and their humour that helps make the performances accessible (1996: 194). Clowns are an important aspect of several different Balinese forms such as *Topeng* and *Barong*. Along with the verbal jokes of the clowns there is a good deal of visual humour such as slapstick and sexual humour which is very popular with the audience (Coldiron, 2004: 223-224). These elements are given detailed consideration in Chapter Five. All the stage action, including the clowning, is accompanied by a gamelan orchestra and the music is an emotive force in the production. Artaud praised Balinese theatre for its use of music and criticised western theatre for being too language based:

> Our theatre has never grasped this gestured metaphysics nor known how to make use of music for direct, concrete dramatic purposes, our purely verbal theatre unaware of the sum total of theatre, of everything that exists spatially on the boards or is measured and circumscribed in space, having spatial density (moves, forms, colours, vibrations, postures, shouts) could learn a lesson in spirituality from the Balinese theatre with regard to the indeterminable, to dependence on the mind's suggestive power. (Artaud, 1974: 53-54)

This indicates that it is important to consider which aspects of music operate innately, for 'music is indeed related to core functions of the biology of the human nervous systems and therefore serves adaptive evolutionary purposes beyond that of the functional interpretation of art' (Miell *et al.*, 2005: 184). This is investigated in further detail in Chapter Four. Overall, Balinese theatre would seem to offer a good model for theatre that combines mask, narrative and character in an extremely accessible manner. This prompted this researcher to Bali to gather first hand knowledge of the Balinese *Barong* to investigate which elements might be most suitable to inform this research project.

Mummenschanz

Mummenschanz are a theatre company whose work is accessible to a very wide audience. Their work 'is a curious blend of masks and body disguising costumes, anthropomorphic creatures, human abstractions and symbolic confrontations' (Cocuzza, 1979: 4). It uses no language, is highly visual and largely movement based so that their work can be described

as a mixture of mime and puppetry. Sometimes the human form is clearly depicted, such as when the performers wear clay masks which they manipulate into different expressions, shapes and forms, or when the actors' eyes and mouth have been replaced with notepads which can be drawn on to change their facial expression, and sometimes the human form is completely disguised perhaps by a sheet of foam which is manipulated from behind to create expression or when a performer is completely engulfed in a tube or a pillow shaped body mask. Either way, audience understanding is achieved by extracting the essence of human relationships or human endeavour:

> […] Mummenschanz is seeking a sense of empathy and identification from its audiences. This--they hope--will happen partly through humorous recognition and partly through a loose emotional correspondence between spectator and the circumstances in which the masks find themselves. (Murray, 2003: 121)

Here it seems that the emotional connection does not have to be strong; there just has to be enough encoding in the stage business for the audience to decode the movement as emotive. This is arguable since emotions are innate phenomena and the corresponding physiological state that an emotional response produces is innately triggered. Simon Murray writes that the company's ability to 'reach a universal level of communication through its work' (2003: 123) is based on the following propositions:

> Human movement has the potential to communicate itself universally.

> It is possible to find--or create--a fundamental language of theatre that can be understood anywhere.

> Certain emotions and gestures have the power to be understood universally.

> An instinct--or a disposition--for play is a phenomenon that exists across different cultures. (2003: 124)

This is in complete accord with human ethology whose practitioners have observed humans from around the world and concluded that there are indeed some human universals of gesture and body language (Eibl-Eibesfeldt, 2007: 480-485). Unlike Brook the work of Mummenschanz is not based in myths and stories, indeed their shows contain sketches that could be played in any order (Murray, 2003: 116). However, each sketch does have a very simple narrative in that there is a beginning, middle and end led by a clear objective, such as an amorphous shape trying to mount a raised plinth, or a relationship that needs to be explored. Founder members Bernie Schürch and Floriana Frassetto state that the 'playfulness of human beings seems to be inherent. We always like to be playful--it is the common denominator around the world' (cited in Murray, 2003: 121). This suggests that by

tapping into the essence of innate behaviours and the fundamental innate quality of play Mummenschanz have achieved an extremely accessible theatre as evidenced by their worldwide tours. Not only has their work crossed cultural barriers, but it also crosses the age divide with both children and adults responding to their work. Therefore, the four propositions that influence their work are very relevant to enquiries surrounding the central research question in this thesis and would helpfully inform a piece of masked theatre that aimed for wide accessibility.

Trestle Theatre Company

Masks have been combined with narrative and character into original full-length performance pieces by Trestle Theatre Company. Early works were silent and employed expressive character masks to portray a range of 'recognisable persona' (Oddey, 1994: 65), clearly identifiable through iconic costuming and behavioural traits. They, like Mummenschanz, toured their work internationally, but less extensively, as Trestle's work toured mainly to Europe, Australia and America, where-as Mummenschanz toured worldwide. The iconography Trestle employed was rooted in British culture with cultural stereotypes such as unemployed skinheads (*Hanging Around* 1982), or Western settings such as a public house (*Plastered* 1983) or traditional British occasions such as a wedding (*A Slight Hitch* 1984). Some shows were not suitable for children as they explored adult themes (*Ties that Bind* 1988). Later work even used language and only toured to English speaking countries (*Top Story* 1987). The masks they used moved away from the larval mask (masks with semi-abstract shapes) that Lecoq taught to inspire the fundamentals of play, towards a more naturalistic style, based on British cultural stereotypes. John Wright, joint artistic director notes:

> In making masks that represented definite types Trestle had lost the ambiguity of the non-figurative shape which enables the actor to work on an extremely broad level of play and instead we had trapped ourselves at a level of psychological realism demanding small and intricate detail. (2002: 81)

Here Wright suggests it is the innate capacity for play that masks stimulate in their wearers that makes some masked performances more successful than others. Play is considered in more detail in Chapter Five. Clearly the accessibility of Trestle Theatre's work was limited both by the style of the masks and the contextual content of their performances and it is

these aspects that the practical element of this project will particularly address in order to explore accessibility.

Problems Surrounding the Concept of the Innate

So far this chapter has considered the innate mainly from a biological perspective but with the growing interest in human ethology has come growing debate about the relationship between the innate, the universal and culture which must also be considered when examining the innate in relation to accessible theatre practice. For some, like Roger Keesing, culture has far more significance than the innate. He feels that culture largely influences all aspects of our perception of the world around us. He proposes that it is 'the anthropologist's special insight, that these internal models we use to create a world of perceived things and events are largely cultural. What we see is what we, through cultural experience, have learnt to see' (1981: 82). In contrast, McConachie believes innate processes underpin cultural activity. He writes that 'the major emotional systems are unconscious and universal to all average humans at the neuronal and chemical levels of operation, although their expression in behaviour will vary among different cultures and individuals' (2008: 94). Whereas, Frank Salter, writing from an interactionist position, suggests that 'universality is seen as neither a sufficient nor a necessary condition of innateness. It is possible for a behaviour to be universal and yet non-innate due to coincidence, the spread of ideas, or the obviousness of a particular solution to a universally occurring problem' (1995: 120). The linking of innateness with the term 'universal' has been critiqued from many perspectives. Valerie Kennedy takes a political stance:

> There are problems with all these appeals to a universal type of human experience. As James Clifford says, it is very doubtful whether the 'African Pastoralist and the Irish poet and his readers' share the same 'existential "bestial floor."' Moreover, the idea of universal experience obscures the interrelations of power and knowledge that Foucault emphasizes. It also seems to disregard the fact that western imperialism and colonialism operated on the basis of hierarchies of race, class and gender, all of which assumed the inherent superiority of white, Christian, middle-class, Western men. (2000: 37)

Kennedy's argument that cultural processes are so powerful that they must override any suggestion of the universal in behaviour supports ideas expressed by Edward Said, whose agenda for such criticism lay in his studies and experience of colonialism and so recognized the power of cultural hegemony. Said (2003) argued that so-called universal truths, such as

freedom, justice and truth, were manipulated by colonial powers to assert their authority over the colonized. He was a humanist who felt Eurocentrism had been presented for so long as universalism that it went unchallenged and clearly this needed to change. Ferial Ghazoul writes that Said 'gestures towards the need for other ways of knowing the Other, and asks the question of how to study other peoples and cultures from a non-repressive and non-manipulative perspective. Here, he imagines the possibility of a kind of knowledge that traverses cultural difference and serves the end of liberation without being falsely universalist' (2007: 70). Said's criticism of the arts for legitimizing colonial rule was far reaching, particularly in film and European literature, but his later writings on music suggest that he understood the innateness of musical response when discussing the East West Dirwan project on National Public Radio in December 2002:

> Beethoven in the first place really transcends the time and place of which he was part. He was an Austro-Germanic composer who speaks to anyone who likes music no matter whether that person is African or Middle Eastern or American or European. And that extraordinary accomplishment is entirely due to this music of striving and development and of somehow expressing the highest human ideals, ideals of brotherhood, of community, of yearning, also, perhaps in many instances, unfulfilled yearning… Music making and listening at the same time present a fascinating dialectic between the individual and the collective, and that back and forth is very precious and gets over a lot of ground that is not commonly traversed in everyday life. (cited in Ghazoul, 2007: 84-85)

According to Yumna Siddiqi, Said imputes to Beethoven 'the ability to appeal to universal human ideals, across the differences of Nationality and location' (2005: 85). Although this might appear to contradict Said's earlier criticism of universalism the difference is in the acknowledgment of what is innate and therefore not culturally specific, and what is culturally imposed passing itself off falsely as universal.

Judith Butler criticizes the concept of universality from a gender politics perspective by opposing assumptions that sex and gender are universal, stable and innate. She writes:

> The meaning of "the universal" proves to be culturally variable, and the specific cultural articulations of "the universal" work against its claim to a transcultural status. This is not to say that there ought to be no reference to the universal or that it has become for us an impossibility. The bracketing of the universal only means that there are cultural conditions for its articulation that are not always the same, and that the term gains its meaning for us precisely through the decidedly less than universal cultural conditions of its articulation. This is a

paradox that any injunction to adopt a universal attitude will encounter. (2004: 190)

Rather than regarding sex or gender as innate, Butler asserts that they are the result of 'discourse and the law' (cited in Salih, 2002: 59). Cultural anthropologists would agree that 'the gender roles assigned to each sex vary from culture to culture and have an impact on personality' (Haviland *et al.*, 2005: 135). From a biological point of view sex does not fit neatly into the assumed universal binary of male/female, as 60 million intersexuals exist worldwide who either have reproductive organs, genetalia or sex chromosomes that are not exclusively either male or female (Haviland *et al.*, 2005: 136). Ethnologists Suzanne Kessler and Wendy McKenna summarise the relationship between what is innate and universal succinctly when they write that '[t]here has never been a report of a culture with no gender categories. To say that gender identity is universal is probably true in the sense that all people know what category they belong to, but may be incorrect if we mean knowing whether they are male or female' (1978: 37). These arguments raise concerns that in considering the innate, assumptions might be made that undermine individuality. Such assumptions might potentially have a negative affect upon accessibility.

Stuart Hall is critical of the concept of innateness when it is used to create stereotypes that support a hegemony which 'appears natural and inevitable' (1997: 259). He defines stereotyping as 'what Foucault called a "power/knowledge" sort of game. It classifies people according to a norm and constructs the excluded as "other"' (1997: 259). His belief in a politics of difference has been described by Helen Davis as 'the potentiality of achieving democratic socialism though a solidarity that unites different groups and individuals while valuing diversity' (2004: 2). To this end he criticized the standard use of the term 'ethnicity' which 'often goes hand in hand, particularly in Europe, with a kind of cultural fundamentalism; a culture of exclusion of the Other, a brutal and cynical rejection of the universal principles of humanism' (Pavis, 1996: 42). Furthermore, Hall criticized the practice of 'reducing the cultures of black people to Nature or naturalizing "difference"' (1997: 245) and the resulting constant portrayal of black stereotypes in the Arts:

> For example, the endless representations of the 'good' Christian black slave, like Uncle Tom […] or the ever faithful and domestic slave, Mammy. A third group occupy an ambiguous middle ground--tolerated though not admired. These include the 'happy natives'--black entertainers, minstrels and banjo

players who seemed not to have a brain in their head but sang, danced and cracked jokes all day long, to entertain white folks; or the 'tricksters' who were admired for their crafty ways of avoiding hard work, and their tall tales, like Uncle Remus. (1997: 245)

Instead Hall proposed in his essay "New Ethnicities" that ethnicity should be used as an 'anti-essentialist term, an attempt to understand the cultural construction of difference, rather than difference as a biological or racial marker that is fixed in our genes' (Procter, 2004: 122). Hall writes:

It seems to me that, in various practices and discourses of black cultural production, we are beginning to see constructions of just such a new conception of ethnicity; a new cultural politics which engages rather than suppresses *difference* and which depends, in part, on the cultural construction of new ethnic identities. (1995: 201)

For Hall, 'black' is a politically and culturally constructed term and that 'blackness' is not innate and fixed by nature and should not be interchangeable with concepts of the 'primitive', but rather it results from a historical hegemony that wrongly reduced black people to an essence or stereotype that 'all black people are the same' (1995: 200). Such problems are relevant to this study as they have the capacity to affect the accessibility of the performance through offending the audience if they are presented with stereotypes with regard to race. It is important to consider the most accessible way to present the characters on stage and this is approached in Chapter Six. The context characters are presented within is also important and this is considered in Chapter Four.

Conclusion

Understanding and applying the workings of innate neurobiological systems is particularly useful in the creation of a piece of theatre which strives to be accessible to the widest possible community of readers. It is possible for innate neurobiological systems to help in the formation of a schema for the articulation of human similarities that seem to cross cultural boundaries. The innate concept of play seems particularly important for accessibility, for as Murray writes of Mummenschanz: 'if their work is to attain a universal level of communication, then it must possess the quality of play and playfulness. Play is therefore a necessary--almost a sufficient--condition for the achievement of such a state' (2003: 121). This is an important consideration because children as well as adults have experience of this behaviour. Mirror neurons also seem to be very important especially in

audience reception, for 'the spectator is at the centre of the theatrical event and hence of theatre itself' (Balme, 2008: 34), and none more so than in this study where the audience is crucial to the notion of accessibility. When drawing on the concept of the innate in performance it is important to avoid stereotypical presentations that could alienate individuals or groups. This thesis continues with an in-depth investigation of the innate pattern recognition system and how this neural mechanism functions in the creation and reception of a piece of theatre.

Chapter Four - Pattern Recognition: Narrative, Music, and Dance

> It is probably one of the many conclusions of anthropological research that, notwithstanding the cultural differences between mankind, the human mind is everywhere one and the same and that it has the same capacities. (Lévi-Strauss, 1978: 19)

Bruce McConachie and F. Elizabeth Hart link the neurobiological processes for survival with the neurobiological processes needed for viewing a performance since both use the same perceptual systems (2006: 1-2). Stephen Di Benedetto indicates the two systems most prominently used in audience reception are auditory and visual, (although there are, of course, a number of performance artists, such as Franko B, who want the audience to experience a wider range of sensorial experiencess including touch and smell) (2010: x). This study will argue the importance of these two systems in audience reception and in informing pre-production dramaturgical decisions that might help widen accessibility of performance material, particularly in relation to narrative and myth. In order to do this it is necessary to start with a detailed investigation of the underlying innate pattern recognition principles involved in visual processing introduced in Chapter Three. This will be followed by similar detailed investigation of aural pattern recognition systems to help inform the argument that certain elements of sound and music (such as rhythm) are widely accessible due to the innate systems involved in their processing. The relationship between sound and movement necessitates a brief examination of dance, its innate capacity and thus the potential for greater accessibility in its reception.

General Principles of Visual Pattern Recognition

Semir Zeki states that the 'pre-eminent function of the visual brain is the acquisition of knowledge about the world around us' (1999a: 8). Indeed, it is estimated that 'more than 75% of all information the brain receives is visual' (Williams and Newton, 2007: 6). Rick Williams and Julianne Newton describe the ability to process visual information as 'intuitive intelligence that uses both nonconscious and preconscious information to initiate behaviour' (2007: 7). They explain the process further:

> Our eyes move approximately 20 times every second to gather information. We neither are conscious of this movement nor can rationally consider and analyse

every image that the eyes see. Nevertheless, selections of this visual information are received by the visual processing centre of the brain, which first synthesizes visual stimuli on preconscious nonrational levels before initiating a behavioural response. In other words, by the time we become conscious of what we are seeing, the intuitive mind has already synthesized the significant information and set a response into motion. Of course, if the rational mind becomes conscious of the information and behaviour, it can then use the visual information to analyse what has been observed and adjust behaviour as it deems necessary. (2007: 7)

Put simply, humans are constantly solving visual problems, mostly unconsciously and sometimes consciously, and Jay Harris notes its importance when he states that human survival skills depend on the brain's evolved capacity to 'create structures that solve problems' (Harris, 1998: 19); indeed Adaption-Innovation Theory, developed by Michael J. Kirton, 'rests on the assumption that problem-solving is the key to life in an ever changing universe' (2003: 26). It is arguable that the same problem solving skills are applied when an audience watches a performance. Problem-solving requires detecting change and being able to respond appropriately to it, or as Kirton writes, 'surviving the change (resolving a perceived novelty) by bringing about another (engendering novelty) that leaves the organism ready to meet the next challenge' (2003: 27). Katherine Leeland argues that a very efficient way to solve problems is through pattern recognition because 'perceiving the world through patterns ensures the rapid deployment of efficient behaviours by reducing the computational resources to be invested in action' (2008: 71). Two proposed models for detecting change through pattern recognition have been addressed in the previous chapter (Marr, 1982; Biederman, 1987). Another theory worth consideration is described by the *gestalt* school of vision. This school recognises the brain's tendency to group objects together through principles such as: 'proximity, closure, continuity, symmetry, similarity, figure-ground and part-whole relationships' (Gross, 1996: 219). Karl Popper describes a *gestalt* perception as a hypothesis because it is 'an interpretation of what we see' (1999: 55). Bruce E. Goldstein suggests these principles are most accurately described as being heuristic, which means they operate under 'rules of thumb' that provide a best guess solution to a problem (2001: 154). The notion of best guess means that attention is not drawn to every little deviation from the pattern being viewed as this would be time consuming and possibly lead to nervous exhaustion through the constant stimulation of response mechanisms. Di Benedetto points out that 'whereas we perceive a stable and

unchanging conception, such as a steady temperature, the brain searches for patterns and pattern violation' (2010: 10-11). If the visual information being received by the brain is more or less responding to *gestalt* principles, within reasonable margin of difference, then there is no response. When there is a notable change in perceived pattern, other areas of the brain are alerted through the quick firing of neurons and the simultaneous release of chemicals into the bloodstream to enable a physical response. This is so effective that Ian Verstegen calls *gestalt* perception a 'model of simplicity' and he suggests these principles help to explain why humans respond so well to 'the visual arts, film, dance, theatre, music and poetry' (2005: 149).

Processing visual patterns involves 'two broad systems: the "what" (also called the ventral system) which is concerned with the identification of an object, and the "where" system (also called the dorsal system) which is concerned with the relative spatial position of an object' (Tovee, 1996: 68). The dorsal stream deals with visual information that requires a motor response, that is, some sort of physical action. This will 'lead automatically to bodily changes, mostly in the viscera and the skeletal muscles, […] some of these changes can be felt [and] the perception of them is the emotion' (Bartlett, 1996: 347). If necessary, once the ventral stream has identified the object being viewed using innate mechanisms that bypass the conscious brain, further ventral stream processing 'can lead to conscious perception' (Milner and Goodale, 1995: 200), and thus voluntary attention is engaged. For this research it is important to note that dorsal stream processing is 'bottom-up'; it is entirely unconscious and automatic. It has the capacity to operate separately from the ventral stream which is 'top-down' (Milner and Goodale, 1995: 69-70). Thus a physiological response to visual stimuli (which sometimes can be perceived as an emotion) can lie outside the domain of culturally learnt information which is an important consideration for accessibility. When this innate physiological response is experienced strongly it is sometimes articulated as a 'gut reaction' or 'gut feeling'. Lauralee Sherwood states that the lower level amygdala plays a key role in the 'gut reaction and describes it as 'a rapid, rather crude, instinctive response' (2008: 156). Dennis Coon and John Mitterer propose that it involves 'trusting one's own feelings and perceptions' (2008: 412).

Another function of pattern recognition systems is suggested by Manuel Ferre as identification, that is, they can answer important questions for survival such as what is this? Or who is this (2008: 117)? This is very relevant for an audience trying to create meaning out of material presented on stage. Josep Nicolau writes that '[d]etection of meaning may be a fairly complex process involving pattern detection, memory, sequence detection and so on' (1995: 70), but most importantly he explains how signification works by pointing out that '[t]wo symbols have the same "meaning" if they are responsible for firing the same M-neurons' (a type of Neuron that works in a cluster) (1995: 70). Antonio Damasio concurs, suggesting, 'that mental images arise from the transient synchronous activation of neural firing patterns largely in the same early sensory cortices where the firing patterns corresponding to perceptual representations once occurred. The activation results in a topographically organized representation' (1994: 101). Thus, an object viewed initially in one environment and subsequently viewed in a completely different environment (for example the theatrical environment) will activate the same pattern of neurons making recognition of that object possible.

Walter J. Freeman and Christine A. Skarda present a different point of view. They propose that instead of the brain reacting to incoming patterns, it is the brain that organises incoming stimuli into patterns. They write that 'we now see brains as physiochemical systems that largely organise themselves, rather than reacting to and determined by input' (1990: 377). But whether the incoming information is received in a pattern or the brain sorts the information into patterns, the same principles of pattern recognition are at the heart of all visual processing, and these principles help us to understand how humans respond to the visual stimuli they encounter when watching theatre. So how can these principles help as make decisions that might widen the accessibility to performance? One application might be in gaining and sustaining attention. It has already been argued in Chapter Three that pattern recognition relies on the predictive nature of neurons, for as Richard Gregory notes'[w]e behave to the present by anticipation of what is likely to happen, rather than from immediate stimuli' (1998: 8). This has implications for sustaining attention on the stage, for if the pattern of incoming visual information is repetitive and thus remains as predicted, then the information is largely ignored or filtered out. However, if the predicted pattern is broken and something unexpected is viewed, then an ergotropic

response is triggered which will have the effect of drawing attention to whatever has caused the novelty and leave the viewer in an aroused alert state. This is supported by Di Benedetto who points out that, 'when an artist makes use of patterns they can attract the brain's attention by violating that pattern' (2010: 11). This seems to support a case for keeping the stage full of non-repetitive stimuli to sustain the aroused state necessary for engagement. But can the same principles be applied to fundamental dramatic elements such as structure and if so, how would this affect accessibility?

Narrative Structure

Sequentiality is an important element in complex pattern recognition due to the fundamental nature of brain operation, for 'in order to communicate, the brain must be able to detect and generate sequences' (Mira and Sandoval, 1995: 70). Sequentiality can be closely linked to narrative form because ordering and sequencing are fundamental both to pattern recognition and to the structure of narrative. This link can be clearly seen in the definition of narrative given by Paul Ricoeur as a story that 'describes a sequence of actions and experiences of a certain number of characters, whether real or imaginary' (1981: 227). Likewise, the link is clear in the definition of narrative given by Jerome Bruner:

> Perhaps its principal property is its inherent sequentiality: a narrative is composed of a unique sequence of events, mental states, happenings involving human beings as characters or actors. These are its constituents. But these constituents do not, as it were, have a life or meaning of their own. Their meaning is given by their place in the overall configuration of the sequence as a whole--its plot or *fabula* (1990: 43).

Interestingly Bruner notes that sequentiality is central to creating meaning. Similar observations have been made by Theodore Sarbin who describes narrative as 'a story held together by recognisable patterns of events called plots, central to which are human predicaments and resolutions' (1986: 3). Furthermore, all three definitions mention people (whether real or fictitious) as central to narrative exposition thus creating a link between narrative and human endeavour. So it is not surprising to find that evidence exists suggesting narrative is key in organising much of human experience. Roland Barthes articulates this very clearly:

> Able to be carried by articulated language, spoken or written, fixed or moving images, gestures, and the ordered mixture of all these substances: narrative is present in myth, legend, fable, tale, novella, epic, history, tragedy, comedy,

mime, painting (think of Carpaccio's *Saint Ursula*), stained glass windows, cinema, comics, news item, conversation. Moreover, under this almost infinite diversity of forms narrative is present in every age, in every market place, in every society; it begins with the very history of mankind and there nowhere is nor has been a group of people without narrative. (1977: 79)

Barthes' suggestion that narrative is a global phenomenon is supported by Thomas Pavel who believes 'narrative desire is a primary human drive' (1990: 66). Theatre practitioners too have noted the audience's tendency to seek narrative in what they view, whether or not the style of theatre presented is naturalistic. In her book on physical performance, Dymphna Callery notes that the audience 'can't help "reading" the movement and constructing "meanings", or see moments at which potential "stories" begin to emerge. This demonstrates how, as spectators, we constantly search for meaning, even in abstract composition' (2001: 82). Richard Schechner has also noted this phenomenon, and claims that 'narrativity--the need to construct a plausible story--is not only hard-wired into the brain but dominant' (1993: 239). This suggests all audience members would have the capacity to recognise a narrative pattern if presented on stage and so narrative is an important consideration for accessibility.

Further support is evidenced by neurological findings. Gail A. Carpenter and Stephen Grossberg (1991) have developed 'adaptive resonance theory' (ART) which confirms the existence of systems of neurons that are capable of automatically finding categories and patterns as well as creating and predicting new categories without supervised training. The ability of the neural structures in the brain to create patterns has thus given humans the capacity to create narrative patterns, and this is supported by recent advances in cognitive neuroscience:

[The] creation of narrative in the human central nervous system is mediated by a regionally distributed neural network. Fundamental components of this network include: 1) the amygdalo-hippocampal system, where episodic and autobiographical memories are initially arranged; 2) the left peri-sylvian region where language is formulated; and 3) the frontal cortices and their subcortical connections, where individual entities and events are organized into real and fictional (imagined) temporal narratives. (Young and Saver, 2001: 75)

Narratives that humans create can be imagined events, as opposed to the replaying of real events, because the existing patterns in the brain can be reconstructed in many (and almost infinite number) of ways. Kay Young and Jeffrey Saver argue that there is a huge

advantage to any species of animal that can mentally rehearse a number of response options to an environmental event and this 'potent adaptive value of narrative accounts for its primacy in organizing human understanding […]' (2001: 78).

Given that all humans actively seek narrative and try to make sense of the world through narrative, a narrative structure on stage should be widely accessible. Any piece of theatre that does not have a narrative structure is likely to have a more limited accessibility as its reception would arguably require more cognitive processes based in learnt experience or education that some audience members might not have had. An extreme example of non-narrative based theatre might be avant-garde or experimental performances whose 'highly indeterminate make-up and loose fixing of reading strategies--does not correspond to any real increase in the range and type of desired spectator, but leads rather to a more or less drastic reduction in range' (De Marinis, 1987: 104). An example might be the work of Carmelo Bene. Mark Fortier writes of his work 'Bene wants to create a crisis or impasse, a disarticulation […] accompanied by perceptual variation, turbulence and excess […] and a breakdown in communication' (2002: 34). Another example might be Heiner Müller's *Hamletmachine* the content of which is described by Watson as 'distortions of the normal time frame by having many scenes in slow motion, and the constant repetition of simple, apparently meaningless, actions and dialogue' (1993: 96-97). It seems with both examples the experience the practitioners are trying to create for the audience is very different to the desired highly accessible experience for children as well as adults at the heart of this project. So if a sequential narrative is arguably a suitable structure, what would be the most accessible narrative mode?

Narrative Mode

Myth is arguably a reasonable starting point in the search for a widely accessible narrative mode since 'all cultures have an associated mythology' (Brown, 1991: 99). Claude Lévi-Strauss notes that there is an 'astounding similarity between myths collected in widely different regions' (1963: 208). Similarly, Eric Csapo recognises that myths from different cultures have common roots and lists the following examples 'the origin of the world, of mankind, of death, or for the characteristics of birds, animals, geographical features and the phenomena of nature' (2005: 4). Geoffrey Kirk highlights a relationship between myth and

narrative when he writes that '[a]ll myths are stories and depend heavily on their narrative qualities for their creation and preservation' (1970: 254). Likewise, Eli Rozik notes this relationship and points out that 'not every narrative is a myth, but every myth is a narrative' (2002: 295). These views are at variance with Robert A. Segal who finds it hard to define myth because various theories 'employ definitions that reflect the discipline from which they come' (1996: viii). He points out that theories from literature define myth with the term narrative or story whereas theories from religious studies define myth in terms of the gods or superhuman figures they contain (1996: viii). Segal summarises with the following statement:

> For most theorists, myth originates and functions to satisfy a need, but that need can be anything--for example, for food, information, hope, or God. The need can be on the part of individuals or on the part of the community. Similarly, the subject matter, or referent, of myth can be anything. It can be the literal, apparent subject matter--for example, gods or the physical world--or a symbolic one--for example, human beings or society. (1996: viii)

Lévi-Strauss first applied structuralist principles of language to myth and dismissed the content and plot of the myth as unimportant when compared to the structure. In *Structural Anthropology* (1963) he argues that the similarities exist because the structure is the same 'for all minds--ancient and modern, primitive and civilized' (1963: 21), he suggests that there is no difference in the structural thinking involved in myth-making compared with that of modern scientists, and he proposes that it is just the subject matter, meaning and purpose of myth that have changed. In the conclusion to his discussion of myths Lévi-Strauss writes: 'we have only sketched here the broad outline of a demonstration […] to illustrate *the problem of invariance* which, like other sciences, social anthropology attempts to resolve, but which it sees as the modern form of a question with which it has always been concerned--that of the universality of human nature' (1963: 24). However, Barthes disagrees that myth can be associated with human nature. In *Myth Today* he describes myth as a type of speech (which he qualifies as not being confined to oral speech but includes modes of writing, photography, cinema, reporting, sport shows and publicity) and argues that myth 'is a type of speech chosen by history: it cannot possibly evolve from the nature of things' (2006: 293). Bronislaw Malinowski adopts a functionalist approach to myth and insists that the cultural context is extremely important. He emphasizes the function of a myth within society rather that its narrative content and believes that myth is 'above all a

cultural force' (1998: 176) and furthermore an 'indispensable ingredient of all culture' (1998: 178). He writes that myth 'fulfils in primitive culture an indispensable function: it expresses, enhances, and codifies belief; it safeguards and enforces morality; it vouches for the efficiency of ritual and contains practical rules for the guidance of man' (cited in Rozik, 2002: 295).

For Lévi-Strauss 'myths signify the mind that evolves them' and that there is 'simultaneous production of myths themselves, by the mind that generates them and, by the myths, of an image of the world which is already inherent in the structure of the mind' (1969b: 341). Despite different views, many other theorists support Lévi-Strauss in linking myth to the human mind. For example, Dominic Strinati asserts that since 'comparable transformations in myths' can be found in widely different cultural settings then 'the specific features of these societies cannot explain the character of the myths. Instead, they are explained by the logical structure of the human mind […]' (1995: 90). Tito Vignoli implicitly touches on the accessible nature of myth when he suggests that myth appears to be 'a special faculty of the human mind, inspired by emotions which accompany and animate its products. Since this innate faculty of myth is indigenous and common to all men, it will not only be the portion of all peoples, but of each individual in every age, in every race, whatever may be their respective conditions' (2007: 4). In his discussion of the concept of mythic problem Eugene d'Aquili argues that it is the neural structures in the mind which evolved because they were advantageous to survival that generate mythic structures:

> Mythic problems, therefore, are structured either socially or individually,
> primarily according to the analytical and verbal mode of consciousness of the
> dominant hemisphere. They codify unexplained reality in terms or antinomies
> or polar oppositions such as good-evil, change-permanence, and so on, and in
> terms of causal explanation sequences. (1993: 62)

Dan Sperber also takes a cognitive approach to myth-making and links it to structuralism arguing that if 'all cultures develop very particular discourses which are remarkably homologous with respect to each other, as is the case with myths, it is valid to recognize in this, like Lévi-Strauss, the fruit of a single human mind. The human mind, or rather a mechanism proper to that mind, generates the structure of myths' (cited in Hénaff, 1998: 118). The mechanism he describes can be explained in terms of the pattern recognition structures present in the cerebral cortex. D'Aquili links the human capacity for myth

making with 'the evolution of the inferior parietal lobule, the anterior convexity of the frontal lobes and their reciprocal interconnections' (1993: 54). This means that when a novelty is perceived, in line with adaptation innovation theory, the brain seeks an explanation from the patterns and templates it has stored. The brain even has the capacity to create narrative explanations from disparate patterns, for '[n]arrative framing of the past allows predictions of the future; generating imaginary narratives allows the individual to safely (through internal fictions) explore the varied consequences of multitudinous response options' (Young and Saver, 2001: 78). The resulting new narrative would almost certainly be created from an assortment of pre-existing data to fit the heuristic or best guess model, and this might explain why mythical creatures have been created--half animal, half human-- or why gods have been created who are human-like but capable of extraordinary behaviour. Brown explains further suggesting there are innate drives behind this process:

> D'Aquili and Laughlin argue that these cortical functions [conceptualization, abstract causal thinking, and antinomous thinking lodged in the supramarginal, angular gyri and adjacent regions] not only give us the capacity to mythologize but that by virtue of what they call "cognitive imperatives" humans are *driven* to "organise unexplained external stimuli into some coherent cognitive matrix" (1979: 161). Thus […] humans are everywhere driven to try to explain what they perceive; where these explanations are not objectively apparent, first causes in the form of supernatural entities are generated. (Brown, 1991: 99)

All humans have the capacity to create mythological material, but mythological explanations for the unknown are manifested in culturally bound semiotics, for myths 'express and serve to organise shared ways of conceptualizing something within a culture' (Chandler, 2002: 145) and therefore the *semiology* of the worldwide phenomenon known as myth is not at all similar:

> It is, indeed, important to remember that different cultures *are* different--that the common preoccupations of mankind (with birth and death, food and sex, war and machines) do not express themselves in the same way or the same proportion from culture to culture. (Kirk, 1970: 28)

Strinati proposes that some of the similarities embedded in myths across cultures operate on binaries and dualisms and what he calls 'mythic problems' such as good and evil, change and permanence which 'arise from an underlying and universal mental structure which "thinks" these relations and oppositions' (1995: 100). Likewise, Eibl-Eibesfeldt supports a biological explanation for the occurrence of binaries in his analysis of the human recognition of good and bad:

> Motivating mechanisms must ensure that the animal searches actively for prey, social partners, resting sites, or inquisitively seeks new information. Preferences and aversions must be built-in, just as complex regulatory systems that activate or stop behaviour at appropriate times are. Animals must be provided with the norms (central reference structures) against which they can match their behaviour.
>
> In man, such norms determine what we perceive as "good or "evil", and these are the basis of what we experience as "good" or "bad" conscience. (2007: 23)

D'Aquili also supports the notion of a biological explanation for binaries when he postulates that mechanisms within the brain such as the abstractive, causal, binary and holistic operators mean 'it is inherent […] to relate the cognitive elements of a structure (again in this case a myth) in such a way that for every pair related by one aspect of a relationship such as "up" *at least* one other pair must be related by the opposite relationship such as "down"' (1993: 59). His summary that human beings 'have no choice but to construct Myth to explain their world' (1993: 62) further supports the position of myth as an intrinsic element of human life and therefore myth is of importance to a study considering accessibility on the stage.

Victor Turner proposes an alternative model for an accessible narrative mode in 'social drama' (1982: 86). He argues that narrative which specifically reflects human conduct is a 'universal cultural activity' (1982: 86) and that social drama is a 'spontaneous unit of social process and a fact of everyone's experience in every human society' (1982: 86). He also notes that there is an 'interdependent, perhaps dialectic, relationship between social dramas and genres of cultural performance in all societies' (1982: 72). According to Turner the structure of social drama follows a pattern of 'breach, crisis, redress and *either* reintegration *or* recognition of schism' (1982: 68). He describes the concept of breach as a 'breach of a norm, the infraction of a rule of morality, law, custom or etiquette in some public arena' (1982: 70). Crisis 'follows a momentous juncture or turning point in the relations between components of a social field--at which seeming peace becomes overt conflict and covert antagonisms become visible' (1982: 70). Redressive measures, aimed at limiting the spread of the crisis, 'may range from personal advice and informal arbitration, to formal juridical and legal machinery, and to resolve certain kinds of crisis, to the performance of public ritual' (1982: 70). This will either be achieved by removing the problem from the social environment (schism), for example expulsion or imprisonment, or accepting the person(s)

involved back into the social environment (reintegration). Turner was not without his critics for his claims of universalism. Peter Antes states that although he was greatly influenced by Turner he also had reservations. He counters that it 'is one thing to study ritual and drama comparatively, quite another to claim that ritual universally arises from social drama.' (2004: 115). Steve Tillis declares that the 'ex post facto nature of Turner's social dramas suggests the arbitrariness of the concept' (1999: 112), whilst Graham St John cuttingly calls social drama an 'overly simplistic analysis of complex cultural events' (2008: 167). Schechner was also critical and wrote that Turner 'can be taken to task for turning all the world's conflicts into western style drama' (Schechner, 2002: 67). However, Schechner worked on a model which suggested a positive feedback relationship between social dramas and aesthetic performance:

> This model demands that each social drama, each aesthetic drama (or other kind of performance), be understood in its specific cultural and historical circumstances. The word "drama" is used not to assert Western hegemony, but as a cipher representing any kind of specific cultural enactment. Another way of putting this relationship is to say that every performance--aesthetic or social--is both efficacious and entertaining. That is, each event proposes something to get done and each event gives pleasure to those who participate in it or observe it. (2002: 68)

Sharon Rowe also points to the redressive action of ritual as a positive aspect of social drama which has the necessary elements to 'resonate with the collective experience, values, and cosmological vision of a community' (2008: 131). Interestingly Ann Jellicoe (1967) notes the neurobiological affect of a ritual which takes the form of repeating patterns of words and gestures as tending to excite participants above a normal state of mind. She argues that ritual and mythic elements form part of the 'unconscious and unacknowledged forces operating upon us' while we are in the theatre (1967: 3).

Auditory Pattern Recognition

Just like visual processing, the computational processes of the auditory brain are constantly searching for novelty within the environment in order to be able to respond to any change appropriately and therefore enhance the chances of survival. Indeed the brainstem 'contains a network of neurons that respond only to surprising sound' (Lehrer, 2007: 141). In evolutionary terms, the unexpected sound of a rustle from behind a bush needs attention as it indicates the possible presence of a predator or potential prey; the ability to recognise and

respond to this sound might be a matter of life or death. The perceived novelty of the sound can either be responded to innately, if a rapid fight or flight response is required, or cognitively in the conscious brain for a more considered response such as visual exploration of the bush.

Michael Kubovy and David Valkenburg propose that 'the auditory system might consist of two parallel streams of processing (the 'what' and 'where' subsystems) in a manner analogous to current conception of the visual system' (2001: 97). Similarities between the auditory system and the visual system have also been noted by Albert Bregman who points out that the systems for grouping sound stimuli are called primitive grouping (parallel to bottom-up) which responds to incoming stimuli with innate processes and schema driven grouping (parallel to top-down) which is driven by 'familiar patterns that have been acquired through experience' (1990: 397). The primitive grouping system is of most interest to this study because according to Bregman primitive segregation 'employs neither past learning nor voluntary attention. It is present in infants and, therefore, probably innate' (1990: 667). This is relevant with regard to the accessibility of sounds and/or music that could be used on stage when children are present in the audience. Scott D. Lipscomb supports Bergman's view of innateness and points out the primitive grouping system does not rely on the recognition of culturally learned patterns; instead it either 'recognises patterns in a series of separate tonal events' (1996: 145) or involves the recognition of patterns according to similar properties, for example, pitch proximity (Lipscomb, 1996: 160).

Interestingly, Bregman (1990) argues that in order to help make sense of the complex soundscape we encounter, each different sound element is detected and grouped together using *gestalt* principles to form an auditory stream. Thus one sound can be distinguished from other sounds in the environment because it obeys, for example, the rules of tempo proximity (the sound stimuli are close together in time) or pitch proximity, (they are of a similar enough pitch to be 'streamed' into one sound event). Kubovy and Valkenburg also support the concept that auditory pattern recognition follow *gestalt* principles of similarity, proximity and continuity and argue that sounds that are similar are more likely to be grouped together, and sounds that are close together in time or pitch are more likely to be

grouped together (2001: 97-126). Similarly, Bregman states that 'amplitude differences between sounds control their grouping. Loud sounds will tend to group with other loud ones and soft ones with soft' (1990: 648). Sequences of sound that are organised in patterns of time are streamed together and articulated as a rhythm. Gay Luce proposes that 'invisible rhythms underlie most of what we assume to be constant in ourselves and the world around us' (1971: 145). The innate ability to respond to rhythm has been noted by Donald Hodges who asserts that we live in a rhythmic environment full of rhythmic patterns, such as 'seasons of the year, phases of the moon, periods of dark and light, heart beat, breathing rates, brain waves, hormonal outputs and so on' (1996a: 43). He particularly links our ability to respond to rhythm with survival:

> Rhythm developed through the necessity to hunt at night which clearly needs a keen sense of hearing. The sound of predator or prey coming closer and closer or travelling further away means that evolution has provided us with a remarkable ability to interpret sounds that are time ordered. (1996a: 45)

The proposition that the ability to respond to rhythm is innate and important for survival can be further evidenced in healthy mother-baby relationships, for a lack of rhythmic singing and rhythmic hugging (rocking) can produce 'marasmus [wasting and lethargy] in babies' (Peretz, 2001: 114). George Pugh further explains that humans' response to rhythm can be traced to the human heart beat and proposes that because the developing baby in the womb constantly experiences the rhythm of the mother's heart beat 'the neural networks in the auditory nerve must inevitably develop a sensitivity or innate response to this rhythm' (1978: 334). Neurologically speaking the 'capability for the perception and volitional production of rhythm is unique to the human brain and is dependent on the capacity for stable, precise, rapid, and complex time organisation in the brain' (Thaut, 2005: 173). The discussion of rhythm is taken further in the section on dance below. Jeremy Campbell makes a clear link between humans' innate capacity to respond to sound and their capacity to respond to music when he writes that to 'hear a sequence of rustling noises in dry leaves as a connected pattern of movements in space is a very primitive version of the ability to hear, say, Mozart's *Jupiter* symphony, as a piece of music, entire, rather than as momentary sounds that come and are no more' (1986: 263-264). Thus the accessibility of music or its appreciation by an audience needs further consideration.

Music

There is a clear relationship between music and patterns since music has been described as 'temporally organised patterns of pitched sound' (Begbie, 2000: 9) and 'sound that is organised into socially accepted patterns' (Scott, 2002: 98). The process of organising incoming musical sounds into a coherent structure has been called 'nothing more than recognising patterns in a series of separate tonal events (i.e. auditory scene analysis)' (Lipscomb, 1996: 145). A correlation between music and innate *gestalt* principles of pattern recognition was first put forward by C.W. Fox (1948) who argued that 'a musical pattern was to be considered as a *gestalt* […] that had other smaller patterns such as melodic patterns, chords, and rhythmic patterns embedded within it' (cited in Bregman, 1990: 723). For example, Fox argued that sounds of a similar timbre are grouped together 'so that the successive sounds of the oboe will segregate from those of the harp, even when they are playing in the same register' (1948: 19). Further evidence that music is processed innately comes from Isabelle Peretz who argues that humans' innate capacity for music might have adaptive significance and she suggests this is at the group level rather than at an individual level with 'music helping to promote group cohesion' (2001: 115). Michael Thaut agrees that music is related to 'core functions of the biology of the nervous system and therefore serves adaptive evolutionary purposes beyond that of the functional interpretations of art' (2005: 57). It is arguably not surprising to find that some sort of music appears in all cultures (Hodges, 1996a: 29). This is of interest when considering theatrical elements that are accessible across cultures and audiences.

Support for the universality of music comes from Bruno Nettl who argues that although some scholars disagree as to whether rap, electronic music or North American songs are indeed music, in his opinion there is clear distinction between ordinary speech and sound communication that could be called music in all societies and this phenomenon he calls a 'solid universal' (2000: 466). Likewise, Hodges states that all humans are musical and points out that this position is supported by a wide range of evidence including studies of fetal and infant response, and brain damaged patients (1996b: 258-259). He asserts that music 'is a universal trait of mankind. Throughout the ages it has played a significant role in the lives of people in every part of the globe' (1996a: 29). Peretz agrees that music is significant to all humans and that 'music has become such a key element in the human

behavioural repertoire that it might be considered as a defining human attribute' (2001: 128). This evidence strongly suggests music of some form would be accessible to children and adults from all ethnic groups. But just because the capacity to respond to music is mediated by innate pattern recognition systems, does this mean that everyone will respond to music in the same way?

Experiments have shown that music has the capacity to stimulate physiological responses in the listener including changes in heart rate, blood pressure, brain waves, and muscle contractions (Hodges, 1996b: 247). George Mandler draws a connection between a physiological response and how music might arouse emotion through the example of an incoming sound pattern being interrupted, or as he calls it a violation of our expectancies. This, he argues, brings about biological arousal, which acts as an alerting signal. This signal 'then stimulates an interpretation of the stimuli, which, when combined with the biological arousal, is felt as emotion' (cited in Balkwill and Thompson, 1999: 60). More specifically, Hodges describes how love and affection can be communicated to newborn babies through musical elements such as rhythmic rocking, patting and stroking and the modulation of pitch, timbre and dynamics in both speaking and singing (1996a: 48). Further evidence in support of a physiological response to music comes from Peretz who has conducted experiments that evidence how sound can have an emotional effect on newborn babies to such an extent that these changes become visibly apparent. For example, she concludes that newborns become 'more attentive in response to voices that are high-pitched, and appear comforted by voices which are of a lower pitch' (2001: 114). Furthermore, Di Benedetto suggests that an innate physiological response is also apparent in adults insisting that the 'act of listening is a means to provoke the embodied mind and invigorate sensorial perception. As we listen and focus our attention on the aural stimulation, we allow our body to feel emotion and respond preconsciously' (2010: 131). This suggests it might be possible to stimulate the same preconscious emotional response in an audience regardless of their age.

Richard Leppert proposes that one common physiological response to aural stimulation is pleasure. He notes that some aural stimulation 'triggers physiological and emotional responses that result in some sense, inevitably temporarily, of well-being' (1995: 85).

Importantly Peretz argues that emotions aroused by music can be seen as reflex reactions, that is, these emotional responses 'would be immediate but superficial. They would not require the additional time taken by elaborate processing of the signal in cortical structures' (2001: 118). This is interesting for this study as it suggests music has the capacity to stimulate an emotional response that is similar in all audience members regardless of their social background because the response can occur without reference to the neo-mammalian brain. Further support comes from Ekman who writes that 'we often experience emotions as happening to us, not as chosen by us. We do not simply decide when to have or not to have a particular emotion' (1994: 17), and similarly from McConachie who points out that experiments have shown that film viewers can pick up the mood, the pace, the psychology of characters and significant turning points in the narrative just from the film score and he argues that there is no reason to believe that audience members could not do the same in the theatre (2008: 96). This evidence suggests that because the emotional response to music is preconscious and uses innate systems it would arguably make music a widely accessible performance element regardless of the age or social background of the audience members. But the ethnicity of the audience needs further consideration.

Peter Kivy (1980) believes that musical response is not the same for everyone regardless of their cultural background. He acknowledges a connection between music and emotion but argues that the music of a culture can only resemble the emotional life of that particular culture, '[t]hus listeners from one culture should be unable to appreciate the natural connections between music and the emotive life of an unfamiliar culture' (cited in Balkwill and Thomson, 1999: 61). Klaus Scherer and Marcel Zenter would support Kivy's argument. They write that on a cultural level, the 'listener features' are based on the 'individual and sociocultural identity of the listener and on the symbolic coding convention prevalent in a particular culture or subculture' (cited in Juslin, 2001: 364). For them, musical response occurs within a framework of knowledge regarding specific cultural forms, such as preferred tonality and instrumentation. In like manner, Lipscomb asserts:

> Music cognition always occurs within a cultural context. Significant factors in a culture's music are the tuning system and pitch collections considered appropriate for use in music performance. Acculturated into a social milieu that has come to recognise the equal-tempered scale as "correct", western listeners

may find the sound of the pelog scale of the Javanese gamelan or the Indian
raga quite unusual. (1996: 154)

Does this mean that all music should be disregarded for an accessible performance due to
inevitable cultural associations? Or rather is it that the choice of music might need further
consideration in order to minimise inaccessibility? Hodges proposes that '[f]amiliarity with
the music, or even the style of the music, can create expectations that influence responses to
the music' (1996b: 247). This suggests environmental factors can also play a role in an
emotional response to music and as a result might have the capacity to affect accessibility.
Freeman agrees that music has the capacity to evoke memories that might influence the
emotional response. He proposes that 'exchanges between association cortices in the newer
brain and older parts of the forebrain, which comprise the deep-lying limbic lobe, generate
memories evoked by listening to music and arouse emotional states that have become
associated with now familiar songs through previous experience' (Freeman, 2000: 412).
Likewise, Justin London notes that if an audience is subjected to well-known repertoires,
'one will often be faced with "associative interference" as one cannot control the contexts
in which subjects have first heard and come to know such repertoire' (2006: 5). This makes
a case for newly created music being most suitable to achieve wide accessibility as this
would avoid an individual or sub-group response triggered by cultural or environmentally
specific memory associations. But what should the style of music be? Do the above
opinions mean that any original music generated cannot be specifically associated with a
particular culture's instrumentation or tonality, or derive from a specific aesthetic code and
sensibility?

The argument for a culturally based response to music seems to contradict the outcome of
scientific experiments which examined cross-cultural emotional response to music. For
example, Laura-Lee Balkwill and William Thompson investigated whether people could
identify intended emotion in music from an unfamiliar tonal system. They concluded that
western listeners were able to perceive emotional expressiveness in the music of an
unfamiliar tonal system, and further testing revealed that these perceptions were based on
psychophysical elements such as tempo, timbre and complexity (1999: 61). Furthermore
Manfred Clynes, using a device called a sentograph (which gives a visual picture of an
emotion based on readings of finger pressure) has demonstrated that 'specific emotions

have characteristic expressive shapes. Moreover, these expressions of emotions seem to be genetically programmed and consistent across all cultures' (cited in Hodges, 1996b: 249). In addition music researchers have found that 'musicians can communicate general emotions to listeners with an accuracy approximately as high as in facial and vocal expression of emotions regardless of whether the auditors have musical training' (McConachie, 2008: 96). The results of these experiments suggest that the cultural specificity of music does not have an effect on the emotional response that can potentially be aroused. This is supported by Thaut who writes that music 'must be viewed as a biological fact, not just as a cultural phenomenon' (2005: 57). Correspondingly, London sensibly points out that occasions that demand reduction in cultural 'interference' with an emotional response (such as association and memory described above) then 'newly composed or otherwise unfamiliar musical stimuli may be preferable, as they circumvent such interference' (2006: 5). Thus a theatrical performance with a newly composed sound score, no matter what tonal register it was in, would potentially help accessibility of the piece, with the score operating like a film score helping to direct the audience to a communal response. Thaut concludes that 'music may be a 'language' the brain can read with ease because its temporal-based grammar is fundamental to how the brain processes information' (2005: 182). Given that cultural influence cannot be eradicated, it might be possible to minimise any effects by creating musical patterns that consider rhythm, pace, and pitch which have the capacity to trigger similar innate responses in all audience members.

Dance

One other area worth considering which also concerns pattern recognition in relation to accessibility is the relationship between music and dance. The body must be ready and able to respond physically to sound in the environment as evidenced, for example, in the fight or flight response. This is why the neurological response to sound is directly linked to the heart and lungs as well as muscles all over the body. Thus reception of sound in terms of the speed, pitch and volume of incoming stimuli often involves a response in the somatosensory areas of the brain as well as the auditory areas. For example, if a loud, unexpected sound is heard (that is, a sound that does not relate to any predictable pattern and that appears to be close by due to its volume) innate systems in the amagdyla induce

103

automatic changes and there is a physical movement away from the direction of the sound, a contraction of arm and leg muscles, blinking, and sometimes changes in physiological measures such as increased heart rate, increased blood flow, and increased respiration (Florentine, 2011: 89-90). Adina Michael-Titus *et al.* point out that the flinching movement is 'mediated by reticulospinal fibres that connect to the motor nucleus of cranial nerve VII and the spinal chord' (2007: 157) and according to Michael Davis (1984) these fast reflexive innate reactions aid survival because they avoid nearby danger very quickly in the brief moment before a flight response can be activated.

Freeman proposes that the neural relationship between sound and body is exactly why music has such a strong association with dance, and suggests this explains the 'the rhythmic tapping, stepping, clapping, and chanting that accompany and indeed produce music' (2000: 412). Similarly, Richard Wallascheck draws on the physiology of the close relationship between the auditory nerves and the spinal chord, thus agreeing with Cesare Lombroso that 'dancing is a sort of reflective motion caused by music' (cited in Wallascheck, 1970: 259). This is supported by Ellen Dissanayake who intrinsically links music and dance together, suggesting that 'in their origins, music and movement were inseparable […]' (2000: 397). There is a strong relationship between music and dance, although Simon Murray and John Keefe point out that dance can occur without music. They see dance as a 'set of codified movement patterns or sequences of a fixed duration for a particular purpose (with or without music) […]' (2007: 60). This suggests that even without accompanying music, movement could still be recognised as dance due to the specific qualities of the movement.

Whether the neurological relationship between sound and body means that dance can be considered an innate phenomenon and therefore its reception accessible to all is a point of debate. Joann Kealiinohomoku suggests there is no real evidence for innate qualities in dance and explains that cross-cultural differences in dance style and aesthetics are due to 'both genetically determined physical differences and learned cultural patterns' (2001: 39). This would suggest dance is not a suitable element for accessible performance. Judith Hanna agrees that dance is culturally specific in its patterns and meanings and argues that dance is not 'universally identical behaviour, a proven innate, instinctive response' (1979:

30). However, she acknowledges that the raw capacities, materials or tools for dance are innate and that 'individuals learn to dance on the basis of innate capabilities' […] (1979: 31). Similarly, John Martin has noticed that some of the features of dance derive from innate human conditions and proposes that there is a lack of universal form, but declares dance as 'a universal urge' (1963: 9) suggesting dance has a relationship to the innate. Corresponding arguments have been put forward by dance academics and practitioners who discuss the concept of universalism in dance. Hanna declares with confidence that 'TO DANCE IS HUMAN, and humanity almost universally expresses itself through dance' (1979: 1). Kealiinohomoku is equally confident that '[r]itual and dance are human universals' (1997: 69) and cites the study by British biologist John Zachary Young who insisted that universals exist because they have adaptive value for the survival of the human race. To Kealiinohomoku therefore, cultural adaptation to innate conditions can be applied to dance in the sense that audiences would respond to dance even when it is that of another culture. Likewise, Marcia Siegel proposes that some aspects of dance could be considered universal. She questions the 'fashionable tendency to discard the idea that there might be "universals"--qualities or expressive behaviours that all people share' (2010: 191) and goes on to state that she knows physicality is universal and it underlies all performance, specifically all dance performance (2010: 191). However, Kealiinohomoku points out that although the act of dancing might be universal, the dance form undertaken is not. She argues that universal dance or even international dance does not exist and doubts whether a universal dance form can ever exist except in theory (2001: 39). Similarly, Philipa Rothfield considers that 'there is no universal, invariant bodily self' and that 'bodily subjects are always culturally specific' (2010: 311). Likewise, Drid Williams is strongly opposed to universalism in dance insisting that 'writings about dance that begin with arguments about the universality of movement are seriously flawed' (2004: 34). On the other hand Susan Foster describes universalism as key to the transcendental experience of viewing expressionistic dance:

> As the process of identification between viewer and dance gathered momentum, the dichotomies of intellect and emotion, form and feeling, personal and universal dissolved, and the viewer was swept into the catharsis or ecstasy of the moment. The experience of the audience seemed to affirm the choreographer's belief in a universal human condition, for despite their different experience of the dance, all the viewers in the theatre felt a communal involvement. (1988: 167)

However, this is a highly subjective account as there is no evidence to suggest that Foster actually surveyed the audience in order to determine exactly what they felt instead it is based on observed behaviour and therefore rather generalised. A similar subjective argument is put forward by Kariamu Asante when referring to Dianne McIntyre's choreography in a piece called *Up North*. Asante believes the power of the piece lay in the feelings produced in the spectator, and it is these that were able to 'jar and reach the audience' that she was serving 'and "universally" compute to any human that was watching' (2001: 149). Both examples suggest that the dance the observer/writer witnessed was able to elicit a common emotional response in the audience members. So what are the elements of dance that might have the capacity to do this?

An innate response to rhythm has already been argued in the section above on pattern recognition. Can the key to reception and accessibility lie with this? Carl Engel notes a strong link between rhythm and movement. He writes that rhythm exercises a regulating power over the movements of the human body due to 'the fact that rhythmic sense is innate in man and that any appeal to this sense is not only general but contagious' (1967: 118). Similarly, Nils Wallin *et al.* clearly link rhythmic response with the capacity to dance. They suggest that 'what is special about humans is not only their capacity to move rhythmically but their ability to *entrain* their movements to an external timekeeper, such as a beating drum' (2000: 12). Thaut supports this and sees a clear neurobiological link between rhythm and movement:

> Musical rhythm rapidly creates stable and precise internal templates for the temporal organisation of motor responses. The motor system is very sensitive to arousal by the auditory system. Neural impulses of auditory rhythm project directly into motor structures. Motor responses become entrained to the timing of rhythmic patterns. (2005: 184)

Clearly rhythm is an important component in the relationship between music and dance. This is further developed by Janet Goodridge who makes a direct connection between dance, rhythm and pattern recognition when she states that '[r]hythm in human movement may indeed essentially be described as consisting of the arrangement of components into a sequential pattern or series of patterns' (1999: 25). Similarly, in his book *The Nature of Dance: An Anthropological Perspective*, Roderyk Lange emphasises rhythm as a shaping factor in dance (1976: 30) and Anya Peterson Royce also suggests that rhythm, leading to

patterned movements, is 'basic to all dance definitions' (1977: 5). Furthermore, Hanna makes a link between rhythm and innate capacities and hypothesizes that 'intentional rhythm in dance is homologous to the biological rhythms that all humans experience' (1979: 74). Most importantly Kealiinohomoku points to the potential for dance to be widely accessible in performance arguing that when it 'occurs through purposefully selected and controlled rhythmic movements; the resulting phenomenon is recognised as dance both by the performer and the observing members of a given group' (2001: 38). This is supported by what Hannah calls 'the universal phenomenon of dance' (1979: 48). Eric Franklin further explains that if the choreographic artist 'is able to tap into universal sources, or what Jung calls the "collective unconscious", then the audience may sense a deeper meaning, even though it might struggle with the content on an intellectual level' (1996: 198). This suggests rhythmic movement might be a successful element in a performance that aimed for wide accessibility because it has the potential to stimulate a similar subconscious response in the audience even if the specific form is unfamiliar.

Magic

Like dance and music, the occurrence of 'magic is a worldwide phenomenon' (Brown, 1991: 69). Godfrid Storms supports this, calling magic 'a universal phenomenon found in all peoples in all parts of the world, at all times' (1974: 27). This research suggests this global phenomenon might arise from the predictive nature of pattern recognition mechanisms**.** It has been shown in Chapter Two that when an event with predictable patterns suddenly presents a perceived novelty which deviates widely from the prediction; the resulting strong physiological response is most usually articulated as surprise or shock. This study proposes that if, as in the case of a magic trick, the surprising event does not match an existing pattern either stored in the innate brain or the memory regions which means that a satisfactory fictional narrative cannot be created to fit the events depicted, then there could be an even stronger neurological reaction articulated as wonder or awe. Sometimes the physiological reaction to a strong emotion can be so intense that a phatic cry might occur to help dissipate the tension that this physiological reaction has created (see Chapter Five on the relief theory of laughter). This study proposes that the strong emotion of awe might lead to a state of confusion and astonishment, for example, "how did s/he do that?" That was amazing!" The phenomenon is deemed to be magic by the viewer as the

brain cannot find an explanation for what the eyes have seen. Magic, that is, the presentation of a phenomenon that cannot be rationally explained by top-down processing, offers a presentation model when devising accessible performance as it should stimulate a similar innate neurobiological response in audience members. However, little scientific evidence can be found to support this theory. Eric Klinger acknowledges little research has been done on the emotions of awe and wonder (1998: 31) and only limited support can be found from Jesper Sørensen who writes that 'magical actions are based on ordinary cognitive principles employed to explain and manipulate the social and physical world' (2007: 11). However, the scientific evidence surrounding shock and surprise is arguably strong enough to support magic as an intense shock and thus likely to stimulate a similar response in audience members.

Conclusion

This chapter has argued that because the stage is a man-made environment portraying sequences of new, ever changing visual and aural patterns, neurological pattern recognition systems are fundamental to audience reception. Narrative, music and dance are elements of performance that are perceived and understood using such systems and thus suitable for accessible theatre practice. A performance which aims to be accessible to a wide audience would benefit from a structure that was narrative based, but without necessarily adopting a pre-existing mythical narrative from one culture; rather it is preferable to create a new narrative which contains universal mythic elements, such as mythic problems and characters (followed up in Chapter Five). Music too, should be new and created specifically for the performance in order to minimise a culturally based response. It should follow *gestalt* principles in composition, and evidencing consideration of tempo, pitch and volume in relation to how they trigger either ergotropic or trophotropic responses. In such a setting, it must be noted that even if these automatic responses are triggered they can be overridden by the conscious brain so a similar response is not guaranteed in all audience members. Dance would be a suitable element to include in the piece, paying particular attention to the rhythmicity of the movement and a shared moment of awe and wonder might be created through the inclusion of some elements or features of magic, whether these be with regards to setting, presentation, content, or context.

Chapter Five - Laughter, Humour, Play and Clowning

> Humor and laughter are a universal aspect of human experience, occurring in
> all cultures and virtually all individuals throughout the world (Martin, 2007: 2).

William McDougall confidently states that laughter is common to all members of the
human species 'unquestionably inborn, unlearnt, and provided for in the innate constitution
of the race and the individual' (2003: 387). Evidence of this comes from cases of gelastic
(laughter producing) epilepsy in newborns, indicating the brain mechanisms needed for
laughter are present at birth, despite infants not usually responding to pleasurable stimuli
until about four months old (Martin, 2007: 3). Similar evidence comes from Robert Provine
(2000) who asserts that the innateness of laughter is proven by the fact that infants born
deaf and blind can laugh without ever having experienced others laughing. Furthermore,
ethologists and anthropologists agree that laughter is an innate behavioural pattern and
probably even predates speech (Glenn, 2003: 17). This has been supported by recent brain
studies which have shown that laughter originates in the subcortical, limbic and brainstem
areas of the brain and not the more newly evolved neocortex where language is based
(Martin, 2007: 186). These findings make laughter a suitable subject for this study that is
searching for innate responses and processes that might usefully inform a devised
performance, and thus this chapter concentrates on questions relevant to accessibility such
as (i) what makes us laugh and (ii) do we all laugh at the same things? It starts with an
examination of laughter and humour, then moves on to analyse theories of comedy
(superiority, incongruity, relief and play) in relation to pattern recognition systems and their
predictive nature in order to discover what humorous elements might be most accessible to
performers and audiences globally. It argues that play behaviour, and its associated
theatrical form, clowning, are most likely to be suitable.

Humour and Laughter

Why do all humans laugh? Vilayanur Ramachandran suggests the physiological function of
laughter appears to be the dissipation of potentially harmful stress levels in the nervous
system (2003: 23). This theory is supported by John Morreall who explains that when

tension is built up within the body for any reason, for example if danger to personal survival is detected in an event such as a display of aggression by another human, ergotropic arousal located in the sympathetic nervous system is triggered. This releases chemicals, such as epinephrine, which prepare the body for fight or flight. If the danger is a false alarm, then fighting or fleeing will not occur, but the latent energy must be released somehow, otherwise the physical state of stress could become harmful to the individual experiencing it (1983: 24). Brian Seaward agrees that laughter helps deal with harmful stress and explains that the effects of the hormone epinephrine are countered by the release of endorphins which have both short term and long term effects. In the short term laughter is known to stabilise blood pressure, stimulate circulation, facilitate digestion and increase oxygenation of the blood, and in the long term the release of endorphins helps boost the immune system (2006: 271).

Endorphins have a 'feel good' effect, (they are also known as opioids and functionally they resemble the opium drugs morphine, heroin and opium itself), hence the pleasurable feeling that laughter begets 'which is reflected in consciousness as euphoria or the sense of increased well being' (McDougall, 2003: 389). Likewise, Michael Olpim and Margie Hesson write that laughter physically manifests itself in the body in two ways. The first phase, arousal, produces increase in processes including pulse, respiration and blood pressure followed by a resolution phase during which 'physiological measures return to resting or lower values creating a relaxation response' (2009: 359). Simon Critchley is more specific and describes laughter as 'a muscular phenomenon consisting of spasmodic contraction and relaxation of the facial muscles with corresponding movements in the diaphragm. The associated contractions of the larynx and epiglottis interrupts the pattern of breathing and emit sound' (2002: 7-8), and this is the sound known as laughter. Robert Latta suggests there are many different types of laughter ranging from 'a faint smile; a broad smile; a chuckle; a smile or a chuckle accompanied by a sharp exhalation through the nostrils or mouth; […] a laugh in the usual sense, of the most common sort; a convulsive, whole body laugh; and so on' (1999: 13).

Morreall explains how the nature of the response is affected by the level of stimulation. A low level stimulation leads to a smile, then if more energy needs to be dissipated, then the

muscles of the diaphragm will be stimulated, along with the respiration muscles, and laughter will be produced. If still more energy needs to be dissipated, then the person might clap their hands together or rock forwards and backwards (1983: 24). When the stimulation has been extremely high then the release might even take the form of a loss of muscle control 'the person's legs may buckle, he may involuntary urinate' (1983: 3). Rod Martin agrees that the range of this innate response runs from 'a faint smile to 'throwing back the head, rocking the body, slapping one's thighs' (2007: 9). However, psychologists Alan Sroufe and Everett Walters warn that '[n]ot all smiles are small laughs' (1976: 184). Similarly, William McDougal argues that there are good grounds for belief that a smile cannot always be considered incipient laughter stating that '[w]e do not always smile as we laugh; there are many forms of laughter, all the hard and bitter forms, which are not accompanied by smiling' (2003: 393-394). However, the hard and bitter forms he describes might well be a voluntary laugh which is different to an involuntary laugh:

> There is reason to suspect that the difference between the involuntary laughter to which humor subject abandons himself on the one hand and feigned and voluntary laughter on the other lies at least in part in a dominance of the parasympathetic nervous system in the former case and of the sympathetic system in the latter. (Latta, 1999: 12)

Indeed, voluntary smiles can be detected as 'false' by a viewer due to muscles round the eye not being contracted (Ekman, 2003: 204-209). What is most interesting to note about Latta's comment is that he equates 'humor' with involuntary laughter. Clearly it is involuntary laughter that is most relevant to this study due to its spontaneous nature, and so the relationship between humour and laughter needs further investigation.

Neurologist Ramachandran links involuntary laughter with humour noting that 'laughter is hard-wired; it's a 'universal' trait in all humans. Every society, every civilisation, every culture, has some form of laughter and humour' (2003: 23). Martin shares Ramachandran's linking of instinctive laughter with humour when he observes that 'humor and laughter have evolutionary origins and therefore confer adaptive benefits' (2007: 29). So what exactly is humour? Alison Ross defines it as 'something that makes a person laugh or smile' (1998: 1). She agrees that there are exceptions in that something can be claimed to be humorous even though no-one laughed and also that some people might laugh at something while others fail to see it as funny. However, for Ross, the important element is

in the response and it is this that counts towards whether something is humorous or not (1998: 1). Response is also important for Martin who agrees that humour is 'anything people say or do that is perceived to be funny and evokes mirth and laughter in others' (2007: 20). He interestingly proposes that laughter and smiling are 'expressive components of an emotion called mirth' (2007: 9), and emotions have already been argued as an important component in accessibility (see Chapter Two). Further support comes from Alexander Kozintsev who points out that mirth and laughter operate in a similar fashion to other emotions:

> The innate component in laughter predominates just as it does in any emotion and in any inborn behavioural pattern. As joy, sadness, anger, and maternal instinct remain themselves in spite of all attempts by culture and language to transform them beyond recognition, so laughter remains itself despite all its cultural aberrations. (2010: 183)

In this Kozintsev fundamentally agrees with Martin that, 'the sounds of laughter are indistinguishable from one culture to another' (2007: 3). Likewise Provine argues, '[l]aughter is instinctive behaviour programmed by our genes, not by the vocal community in which we grow up' (2000: 1). The question remains however, that even though all humans laugh in a similar enough manner for it to be recognisable as laughter does it necessarily mean that they all laugh at the same things? Valerie Gray Hardcastle believes they do not, and that what makes us laugh can be socially determined (2000: 125). Similarly, Jacob Levine argues that social context is important and suggests people laugh 'to mask unhappiness or distress or to cover up social discomfort. They want to deny the seriousness of a situation or when they want to hide the fact that they are angry. There is even the laughter of distress. People also laugh when they are suddenly relieved from fear' (1970: 786). This has implications for the concept of accessible theatre because the social context of audience members from a range of backgrounds will differ and this will affect their response to potentially humorous situations. Furthermore, Olpim and Hesson write that laughter and humour vary widely between 'genders, ages, males and females' (2009: 360) and Anthony Chapman and Hugh Foot have conducted experiments that prove personality traits such control, conservatism and sensation-seeking can all affect their sense of humour (1996: xiv).

But conditions for laughter are not just socially variable, Robin Harwood *et al.* acknowledge that 'the circumstances under which laughter occurs are culturally variable' (1995: 13), while Duane Elmer is of the view that humour 'rarely translates well across cultures' (2002: 112). For Martin, there are 'obviously important cultural influences on the way humour is used' (2007: 29). Maurice Charney identifies the difficulties in humour crossing cultures and argues that what we find funny is not only dependent on which country we come from but also which 'region within a country' (2005: 350). This makes the search for a widely accessible form of humour problematic, particularly if the function of laughter is to act as a relief from potentially harmful tension because Morreall suggests people might bring tension with them from their cultural background into a potential laughter situation (such as a humorous performance):

> All cultures forbid some activities connected with sex. Many forbid intercourse outside of marriage, for example, and most have restrictions on when sex can be talked about. Such restrictions cause people to suppress their sexual desires, according to the relief theory, and so when someone, say a comedian, breaks the taboo and talks about sex, forbidden sexual thoughts are called up and some of the sexual energy which has been repressed is released in laughter. Societal prohibitions on violence are supposed to cause a similar kind of repressed energy. (1983: 21)

This might help explain why taboo subjects such as sex and violence are often the topic of comic humour. This is supported by Sigmund Freud who argued that '[t]he act of laughter is a physical release or expression of sexual and hostile impulses suppressed by the conscious mind. He believed that the greater the suppression of these thoughts, the greater the laughter in response' (Seaward, 2006: 268). Furthermore, Jerry Palmer argues that dealing with taboo subjects through comedy is a socially acceptable way of confronting socially unacceptable subjects:

> It produces spiritual equipoise for the individual and thus helps group cohesion, for this equipoise is a form of management of psychological and instinctual forces that threaten equilibrium. It is thus a form of ethological integration and aids social bonding. (1994: 58)

The challenge for this study with regard to laughter that produces relief by addressing taboo subjects is that 'our objections to cruel laughter are not, even today, part of all cultures' (Morreall, 1983: 9). In other words this form of laughter is culturally specific depending on the social rules and regulations which help delineate any particular culture. Critchley writes that '[h]umour is a form of cultural insider-knowledge' […] (2002: 67) and as a culture is

defined by the rules it sets for itself, (rules which Geertz describes as 'a system of symbols created by people, shared, conventional, ordered and obviously learnt' (1973: 130)), then knowledge of the boundaries the humour is breaking must be based on social experience gained through enculturation and thus would not be widely accessible to people outside a culture. With regard to taboo subjects Palmer suggests that 'such subject matter is only representable in the form of comedy, because here it is possible to act out in safety the basest urges that are common to us all' (1994: 60). Yet he forgets that young children do not usually experience similar base urges to adults and, as one of the aims of this study is to create material suitable for children as well as adults, it is obvious some subjects, such as sex, are not suitable as the humour will not be accessible to children.

There are other problems with regard to why people laugh. According to Morreall the 'oldest, and probably the most widespread theory of laughter is that laughter is an expression of a person's feelings of superiority over other people' (1983: 4). Andrew Stott supports this when he writes that 'human beings are moved to laugh when presented with a person or situation they feel themselves to be intellectually, morally, or physically above' (2005: 131). For Larry Hughes the 'most humor techniques, or specific uses of humor, fall under this category' (2005: 93). This would be supported by ethologists who note that 'laughter originated in the animal function of the aggressive baring of the teeth' (Critchley, 2002: 28). More specifically Irenäus Eibl-Eibesfeldt notes:

> The loud utterance of laughter is derived from an old pattern behaviour of mobbing, in which several group members threaten a common enemy. Thus it is a special case of aggressive behaviour and this component retains its original significance. If we laugh aloud at someone, this is an aggressive act, bonding those who join in the laughter. (2007: 138)

Superiority theory has parallels with relief theory in that a build up of tension needs addressing, but the source of the tension is in this context different. Rather than addressing taboo subjects, superiority theory depends on ridiculing another person (or other peoples) and according to Philip Cooke 'in extreme cases it can result in racist jokes, sick humor or merciless ridicule' (2007: 2). This type of humour can be conceived of as 'acts of aggression that indicate a fear of difference' (Stott, 2005: 147). Robert Heilman considers the use of superiority theory for comic effect in theatre means that the stage is peopled by, for example, 'the silly, the petty and the vain' (1978: 21). He suggests that laughter is

produced as a way of pointing out how undesirable these qualities are in the target audience (1978: 21). Similarly, Stott proposes this style of comedy is 'employed as a form of castigation, a means of imposing normative values on those who deviate from agreed standards of citizenship within communities whose membership is well defined' (2005: 147). McDougall does not believe that the laughter instinct evolved as a social disciplinary tool but as a secondary application, arising only in 'highly developed and conventionalised society' (2003: 390). The problem as to whether this type of humour might be widely accessible is the same as for relief theory. Its boundaries are dependent on the rules and regulations set by a particular culture or social group as to what is normal and acceptable as well as how deviation from the normal is recognised and how it becomes a source of ridicule:

> The link between embarrassment and humour is ambivalent. It can function to protect the social order, keeping social actors in line, but simultaneously it can express pleasure at subverting that same order. All this helps understand why humour is universal to the extent that it is found in all cultures. One might suppose that ridicule is universally useful both as a means of socialization and as a means of preserving everyday social order through the discipline of embarrassment. (Billig, 2005: 235)

The social value of laughter would limit wide accessibility due to the socially or culturally specific context of the humour. However, Jerrold Levinson is highly critical of superiority theory and points out its limitations in his analysis of many cases of laughter that do not involve humour. One example is word wit in which the utterer may actually strike us as being 'cleverer than us' (2003: 346). However, we might admire the speaker of the witticism whilst the content of their speech might still adhere to the principles of superiority. Another critic, Francis Hutcheson, pointed out that we realise we are superior to oysters but don't necessarily laugh at them and he preferred to think of humour 'in terms of incongruity' (cited in Caroll, 2001: 247). What Hutcheson does not appreciate is that there has to be a build up of tension in the nervous system, which is caused by the social/cultural context that viewing oysters outside an appropriate contextual framework does not achieve. However, he is not alone in thinking that incongruity is at the root of much humour.

Cooke suggests incongruity is stronger than an imbalance and defines it as 'the concept of surprise and irony--an event that isn't logical or rational' (2007: 1). The concept of surprise

and irony was first proposed by Immanuel Kant when he wrote 'the subject forms a tense expectation, suddenly it goes unrealized, and he laughs in consequence' (cited in Latta, 1999: 223), 'and further developed by Arthur Schopenhauer who ascribed laughter to 'the sudden perception of the incongruity between a concept and the actual objects that it relates to' (1987: 52). In other words it is a classic rule breaking as discussed in Chapter Four, and thus, in theory, might well involve innate pattern recognition mechanisms.

Wit is one example of incongruous humour, and is 'most commonly word-based' (Lewis 2003: 22). Stott would argue that the majority of wit depends on culturally specific verbal dexterity 'as it recognizes the role of chance in the production of meaning, and the ability of language to make meaning outside the realm of practical sense' (2005: 137). Similarly, Martin implies that a level of intelligence and knowledge is required to appreciate wit which he describes as 'intellectual, sarcastic, and related to antipathy' (2007: 23). He points out an interesting difference between wit and humour that developed in the early nineteenth century in Europe:

> Wit was also considered to be more artificial and something that could be acquired through learning and practice, where-as humor was viewed as more natural and an inborn talent in the individual. Thus, it was generally recognised that laughter could either be aggressive or benevolent, and the modern distinction between "laughing at" and "laughing with" was captured by wit and humor, respectively. (Martin, 2007: 23)

This argument suggests humour might be more accessible than wit to a wide audience due to its implicit innateness. Freud too differentiates between cognitive and innate processes in his book *Wit and its Relation to the Unconscious*. He makes two interesting points:

> First, how it happens that we rarely ever know in a joke why we are laughing, although by analytical investigation we can determine the cause. This laughing is the result of an automatic process which was first made possible by keeping our conscious attention at a distance. Secondly, we arrive at an understanding of that characteristic of wit as a result of which wit can exert its full effect on the hearer only when it is new and when it comes to him as a surprise. This property of wit, which causes wit to be short lived and forever urges the production of new wit, is evidently due to the fact that it is inherent in the surprising or the unexpected to succeed but once. (1999[1922]: 238)

Irony too can also depend on its audience/receiver's knowledge of language as it is commonly defined as 'saying what is contrary to what is meant' (Colebrook, 2004: 1). It can also depend on understanding a specific vocal tone for Michael Billig argues it can be

defined as what happens 'when speakers say the opposite of what they mean in a dead-pan manner' (2005: 208). Interestingly, Ellen Winner suggests irony might not always be accessible to children and that it is only made possible by 'the social cognitive development required to understand other minds' (1997: 13). Linda Hutcheon agrees that understanding irony is learnt but she is more specific and suggests that irony can only be understood when children have learnt 'that others can lie or pretend' (1994: 66). Raymond Gibbs and Herbert Colston have conducted tests that concluded that children develop a sense of irony between the ages of 5 and 8 years old and that the humour in irony derives from 'surprise yielded by the disparity between what is said and what is meant' (2007: 448). This suggests that irony might be a suitable form of humour for an audience comprising of children but only if they were all from the same social background.

It is worth noting that the form of irony called dramatic irony does not necessarily depend on verbal or social knowledge to create the surprise necessary for laughter, as this can occur solely within the context of a stage performance. Dramatic irony is defined as a 'plot device in which the spectators know more than the protagonist' (Dane, 2011: 122). Interestingly, according to Anthony Friedmann dramatic irony can occur through actions, not just words (2010: 198). This is supported by Claire Colebrook who argues that dramatic irony can result from the audience seeing and knowing more than a character (2004: 176). Kathleen George further argues that dramatic irony can occur with a gesture or an action 'which is made for two audiences, one on stage, which does not understand the full implications, and one--the audience--who does […]' (1994: 69). Similarly Friedmann notes that every horror film and suspense thriller depends on dramatic irony, for audiences 'watch knowingly as a character walks into a trap or a situation of danger' (2010: 198). This is particularly appropriate to note for the practical performance element of this research study which is largely visual in nature and has no spoken text. Critchley argues that it is 'visual humour that can travel across the linguistic frontiers which can delineate cultural boundaries' (2002: 67). These arguments suggest visual dramatic irony might be an appropriately accessible form of humour for this project. Yet, even with visual humour we encounter the problem that the expected pattern must be ascribed the value of 'normal' for anything deviating from it to constitute a surprise, as Morreall would argue 'we get something that we are not expecting. Whatever it is, it completes the story or fits into the situation in some way--it

just does not fit in the expected or "normal" way' (1983: 17), and in this instance normal could constitute social and cultural norms. However, Jan Hokenson writes:

> Comedy disfigures something that is usually referred to as "the norm" – whether construed as "the good" (Plato), "the average" (Aristotle), "the civilized" (Freud), "accepted social norms" (Lauter), "normal patterns of human behaviour" (Torrence), the "norm of congruence" (Levin), "symbolically lawful language" (Purdie), and similar conceptions of a yardstick used to measure the socially desirable. (2006: 24)

It is arguable that the most appropriate 'yardstick' when considering accessibility is the notion of 'normal patterns of human behaviour'. If these can be identified using ethological and anthropological studies which claim to have identified universal forms of human behaviour, for example in Donald Brown (1991) and Eibl-Eibesfeldt (2007), these might provide a basic framework for incongruous humour that has the potential to be widely accessible.

Play Theory

According to Martin, the ability of humans 'to create humor, to amuse one another and evoke laughter appears to have evolved as a means of providing us with extended opportunities for play' (2007: 6). Similarly, Richard Schechner feels that play is a fundamental part of life and describes it as 'a genetically based life-long activity of humans [...]' (2002: 82). What makes play theory highly appropriate for this study is that play has been recognised as an innate human experience (see Chapter Three). Jean Piaget (1951) proposes that all children, regardless of their cultural background, experienced three major stages of play: mastery play, symbolic (or make believe) play and logical play (play with rules). She argues that, although play is an essential element in child development through which intellectual and cognitive skills are practised and fine tuned, children also play purely for pleasure. Donald Winnicott (2005 [1971]) also notes the pleasurable effect of play. He conducted observations of babies playing 'peek-a-boo' with their mothers. The removal of the mother from sight was an anxious moment for the baby but the reappearance of the mother short circuited the anxiety and released the built up energy in the form of laughter according to the principles of relief theory. As this activity was repeated it became a game, and 'pleasurable anticipation replaced the nervous anxiety as the child became

familiar with the reappearance of the mother within an acceptable time frame' (Emigh, 1996: 2).

The innate aspects of play 'can be thought of in terms of the drives for curiosity, exploration and manipulation' (Gross, 1996: 111). Innate drives are housed in the reptilian brain and as is the case with all drives, there is a pleasure reward involved with the automatic release of dopamine. The pleasure and reward aspect of play means that the desire to play continues past childhood into adulthood (Frost *et al.*, 2005: 128). Victor Turner describes adult play as 'a volatile, sometimes dangerously explosive essence, which cultural institutions seek to bottle or contain in the vials of games of competition, chance, and strength, in modes of simulation such as theatre, and in controlled disorientation, from roller coasters to dervish dancing' (1987: 167-168). Turner's observation that play is present in performance models from different cultures indicates that play might indeed have performative qualities that can be included in a performance in one culture and recognised by audience members (like Turner) from another, and thus it is a concept which has the potential to be widely accessible. Indeed, experiments by Pierre Dasen have proved that Piaget's stages of development of play do exist in different cultures, though rates of development vary between cultures:

> The deep structures, the basic cognitive processes, are indeed universal, while
> at the surface level, the way these basic processes are brought to bear on
> specific contents, in specific contexts, is influenced by culture. Universality and
> cultural diversity are not opposites, but are complementary aspects of all human
> behaviour and development. (Dasen cited in Gross, 1996: 642)

Schechner notes that the concept of play is fore-grounded as a category of thought in all walks of life from the beginning of the twentieth century (2002: 80). It is hardly surprising then that play has been absorbed into the underlying principles of some twentieth-century theatre practitioners such as Jacques Lecoq. Simon Murray writes:

> [F]or Lecoq […] the *pleasure of play* is not simply some kind of self-indulgent
> tomfoolery where having a wonderful time is the key to creativity and effective
> acting. Rather, an ability to play is more about *openness*, a readiness to explore
> the circumstances of the moment without intellectual 'editing', but within a set
> of rules or expectations germane to the style or form of theatre under
> investigation. (2003: 50)

This description contains an implicit reference to the design of the nervous system in that the 'intellectual editing' that can occur in theatre practice happens in the neo-mammalian

brain, and this reflexive behaviour can lead to censorship based on culturally accepted norms. But as play is innate, its processing happens in the paleo-mammalian brain, where actions and reactions occur unconsciously and are not always consciously controlled by culturally bound thought, thus allowing behaviour to be spontaneous and immediate. In his book *Homo Ludens* Johan Huizinga suggests an interesting relationship between play and culture:

> When speaking of the play-element in culture we do not mean that among the various activities of civilised life an important place is reserved for play, nor do we mean that civilisation has risen out of play by some evolutionary process, in the sense that something that was originally play passed into something which was no longer play and could henceforth be called culture […] we do not mean that play turns to culture, rather that in its earliest phases culture has the play-character, that it proceeds in the shape and the mood of play. In the twin union of play and culture, play is primary. (1949: 46)

Eli Rozik is critical of these ideas and comments that Huizinga makes no reference to biological explanations and even discards theories that 'assign a biological function to play' (2002: 226). Yet for Rozik it is the innate elements of play that are most relevant to theatre performances (2002: 227). Similarly, Roger Callois states that 'the spirit of play is essential to culture' (2001[1958]: 58-59) but distinguishes between innate play which he calls *paidia* and defines as a word 'covering the spontaneous manifestations of the play instinct' (2001[1958]: 27-28) and *ludus* which involve rules and games which 'reflect the moral and intellectual values of a culture, as well as contribute to their refinement and development' (2001[1958]: 27). It is the concept of innate play that is most relevant to this study for its capacity to be familiar to most people, no matter their cultural background and so further examination of innate play is necessary. Louise Peacock suggests 'the nature of the interaction between the clown and the audience is spontaneous and here, genuine play occurs […]' (2009: 9). This spontaneity arguably implies that reception of the clown's play derives from innate ability to respond to play and humour. Similarly, Kenneth Little writes that clowns engage in 'free play' (2003: 142) with the word 'free' implicitly suggesting spontaneous flow. This suggests that clowning would be a good element to study in relation to the innate concept of play and accessibility.

Clowns

Many different cultures have clowns that stimulate laughter in their audience. For example, in Asian theatre there is Vita, a clever roguish clown and Vidusaka, a slow witted buffoon; Chinese theatre has four basic character types, one of which is a clown or ch'ou; Balinese clowns come in a pair, one stupid the other clever, called Penesar and Kartala; and America's Southwest boasts the famous Hopi Indian clowns. Indeed, cross-cultural similarities in clowning have been noted such as in their 'violation of taboos, mockery of the sacred and profane authorities and symbols, reversals of language and action and a ubiquitous obscenity' (Berger, 1997: 78). The global occurrence of clowning makes it worthy of further investigation to see how this humorous form might be suitable for accessible theatre practice. John Wright claims that '[c]lowning is another of those great universals of performance. In fact, clowning is pretty universal, full stop' (2006: 179). This claim of universality does not necessarily mean that clowning from a particular culture can be adopted piecemeal into a theatrical performance and that audiences from other cultural backgrounds would find it funny. Just because there are worldwide similarities in the subjects that clowns address does not necessarily mean that clowning itself will be widely accessible.

Often the function of the clown in various cultures is to make social comment. For example, the anarchic clowning of Dario Fo challenged the authority of the Church and the Italian government, the San Francisco Mime Troupe made extensive use of the clown to help promote their left wing ideals in a republican American state, and in Balinese *Topeng* the clown's humour can derive from 'the ambiguous loyalties the Balinese feel toward the contemporary nation-state of Indonesia' (Emigh, 1996: 142). What these ideological clowns have in common is the comic form through which they generate laughter and that is satire. Turner writes that '[s]atire exposes, attacks, or derides what it considers to be vices, follies, stupidities, or abuses, but its criterion of judgment is usually the normative structural frame of officially promulgated values' (1982: 40). In this sense satirical clowning requires specific and explicit cultural knowledge of 'promulgated values' for it to succeed. An example of this is the clown Durov, who trained a pig to challenge repressive governments in Russia and Germany. For Durov's clowning to be effective, audience members had to be aware of the specific cultural circumstances surrounding the politics of

121

the First World War. His clowning would not be understood, and therefore not be considered funny, outside this cultural context. Another example is the Hopi Indians whose clowns satirise the negative effects of white America's culture (such as drinking alcohol). Any audience would need knowledge of both Hopi culture and western stereotypes to understand the humour. The use of clowning techniques to address taboo or socially relevant issues in many different cultures is interesting, and could have arisen because the laughter it produces relieves tension thus making the topic more accessible and approachable so that the conscious brain can make an educated response to the topic. This is possibly why some clowns are treated with great respect. For example, 'among the Tubatulabal of California, […], the clown's opinions are held in such high esteem that if he criticises the chief, a new leader is likely to be selected' (Towsen, 1976: 8). Indeed '[m]ost cultures recognise consciously or unconsciously, the value of the fools' perceptions' (Towsen, 1976: 6). However, clowning techniques which rely on satire or which address taboo subjects require cultural knowledge gained by top-down processing which would limit accessibility to those without the relevant cultural experience or education.

A clowning technique which is widely known to produce laughter is slapstick. Slapstick is a form of humour that is 'physical, visual, non-verbal, and playfully violent. [….] clowns, mostly mute throughout history, have specialized in this form of entertainment' (Gruner, 1997: 69). The most definable feature of slapstick is playful aggression which relies on visual humour framed by the application of theories of incongruity and relief. Among aggressive incidents involving clowns are: the pratfall, the whacking of the head or body with a stick or mallet, the quick drenching from a sea of liquids, a two-fingered poke in the eye and the tumbling fall downstairs (Gruner, 1997: 69). Often the clown is on the receiving end of such incidents and is the butt of the joke. The tension in the audience builds as the predictive quality of the mirror neurons can foresee through pattern recognition the outcome, as the stick makes its way towards the clown's head. The ergotropic system responds. The predictive capabilities of the mirror neurons can also foresee the pain involved 'as if' the viewers were about to be hit themselves. However, the beauty of clowning is that the clown never actually gets hurt. The violence is only pretend. When the clown gets up and carries on as if nothing had happened the relief theory applies, and the tension in the audience dissipates through laughter.

An example of the ability of slapstick to cross cultural and age boundaries might be the work of Charlie Chaplin who, as Leo Markum points out, is 'able to arouse laughter in many parts of the world' (2003: 28). Though Chaplin's films are not fully accessible worldwide because much cultural understanding of his work is required, it is arguably the slapstick elements (alongside other visual elements) in his performances which cross cultural boundaries and help make his films successful in many different countries. Eastern forms which incorporate slapstick and are popular with tourists from around the world are Balinese Topeng (Slattum and Schraub, 2003: 33) and an Asian dramatic form called *Vag,* which is based on historical or mythological sources (Brandon, 1993: 109).

Being the butt of a joke is also important in Lecoqian clowning. He defines a clown as 'the person who flops, who messes up his turn, and, by so doing, gives his audience a sense of superiority' (Lecoq, 2000: 146). This concept of the flop can often be combined with elements of slapstick and therefore is an important element to consider for its potential innate qualities. The concept of 'the flop' differs from slapstick in that the clown is responsible for his own failure rather than a partner causing his failure. A 'flop' can be realised on stage through a clown failing to achieve clearly set objectives. Here the predictive quality of the mirror neurons is very important. The audience must be able to predict the outcome of an action, such as a clown trying to ride a bike or mounting a moving horse, for there to be laughter when the bike falls over or the clown sits the wrong way round on the horse. Lecoq states that '[t]hrough his failure he reveals his profoundly human nature, which moves us and makes us laugh' (2000: 146). It is the fundamental capacity to reveal 'human nature' that arguably gives clowning its worldwide appeal.

Clowning, Play, Improvisation and Flow
Wright emphatically links clowning with the phenomenon of play when he writes that '[i]f playfulness is at the heart of our creativity then […] clowning is the key to that playfulness. Clowns play all the time' (2006: 184). This is developed by Lecoq who suggests that when in a playful state and 'aware of the theatrical dimension, the actor can shape an improvisation for spectators, using rhythm, tempo, space, form' (2000: 29). Likewise, Roger Caillois states that one extreme of play is 'free improvisation and carefree gaiety'

(2001 [1958]: 13). Arguably improvisation is a specialised form of play, and similarly utilises innate mechanisms.

There is evidence to suggest that improvisation is a fundamental trait of clowning worldwide. In Burmese spirit plays clowns have the leading roles and are given 'absolute freedom to improvise' (Towsen, 1976: 36). In the texts of Asian Sanskrit dramas, the clown's role was quite small, but in the actual performance his role became much larger due to 'improvisational elements' (Towsen, 1976: 33). Likewise, the Hopi clowns improvise their satirical performances (Read, 2001: 102). While in Balinese Topeng '[t]he parade of bondres [clown] characters continues as long as the audience's laughter, attention, and support is with the performers' (Slattum and Schraub, 2003: 33). Shakespeare also notes the freedom of clowns to improvise and extend the world of a play in the words 'And let those that play your clowns speak no more than is set down for them […]' (Hamlet 3.2. 39-40).

Play is also closely linked with a phenomenon called flow, for '[f]low occurs when the player becomes one with the playing' (Schechner, 2002: 88):

> In a flow state, action follows upon action according to an internal logic which seems to need no conscious intervention by the actor. He experiences it as a unified flowing from one moment to the next, in which he is in control of actions, and in which there is little distinction between self and environment, between stimulus and response, or between past, present and future. (Csikszentmihalyi, 1975: 36)

The neurobiological connection here is implicitly stated in the description that the actor needs 'no conscious intervention', suggesting that the neo-mammalian brain is not initiating the impulse. Thus the actor is able to work instinctively, using innate responses in the reptilian and paleo-mammalian brains. In theory, then, actors working in a state of flow have the potential to enhance the accessibility of a performance. For example, if one character on stage is to portray being shocked by the actions of another, he must not demonstrate this shock with culturally bound gestures which will be understandable only to those with the same cultural knowledge, instead he should allow his instinctive reaction, (increase in muscle tension, raised heartbeat, momentarily arrested movement in preparation for fight or flight), to manifest itself in the performance. The audience's mirror

124

neurons will mimic the neurobiological pattern of the actor's body language, and they will understand the portrayal of shock due to its innate qualities.

The wearing of masks by the performers may help them achieve a state of flow. John Emigh writes in his book *Masked Performance*:

> Still, most Indian [masked] performers I have talked to describe as ideal something very close to Csikszentmihalyi's notion of "flow" in which mastery is bound up in the movement itself, and the movement is connected to the spiritual and emotional state (bhava) of a character. (1996: 28)

Here, the 'spiritual and emotional' connection to the character might be an articulation of the sensibilities of the actor when his actions are no longer influenced by the neo-mammalian brain as he would be in daily life. The experience, therefore, feels different and so a performer without any neurobiological knowledge gives an explanation (creates a narrative) for the phenomenon within their cultural beliefs and knowledge. This sense of being out of control, without complete loss of control, means that a masked actor in a flow state is able to follow the designated structure in terms of what is supposed to unfold on the stage, but the performance will also be largely spontaneous within that fixed structure. The mask is particularly effective in achieving this state because its very nature heightens the duality of character and actor:

> The "flow experience," then, is abetted by the sense of "not me/not not me". The use of the double negative is appropriate, since, ideally, all prior decisions and questions of identity are now absorbed in the actions: once the persona has been created to focus, shape and direct energy, the ontological questions surrounding "me or not me?" "simply do not occur." (Emigh, 1996: 26)

Neurologically, the explanation might lie in an altered physiological state directed in the actor by the inherent properties of the mask. For example, when the actor adopts the facial expression of the mask, there is a physiological change in the body due to the direct neurological link to the limbic system, making the actor immediately feel different. (This will be dealt with in more detail in Chapter Six).

Further proof that clowning does indeed stimulate innate neurological and physical mechanisms lies in the fact that clown performances have been acknowledged as therapeutic and even medically remedial for the audience; indeed some non-western ceremonies include comic healing rituals. In recent years 'more anthropological and

medical investigations have come to recognise the value of this kind of cure, at least in dealing with the psychosomatic dimensions of the disease' (Towsen, 1976: 13). In a healing ritual, the clown operates in much the same way that the western concept of the placebo does. Both probably promote a feeling of well-being through the additional release of endorphins into the bloodstream. Clowning releases the endorphins as a result of breaking tension through laughter; placebo medication breaks the tension associated with illness because the patient believes a cure is imminent, and endorphins are released in relief (Harrington, 1997: 5). Western medicine is beginning to acknowledge the healing properties of laughter. In a handbook for mental health practitioners called *Disaster Responses and Recovery*, Diane Myers notes that '[t]he healing properties of humor should not be forgotten. Laughter can break tension and provide relief from stress. It is not unusual for disaster jokes and cartoons to surface soon after a disaster' (1994: 45). Laughter therapy workshops have even been introduced into some primary care trusts within Britain's National Health Service (Middlemiss, 2004: 89). It is the neurobiologically beneficial dimension to laughter that might explain why the phenomenon of clowning exists in all cultures (Towsen, 1976: 4). Clowns make people laugh and laughing enhances group cohesion (Berger, 1997: 57) so clowning traditions are culturally embedded.

Humour, Age and Audience Reception

When devising for the widest possible community the potential audience includes children as well as adults. Martin argues that children have a reduced level of enjoyment from humour that is either too difficult or too easy (2007: 244), thus the comic content of accessible theatre must be pitched at a level that is not too easy to sustain the attention of adults and not too difficult for the children.

Psychologist Paul McGhee (1989) states that humour in children develops in parallel with cognitive development and has four clear stages. The first is incongruous actions towards objects, the second, incongruous labelling of objects and events, the third conceptual incongruity and fourth, multiple meaning. It is clear from this that humorous behaviour that involves rule breaking governed by principles of incongruity might be particularly effective for children:

> Humor is appropriate for young children because they have an innate appreciation for incongruity. […] A girl pretending to comb her hair with a pencil, a cat saying "moo" are examples of incongruity. Children (and some lucky adults) love laughing at something that doesn't make sense. (Wheeler, 2005: 71)

Incongruity stimulates laughter in children because of the physiological response they experience which has been triggered by a break in the predicted pattern of behaviour associated with the object/animal. Adults, on the other hand, might be amused at the incongruity described above and possibly smile, but arguably the arousal would not be large enough to stimulate laughter. For '[t]hings that seem incongruous and funny at an early age become mundane and less humorous at a later stage of cognitive development' (Martin, 2007: 238). It is interesting that Peter Berger notes:

> Most modern adults, at least those with a measure of "higher" education, are not easily amused by the antics of the circus clown. Children inevitably are. […]. Children immediately identify with the clown and his world. One might put forward the thesis that they know something that their elders have forgotten. (1997: 77)

This is not simply because adults have forgotten how to play (though this might well be a contributory factor); the children understand the nature of play because of their huge capacity to learn through play at an early age. It is arguable that the adults have had greater experience of the clown and so any comedy that operates under the principles of incongruity fails to surprise them any more. Thus in theatre that strives for its humour to be accessible to adults and children alike, the comedy must be original and not rely on traditional circus clown type humour for example, bucket of whitewash in the face, exploding car, collapsing ladder (Peacock, 2009: 110) otherwise it might be mundane or predictable for the adults in the audience.

It is also important to note that '[p]lay and laughter are the universal language for children's communication' (Arnold, 2005: 56). The concept of humour as play is made explicit by psychologist Michael Apter (1991) who proposes that to experience humour we need to be in an appropriate state of mind. For him play is 'a state of mind, a way of seeing and being, a special mental "set" towards the world and one's actions in it' (1991: 13). This is supported by McGhee who has studied the results of many research studies about children's play and humour:

> Most researchers studying children's humor agree that there is an important link between play and humor. Many of the same issues that arise in studies of humor arise in studies of play. The notion of playfulness as a prerequisite for genuine humor enjoyment or production is especially important. (1989: 8)

Forest Wheeler suggests that one reason for this relationship might be that '[i]n order to learn, children must feel a desire or need to learn. Laughing helps create a desire to learn' (2005: 72). This evidence suggests that play can also be considered an appropriate model for producing humour suitable for children.

Adults can either be in a playful state of mind (paratelic) or a goal oriented state of mind (telic) and 'can quickly switch from one state to another' (Palmer, 1994: 103). In a telic state the individual is goal orientated and high arousal leads to unpleasant sensations of anxiety and low level arousal leads to pleasant sensations of relaxation. The reverse is true of a paratelic state in which the individual is focused in the present and high arousal leads to pleasant sensations of excitement and low arousal leads to unpleasant boredom (Kerr *et al.,* 1993: 15). The process of switching from a telic to a paratelic state is called reversal (Potocky and Murgatroyd, 1993: 15). Arguably then adults need to be in a paratelic state when watching theatre that requires playful behaviour to be decoded, for the 'central claim of reversal theory is that the way in which we interpret actions and activities depends upon our underlying "state"'(Lachenicht, 1988: 21). Thus, in a paratelic state, arousal from the constructed theatrical environment the audience are experiencing should give them pleasurable excitement; but conversely should the theatrical environment fail to stimulate, the audience will become bored.

However, audience members cannot choose which state they are in for 'the reversal process cannot be initiated by a conscious decision' (Lachenicht, 1988: 23). Mary Foster argues that some cultural events exist precisely to stimulate a switch to the paratelic state:

> It seems from the anthropological literature that cultural reversals (and something of the sort is described in virtually every ethnographic monograph) are specifically designed to trigger emotional shifts from what psychologists have called telic to paratelic states in participants and/or spectators. (1988: 68)

Football is a good example of a cultural event where the crowd 'enjoy their personal paratelic reversal in the licence to shout, scream, cheer or call the umpire names […]' (Foster, 1988: 68). It is arguable that theatre is also a cultural event that has the capacity to

stimulate a paratelic state in the audience, but proving this is difficult and researchers can only rely on evidence from the audience themselves:

> Agreement among spectators, thus, becomes more important than agreement among "experts" in determining the adequacy of a theory. This very special kind of agreement implies that spectators generally show traces of the particular mental processes described by the theory. (Tan, 1982: 158).

Evidence of the mental processes of an aroused paratelic state might include shouting out, phatic cries, laughter, smiling, that is, any evidence that pleasure has been stimulated. Proof that children and adults alike have enjoyed a performance will entail both children and adults displaying actions that depict pleasure. Furthermore, audience questionnaires have the capacity to reveal the extent to which children and adults enjoyed the show. Evidence that an aroused paratelic state had been achieved would be that children and adults rated the show with similar levels of enjoyment.

The question remains as to how to stimulate the paratelic state. The answer might lie with Berger who suggests in his book *Redeeming Laughter* that puppet theatre is a very good example of humour suitable for children as it combines incongruity in a form which clearly creates a fantasy world for 'what happens there would be terrifying indeed if it occurred in real life' (1997: 50):

> This fantasy world does have a certain reality (precisely the fugitive reality of a finite province of meaning), and the child who watches does experience a *frisson* of anxiety. But the puppet reality is indeed finite, the anxiety is limited by this knowledge and there is relief from real anxiety by the very fact of this limitation. The transition from one level of being to another is perceived as incongruous and *ipso facto* is comic. (Berger, 1997: 50)

Here it is possible that any initial anxiety associated with the telic state is switched to pleasurable excitement associated with the paratelic state through the knowledge that what is being viewed is not real. There are clear parallels between puppet theatre and masked performance with an obvious semiotic signalling of human/not human in the masks similar to the human/not human world of the puppet. Masks on stage signal to the audience a lack of reality and hence have the potential to trigger a reversal to the paratelic state for anyone not already in the state. Conversely, Foster states that '[w]hat would trigger a shift from paratelic to telic is a sudden introduction of seriousness or reality into a situation that has begun, and is suspected to continue as, paratelic' (1988: 69). This suggests that sustained

playful behaviour on stage should help maintain a paratelic state and allow the audience to receive the humour appropriately. Evidence that this has been achieved can only be produced by monitoring of the audience reaction during and immediately after the show.

Conclusion

This chapter has argued that certain modes of clowning might have the potential to transcend cultural boundaries, and thus the presence of some clowning techniques in a piece of theatre that aimed to be widely accessible would arguably be an important contributory factor. It suggests that the clowning techniques adopted should not be specifically ideological nor should satire be used to achieve comedy as this form of humour tends to be culturally bound. It suggests the most accessible techniques might be play and slapstick because play is an innate behaviour and arguably its presence on stage should be recognisable by any audience member regardless of age or background and thus is a key element for accessibility. Similarly it proposes that slapstick has the capacity to produce a wide response due to the element of surprise inherent in the technique and should be widely understood as long as if the context for the slapstick is not culturally bound.

It has been argued that when the triggers for pleasure include concepts and processes that are accessible to children, such as play, slapstick, the flop, then performance material such as clowning could become widely entertaining whatever the age of the audience. An accessible performance structure should include moments when the actors can improvise in a playful manner, this will create the right conditions for the performers to achieve a state of flow. The chapter has suggested that in order for humour to be accessible to both children and adults, the adults should ideally be in a paratelic state of mind. Given that this cannot be achieved consciously, it argues that it is important that suitable triggers are in place, and suggests playful behaviour on stage and masked acting might help facilitate a paratelic state. It has made a case for mirror neurons enabling the audience to read any potentially comic behaviour onstage, and, if understood, triggering an innate response through the phenomenological form of laughter. However, it also acknowledges the role of social and cultural factors that might influence this innate response.

Chapter Six - Character and Behaviour

> According to Goodman and Grotowski, what is universal are doable acts of the body; and these acts are nonideological, not culture-specific (Schechner, 1993: 253).

Elaine Aston and George Savona propose that throughout history and across cultures 'it is the actor who constitutes, in her/his person, the primary channel whereby character is communicated' (1991: 46). Bruce McConachie and F. Elizabeth Hart specify further that characters 'whether of humans, animals, or gods, have always been represented in performance through the bodies of actors' (2006: 33). Patrice Pavis suggests that in order to communicate a sense of character on stage, actors use both corporeal and vocal signifiers, which have been learned, whether they are highly stylised signifiers, as in many eastern cultures, or codified into an apparent naturalistic representation as in western realism (1996: 3). This chapter focuses on the physical portrayal of character on stage (as necessitated by non-verbal, full-masked performance conventions) to determine how to create characters and situations that are accessible to a wide audience. It starts with an examination of non-verbal communication through gesture and posture and moves on to modes of behaviour that can help define character traits. Through an examination of audience reception of character the unfolding argument that certain characterisations might be far more accessible than others leads to Carl Jung and the notion of archetypal characters.

Non-Verbal Communication - Gesture and Posture

William Gudykunst states that often 'non-verbal behaviour is discussed as either universal or culture bound' (2004: 193). William Rinn suggests a clear biological explanation for this dichotomy when he writes that '[c]ortical behaviours tend to be learned responses, where-as subcortical behaviours are innate. Because of this, cortical behaviours vary widely from culture to culture (e.g. language), but subcortical behaviours are universal across cultures (e.g. emotion, expressions)' (1991: 14). Marianne LaFrance and Clara Mayo agree but add a third layer 'the non-verbal behaviours that show both uniformity and diversity' (1978:

73), for example, members of all cultures 'display affect, express intimacy, and deal with status but the particular signs of doing so are variable' (1978: 73). Amongst these several views David Freedberg and Vittorio Gallese explain how we make sense of non-verbal communication through mirror neurons:

> Our capacity to pre-rationally make sense of the actions, emotions and sensations of others depends on embodied simulation, a functional mechanism through which the actions, emotions or sensations we see activate our own internal representations of the bodily states that are associated with these social stimuli, as if we were engaged in a similar emotion or sensation. (2007: 198)

Houman Sadri and Madelyn Flammia agree that non-verbal communication is often beyond our conscious awareness and control but interestingly note that when we receive conflicting messages between verbal and non-verbal communication then it is the 'non-verbal message that is considered to be the most trustworthy' (2011: 160). Anthropologist Edward T. Hall would agree for he writes in his book *The Silent Language* that in 'addition to our verbal language, we are constantly communicating our real feelings in the language of behaviour' (1981: ix). It is clear then that it is necessary to differentiate in some way between culturally specific non-verbal communication, and innate non-verbal communication.

One form of non-verbal communication is gesture. In approximately 100AD a Roman called Quintilius first differentiated between two types of gesture, those that seemed to '"naturally proceed from us simultaneously with our words" and those by which one indicates things by means of mimicry' (Kendon, 2004: 18-19). Writing in the year 2000 John Haviland agrees:

> Broadly speaking, the phenomenon of gesture can be viewed in two seemingly opposite ways. On one of these views it is a 'window' into the mind, and is regarded as part of the individual speakers-gesturer's ongoing mental life. […] The other approach [is] that of gesture as part of the social interaction in which the person participates. (2000: 11)

Curtis LeBaron and Jürgen Streeck concur that some gestures used in social interaction are culturally specific due to their descriptive or iconic nature necessarily involving 'indexical links to the material world' (2000: 131) and further suggest that 'in conversational contexts that are detached from the talked about world, participants must fill in encyclopaedic knowledge (ranging from the universal bodily experiences to highly specific cultural practices) to see and recognize gesture' (2000: 131). Ethologists such as Irenäus Eibl-

Eibesfeldt and Ray Birdwhistell have conducted studies into the nature of innate releasing mechanisms which have revealed that the nature of gesture is universal and 'to be found in all humans regardless of culture' (Kendon, 2004: 327) but that 'most gestures are formed and develop culturally' (Eibl-Eibesfeldt, 2007: 480). Susan Goldin-Meadow alludes to the sub-conscious nature of gesture when he writes that 'gesture reading is not a skill that must be taught. We all do it and are moderately good at it' (2003: 245). Edward Sapir similarly writes that we respond to gestures in accordance with an elaborate and secret code that is written nowhere, known by none, and understood by all. He suggests that even though people can often identify a certain type of communication behaviour when they see it, 'they may not be able to describe the behaviour when asked' (cited in Novinger, 2001: 62). Examples of culturally specific gestures are the western handshake given in greeting, or the thumbs up gesture of approval, the nose thumb or vertical horn sign. Desmond Morris gives many examples of these in his book *Manwatching* (1977). Eibl-Eibesfeldt argues for two exceptions to this, firstly, pointing with the index finger, which he evidences is found throughout the world even in young children, and secondly, the wagging of the index finger to tell someone off (2007: 480-481). Houman Sadri and Madelyn Flammia disagree that a universal existence means universal understanding and firmly state that there are no universal emblems (gestures that convey a specific verbal meaning) that are used across all cultures and caution against the use of emblems when socialising in non-familiar cultures as they might cause miscommunication or even offence. They give the example of pointing with one finger being considered bad manners in China where the preferred gesture is to indicate with the whole hand (2011: 162).

Haviland's notion of a 'window into the mind' suggests that gesture can also reveal unconscious thoughts and feelings. This is supported by ethologists who have found that 'the expressive movements associated with the various emotions are essentially identical in all cultures' (Eibl-Eibesfeldt, 2007: 478-479). Shunya Sogon and Makoto Masutani support this as their studies have shown that there is evidence for 'cross-cultural consistency in actions specific to emotions, and these actions are recognisable in emotions terms by others from a different culture' (cited in Weisfeld, 1997: 30). The emotions that exist worldwide can be 'classified into distinct major categories: anger, fear, sadness, joy, surprise, and disgust […] (Eibl-Eibesfeldt, 2007: 476), and Glenn Weisfeld importantly notes that we

133

have only 'one response tendency per emotion' (1997: 30). An example is that 'anger prompts us to attack the offending target. We may execute the attack in a variety of ways, but each constitutes an attack' (Weisfeld, 1997: 30). Sadri and Flammia agree that some adaptors (gestures that are largely unconscious expressions of the emotional state of the individual), occur in most cultures, such as pounding one's fists signalling anger, but would argue that some gestures including fist clenching, foot tapping, scratching, or eye rubbing, are not universal because of cultural adaptations. They argue that fist clenching does not necessarily denote anger, for in Germany forming fists and moving them gently down signals good luck. However, it is arguable that in this case other non-verbal cues such as facial expression, speed and rhythm are also involved in the communication. It is also important to note that display rules in different cultures can affect the innate expression of emotions for Kenneth Keith points out it is our culture that shapes the rules for 'when, where, with whom, and how different emotions should be expressed or suppressed' (2011: 413). Maja Bratanić agrees that non-verbal behaviour is to a great extent universal but is 'marked' by what she calls 'cultural patterns' (2007: 82). Edward Hall goes even further and suggests human beings have specialised the language of the body to be congruent with everything they do, therefore it must be understood in its cultural context. He argues that just as 'there are no universal words or sound complexes that carry the same meaning universally (the symbols of verbal language are totally arbitrary), so there are no body motions, facial expressions, or gestures that have identical meaning across cultures' (cited in Novinger, 2001: 63). However, some ethologists would disagree. For example Paul Ekman (1975, 1979) notes that universal facial expressions linked to the major emotions (anger, fear, sadness, joy, surprise, and disgust) are now widely accepted (this is considered in detail in Chapter Seven).

Posture is another form of non-verbal communication relevant to this study. It can be defined as a static component of body language which is framing discrete 'units of movements with a beginning and an end it time' (Grammer *et al.* 1997: 92). Charles Darwin argues that some postures are innate responses to specific triggers. For example, lowering your height and making yourself smaller is an innate submissive posture recognised in animals (1999 [1872]: 56) and Eibl-Eibesfeldt has noted something similar in humans which comprises the lowering of the head, dropping the shoulders, and stooping

(2007: 485). He also acknowledges culturally formed manifestations of the innate response such as bowing, kneeling or taking a hat off, but argues that the basic lowering response appears in all cultures (Eibl-Eibesfeldt, 2007: 485). James Leigh points out that the antithetical innate response of domination (holding the body upright to increase height and thus appear alert and confident) also appears in all cultures (2000: 8). The innate quality of some postures is supported to some extent by the work of Felicitas Goodman (1990) who devised experiments aimed at discovering how specific postures adopted by dancers might influence their ensuing movement improvisations. Initially she researched and noted the body positions of people in trance situations as described in ethnographic literature, paintings, drawings, or photographs and asked her students to adopt the same body postures. When they were accurate she started dance ritual activity and observed that 'these postures in a predictable way shaped not merely the somatic perceptions, but even more importantly the contents of the visionary experience' (1990: 103). On seeing the results of Goodman's experiments, Richard Schechner proposed that 'belief and cultural context are unnecessary--put yourself in the proper posture, perform the right actions, and the experience will come' (1993: 252). He infers that the use of certain postures and actions has the capacity to stimulate innate physiological responses.

However, Eibl-Eibesfeldt notes that in 'gesturing and posturing, our cultural and the biological heritage are blended in a variety of ways. Expressive movements arise in a process of ritualisation from various types of precursor behaviours, occurring regularly in specific contexts and which are indicators of specific intentions' (2007: 492). Eibl-Eibesfeldt comments on the perception of such expressive movements by a viewer (which can be related to audience reception in the theatre) when he writes that the 'recipient's perception enforces parallel (analogous) developments for both phylogenetically and culturally evolved signals' (2007: 492). This is supported by Phillip Zarrilli who studied both *Kathakali* and *Noh* actors and came to the conclusion that the same physiological response in the actors was produced by very different sets of culturally specific movements (Zarrilli, 1994: 143).

Expression of the Body - Behaviour and Motivated Movement

Julian Blackburn suggests that a person's character is clearly linked to their behaviour when he points out 'the fact that most people betray at any rate a moderate degree of consistency in their behaviour […] has enabled authors and novelists to portray individuals who behave in ways which are consistent with their characters' (2003: 1). This is in line with trait-based theories which according to Jo Brunas-Wagstaff can be 'seen in terms of temperaments or underlying predispositions to behave in characteristic ways' (1998: 63). Similarly, Robert Burgess notes:

> [E]volutionary scientists have been primarily interested in explaining pan-human traits, that is, those behaviours that all humans share. Such traits include biparental care, long-term pair bonding, language, our lengthy child-hood, deception, co-operation, trust, jealousy, violence and so on. We take these traits for granted, and we should, because we all share a common human nature. (2005: 3)

Predisposition is also in line with instinct theory which 'assumes that in all members of a species, innate instinctual tendencies are found which are concerned primarily with psychophysical dispositions that direct their behaviour in predicable ways' (Mishra, 2008: 411). Certain instinctive behaviours are motivated by the need for survival, such as 'feeding, mating, withdrawing from threat […]' (MacDonald, 2005: 213). Mark Bear *et al.* explain that at a simple level instinctive behaviour involves unconscious reflexes initiated by sensory stimulation, for example, dilation of the pupils when there is bright light or moving the hand quickly away from a source of strong heat. At a more complex level the behaviour is called wilful movements which are initiated by the neurons in the frontal lobe:

> Wilful movements are incited to occur--or motivated--to satisfy a need. The motivation can be abstract (the need to go sailing on a warm and breezy summer afternoon), but it can also be quite concrete (the need to go to the bathroom when your bladder is full). Motivation can be thought of as a driving force on behaviour. (Bear *et al.*, 2001: 523)

However, Braj Mishra suggests that nowadays instinct theory is no longer widely accepted as an explanation for human behaviour as most psychologists consider behaviour to be a product of both genetic and environmental factors (2008: 412). This is supported by Peter Reynolds who believes that human behaviour is a product of 'constant and functionally unitary interaction between innate and environmental information' (1981: 74-75). Clifford Geertz (1973) also points out that cultural difference, individual difference and the human ability to learn and adapt to the environment all affect behaviour. Yet John Bowlby (1969)

136

asserts that although human behaviour is variable, there are commonalities that are discernable and of obvious survival value such as the care of babies and young. Such basic innate survival drives governed the behaviour of early humans as they lived the simple life of hunter-gatherers in small social groups. But as humans have developed and evolved and their environments have also developed and evolved (for example, urbanisation) some innate behaviours have been adapted to suit many different culturally specific situations yet Bowlby asserts that these behaviours appear 'in a predictable form in all members of the species' (1969: 39). William Thorpe agrees that although there might be differences in the actual manifestation of the behaviour, the underlying behavioural template is common to all humans because it originates in an inherent drive linked to some aspect of survival (1974: 135). Peter Carruthers *et al.* propose that 'cultural diversity occurs only with respect to the means by which fixed, universal ends are achieved. For example, one group may satisfy its taste for sweets by eating fruits, while another may manufacture candy. The taste for sweet foods, however, is itself innate, universal, and not susceptible to culturally determined variation' (2007: 326). Thorpe lists the behaviours that he considers are 'primarily inherited' and 'relatively little influenced by individual experience' (1974: 148) as follows:

> (1) *Sex*, including aggressive and submissive behaviour and fighting of various kinds (including territorial behaviour); (2) *Nutrition,* including the way of obtaining and eating food; (3) *Care of the body surface* including grooming, preening and scratching; (4) *Escape from predators*, including methods of concealment, threat, […] freezing, […] and taking flight; (5) *social behaviour*, including methods of responding to other members of the social group irrespective of whether or not they are of the other sex […]; and indeed (6) *sleep* itself, including the rhythm of rest and wakefulness, positions assumed in sleep, and so on. (1974: 148)

This thesis hypothesizes that these behaviours will be recognisable despite culturally-defined and oriented manifestations because the templates for the behaviour have innate roots. But before any conclusions can be reached it is necessary to examine how reading of performance material in general is manifested neurologically to help specifically understand audience reception of behaviour.

Audience Reception: Planning

Bowlby suggests that performing actions that satisfy needs (thirst must be quenched, hunger satisfied, children protected) is enabled by the capacity of humans to adhere to what

he terms a 'common plan' (1969: 39). In the book *Plans and the Structure of Behavior,* George Miller *et al.* define a plan as 'any hierarchical process in the organism that can control the order in which a sequence of operations can be performed' (1965: 16), and behaviour as 'a coherent series of actions--a plan--rather than a set of single responses' (1965: 17). Robin Morris and Geoff Ward assert that in contemporary humans such plans need not just be about biological needs but can also be those 'relating to enjoyment or relaxation, those for achieving a valued possession or social position or preserving or improving the health of people' (2005: 16). Planning is viewed by some cognitive science research 'as a type of problem solving, and "plans" as sequences of action categories' (Randall, 1987: 39). Jagannath Das *et al.* differentiate between strategies and plans believing 'strategies can be formed without the individual ever being conscious of them […] whereas the individual is conscious of plans at least at some point in their development' (1996: 113). Joseph Nuttin suggests that general motivational orientations are innate and as such common to all humans but that their behavioural shaping occurs as a function of situational factors and therefore the same behavioural manifestations are not present in all people (1984: 79).

The neurobiology underpinning the ability of humans to plan lies within structures collectively called basal ganglia which 'are involved in one or more stages of the building up, storage, decoding, retrieval and expression of behavioural action plans through collaboration with the neocortex, the thalamus and the limbic system' (Graybiel, 1998: 289). This part of the brain operates using goals-means principles which Bear *et al.* (2001) describe as having three settings, a 'ready' mode in which incoming information about a desired goal or objective is received (the example given is to pitch a curved ball) then a 'get set' mode in which the serial planning (the means by which the goal is achieved) is undertaken and the neurons necessary to carry out the action are fired in a pre-planned sequence, but inhibited from reaching their intended target (in the example given neurons in the motor area of the brain which control the muscles necessary to actually throw the ball in the desired manner are activated but discharge is inhibited) and then a 'go' mode in which the signals to the muscles themselves are released and the desired action takes place (Bear *et al.*, 2001: 476-477). A more modern analogy might lie in an aeroplane's automatic pilot. First the destination is given (ready), then the built-in computer chooses the details of the

route (get set) and once the whole journey has been pre-planned, then the plane can take off (go). The ability to plan is clearly a skill that enhances survival and neurobiologists support the view that both learnt and innate movement sequences can be serially ordered (Graybiel, 1998: 292). Sarah Friedman *et al.* do not believe that such plans are always subconscious. They believe that 'once a behavioural goal has been formulated, the individual devises a program. Some of these programs are innate, some are learned, and others are constructed through inferential processes' (1987: 31).

Most interestingly Robin Morris and Geoff Ward propose that such plans are subject to plan revision. That is, an original plan can be inadequate in achieving the desired goal because the predicted pattern is no longer viable 'with the result that the plan is modified to take into account the new data' (2005: 11). It is the ability to revise plans that is most relevant when considering audience's reception of behaviour observed on a stage. When viewing a plan in action (in this case a sequence of events on a stage) the observer's brain tries to match what is observed with a pre-stored plan within its own memory. Once it has found a matching plan, and as dictated by pattern recognition model, then meaning is generated. The brain's ability to predict the objective, or object, of the intended behaviour is central to how meaning is created when one person is observing the actions of another. This is described by Fritz Heider as follows:

> One might say psychological processes such as motives, intentions, sentiments, etc., are the core processes which manifest themselves in overt behaviour and expression in many variable ways. The manifestations are then directly grasped by *p*, the observer, in terms of these core processes; they would otherwise remain undecipherable. By looking through the mediation, *p* perceives the distant object, the psychological entities that bring consistency and meaning to the behaviour; *p*'s reaction is then to this meaning, not to the overt behaviour directly, and this reaction is then carried back by the mediation to *o*, etc. (1958: 34)

Thus, as long as the audience understand the objective of an action (the outcome of the plan), then sense is more likely to be made of the behaviour involved in carrying out the action/plan. If the objective is linked to innate behavioural objectives, such as feeding or nurturing, even if the behaviour itself contains some cultural specificity, meaning could still be created due to the heuristic nature of pattern recognition. There has to be just enough information for the behaviour to match with a pre-existing pattern. It is not necessary for an

exact match of every detailed component of the action involved to create understanding in the audience. For example, the behaviour associated with trying to forage for food from the natural environment is an innate behavioural pattern common to all people (Haviland *et al*., 2005: 155). An audience watching foraging behaviour on stage need not be familiar with the specific foliage to understand the behaviour being observed; they just need to understand the objective (to obtain the food) for their brain to make sense of the activity being viewed.

But what happens if what is being viewed is novel? Joseph Nuttin states that 'when confronted with an unfamiliar stimulus, an individual is likely to search for its meaning' (1984: 25). Robin Morris and Geoff Ward agree that in novel, unexpected or less frequently experienced events and situations 'by finding a plan (or by creating a plan, in the case of novel plans), a person can infer the reason for another person's behaviour and can use this to help make sense of what they are doing' (2005: 16-17). The behaviour of characters on the stage will either correlate with pre-existing plans in the brains of the audience or the audience must be able to construct a new plan by structuring existing patterns into a new sequence of events through which the meaning can still be inferred, even though it might not have been directly experienced. For example, an audience member need not be violent themselves in order to understand violent behaviour on stage. When the behaviour of characters on stage is culturally specific then other cultures would not be able to recognise the behaviour as there will be no pre-existing plans to match this with and the brain will be unsuccessful in its attempt to create a new plan because the relevant patterns will not be stored in the memory. But if the patterns of behaviour viewed are genotypical then the audience should be able to create meaning by accessing the relevant pattern that corresponds to innate instinctive behavioural patterns. This hypothesis also applies to other forms of behaviour that are motivated by the aesthetics and pragmatics of survival. For example, Eibl-Eibesfeldt has argued that pre-formed templates can also concern interaction with certain objects that are important for survival, thus human beings 'exhibit an aesthetic preference for plants (Phytophilia) which reflect an "archetypical" imprint on features of the environment' (cited in Schmitt *et al*., 1997: 18). This aesthetic preference for plants means that a tree on stage should be understood aesthetically by all audience members no matter their cultural background whether they have encountered the specific tree or not. As

long as they have experience of "a" tree, their brain will be able to understand "tree" by using heuristic modelling of the incoming visual information and thus recognising the "tree-ness" of the object.

Character and Behaviour

When consciously adopted in various art forms, behavioural patterns can be grouped together to form what is called a character (Blackburn, 2003: 1). In his analysis of folklore, Vladimir Propp notes that 'each character will emerge performing several functions in the "sphere of action" that characterises that person' (1968: 79-80). In other words a character is defined by the actions that they undertake. Furthermore, he theorises that there appear to be seven character types that undertake these actions namely: the villain, the donor, the helper, the sought-for person, the dispatcher, the hero and the false hero (1968). This limited range suggests that the individual actions of the many characters in a broad range of stories might derive from specific genotypical roots.

However, this theory is inconclusive as Propp only analysed Russian folktales for his research. A wider, less culturally specific model should be found to ascertain which pan-human behaviours can be linked to character types and thus render the stage persona more likely to be understood by the audience irrespective of their background. Leading human ethologist Eibl-Eibesfeldt uses the word 'archetypical' when discussing 'pan-human behavioural traits' (Schmitt *et al.*, 1997: 18) and this draws attention to the work of Jung and his well documented notion of the archetype.

Jung

Jung addressed the common heritage of the human condition and called this 'the collective unconscious' (1959: 3):

> I have chosen the term "collective" because this part of the unconscious is not individual but universal; in contrast to the personal psyche, it has contents and modes of behaviour that are more or less the same everywhere and in all individuals. It is, in other words, identical in all men and thus constitutes a common psychic substrate of a suprapersonal nature that is present in every one of us. (1959: 3-4)

It could be argued that the modes of behaviour Jung described might be linked to innate behaviour patterns and therefore, if identified, could be presented on the stage by the actors, thus increasing the possibility that all members of the audience regardless of age or cultural difference would understand the character. Jung called such behavioural modes 'archetypes' (1959: 4):

> For our purposes this term is apposite and helpful, because it tells us that so far as the collective unconscious contents are concerned we are dealing with archaic or--I would say--primordial types, that is, with universal images that have existed since the remotest times. (1959: 5)

The use of the word 'primordial' suggests that archetypes could be housed in the earliest section of the brain to evolve, the reptilian brain, where the patterns for instinctive behaviour lie. This is supported by Andrew Samuels who states that the 'reptilian brain is an older part of the brain and may contain not only drives but archetypal structures as well' (1985: 39). Anthony Storr (1973) also supports this when he describes archetypes as 'inherited predispositions' which have not been culturally learned, but are part of our 'genetic inheritance' (1973: 41). Storr suggests that these innate patterns are expressed consciously at times, and have recurring similarities with the images and symbols in myths, legends, paintings and sculptures from different cultures. This link between archetypes, instinct, and human creativity, is supported by a school of archetypal psychologists who believe that 'the fundamental nature of the archetype is accessible to the imagination first, and first presents itself as image […]' (Hillman, 1983: 12). Clearly theatrical performance is an art form rooted in imaginative behaviour, which utilises imagery as one of its key signifiers. However, performance styles vary in different cultures, and indeed differences occur within the conscious manifestations of all areas of the arts in different cultures because, '[t]he archetype is essentially an unconscious content that is altered by becoming conscious and by being perceived, and it takes its colour from the individual consciousness in which it happens to appear' (Jung, 1959: 5). Therefore the individual will phenotypically frame the archetype according to the cultural environment they live in, because, although the archetypal impulse occurs genotypically in the reptilian brain, the actual manifestation has to sometimes employ the neo-mammalian brain (depending on the art form) and therefore draws on what has been culturally learnt. This is supported by ethologist James Hillman, who states that 'archetypal psychology axiomatically assumes imagistic universals, that is, mythical figures that provide the poetic characteristics of human thought,

feeling and action, as well as the physiognomic intelligibility of the qualitative worlds of natural phenomena' (1983: 19).

It is no surprise then that Jung's personified archetypes such as Mother, Hero and Child, correspond almost exactly to characters that appear in many different myths and legends from around the world. Jung himself suggested links between myths, archetypes and human instinctive behaviour, but this knowledge was not available to him at the time. However, his idea was supported many years later by human ethologists such as Stephen Lea who noted:

> Jung supposed that we have a 'collective unconscious', a common inheritance of behavioural tendencies and possible social roles, or archetypes, that influence our behaviour but do not come into our awareness. Scientific psychologists have often dismissed the idea, but it is not really implausible if we remember that we are descended from creatures whose social behaviour was determined by processes like instinct and imprinting, and that at least the residues of these processes remain with us today. (1984: 81)

Ethologists argue that our brains are programmed to read certain patterns and images. As animals this helps us interpret the natural phenomena around us and therefore ultimately to survive. Literary analyst Joseph Russo acknowledges that there is a clear link between archetypes and ethology. He states that '[a]rchetypes are best conceived of as patterns of energy with image-making potential, and may be compared to the innate mechanisms discovered by ethologists to be part of the physiological structure and thus the biological inheritance of the brain' (2008: 254). The link is also made by Samuels:

> Ethology shows us that each species is equipped with unique behavioural capacities that are adapted to its environment and, even allowing for our greater adaptive flexibility, we are no exception. Archetypes are the neuropsychic centres responsible for co-ordinating the behavioural and psychic repertoires of our species. (1985: 37)

The biological necessity for instinctive behaviour speaks for itself, and humankind's survival has no doubt been in part due to its ability to read complicated patterns and images and respond to them appropriately. Just as an animal, like a dog, is programmed to read the behavioural signals of another dog it meets, (for example, bared teeth, hackles up, ears forward, tail up will be recognised as aggressive, and if a fight is to be avoided will automatically be responded to with submissive behaviour such as ears back, tail down, back down in order to prevent an attack (Darwin, 1999 [1872]: 55-56)), so we humans are

programmed to read instinctively all aspects of our environment, including the behavioural patterns of other humans, via our mirror neurons, and to respond appropriately. Further support for this was given by Bowlby who wrote:

> For it must be emphasized that in all higher species, and not in man alone, instinctive behaviour is not stereotyped movement but idiosyncratic performance by a particular individual in a particular environment yet a performance that nonetheless follows some recognisable pattern and that in a majority of cases leads to some predictable results of benefit to individual or species. (1969: 39)

It seems, then, that archetypal behaviour patterns that manifest themselves in interactions such as relationships with parents, relationships with others in the social group, interaction with the opposite sex, safety and well being of individuals and groups, birth and death and in fact, any predisposition that ethologists deem instinctive and connected to survival, are those that will be widely understood by anyone regardless of cultural background. If archetypal characters, as defined by their behaviour, were presented on stage, then a wide range of audience members should be able to 'read' those characters due to mirror neurons making connections with innate patterns of action deep within the reptilian brain. Suitable character types would be those identified by Jung as archetypal. Anthony Stevens even infers this possibility when he writes that 'throughout the whole cycle of life, the archetype stands behind the scenes, as it were, as a kind of author-director or actor-manager, producing the tangible performance that proceeds the public (and private) stage' (2002: 59).

Archetypal Characters

William Doty defines archetypal characters as 'existentially global' which 'represent experiences encountered across human cultures expressed in the infinitely varied garb of human personality' (2004: 32). He gives examples of the mother, the wise old man, the trickster, and the innocent child. Toby Wilsher who has worked with theatrical masks for many years argues that archetypal characters show traits 'seen in other characters across the centuries, coming to represent a universal truth about human character' (2007: 19). Characters on the *Kathakali* stage are described by Zarrilli as archetypes. He uses a standard definition of archetype as 'an original model, form, or pattern from which something develops' (1984: 190) and describes *pacca* characters which are 'self possessed and in control of every action--such is the ideal heroic figure' (1984: 178) and archetypal

demon kings such as Ravana (1984: 375) and Narakāsura (1984: 200). Most interestingly for this study Deborah Bell, who has interviewed mask makers from around the world, noted a link between masks, archetypes and myth:

> Even if myth is not totally evident in the mask maker's work, s/he inevitably explores archetypal qualities such as those seen in mythic characters. These archetypal character qualities most often show up in the forms of demons/villains, heroes, gods, and protectors, such as animal totems--but also in the form of everyman figures. They can range from heroic figures on a major quest to flippant slaves/servants outwitting their masters, or nonchalant gods conquered by trickster figures who force the gods to accept a truthful idea. We see masked characters as archetypal figures found in historical mythic dramas or in contemporary productions because they have the power to resonate at eternal universal levels. (2010: 9)

It is useful to examine some of these archetypal characters in relation to myths and ethological findings.

Hero

Hero characters appear in many myths and although the details are different cross-culturally (in that sometimes the hero is of humble birth, sometimes a prince or king, sometimes he is an exile, sometimes he marries a princess) Fitzroy Raglan has noted commonalities in patterns of behaviour and gives the example that '[h]eroes are saviours' (cited in Segal, 2000: 1) and '[a]ll his victories, when they are actual fights and not magical contests, are single combats against other kings, or against giants, dragons or celebrated animals' (Segal, 2000: 11). Examples of heroes that western readers might be familiar with are Hercules, who killed two large serpents when he was two years old, Robin Hood who was exiled then defeated the Sheriff of Nottingham, and the comic book hero Superman who displayed superhuman qualities in defeating evil. In Norse mythology Sigurd is a dragon slayer. In Hawaiian mythology Maui is renowned for discovering fire, prolonging summer, and providing more sky by pushing up the heavens. In his book *On Heroes, Hero Worship and the Heroic in History*, Thomas Carlyle notes how some people achieve the status of hero during their life time stating that 'in all epochs of the world's history, we shall find the Great Man to have been the indispensible saviour of his epoch' (1840: 17). Paul Gilbert suggests the innate biosocial behavioural pattern which determines this archetypal behaviour is to do with dominance:

> For example, the hero may represent the orientation to excel (compete) in a way that is socially recognized, and to which status is bestowed. The more competitively oriented a person, the more the hero archetype may come to dominate achievement striving in both fantasy and reality. (1989: 40-41)

Valerie Manusov describes dominance behaviour as 'context- and relationship-dependent patterns in which one actor's assertion of control is met by acquiescence from another' (2005: 326). John Archer agrees there is an imbalance of power or status and suggests that one likely outcome of this is that 'the dominant will consistently have priority of access to a resource both of them would otherwise seek to obtain' […] (1992: 129). Peter Smith has interestingly noted dominant behaviour in children occurring in play fighting (rough and tumble) that is used 'as a social tool in establishing or maintaining dominance in peer groups' (1997: 47) and that, as far as can be ascertained from existing data, rough and tumble 'is a universal, that is, a behaviour in which all youngsters all over the world are involved, boys more than girls' (Schmitt, 1997: vi). It is interesting to note that it is not a gender specific phenomenon which is supported by Doty who notes that heroes can be male or female, examples being Joan of Arc and Superwoman (2004: 40-41).

Evil Villain

In many myths there is a villain who is 'often construed as the one for whom nothing is beyond the pale, nothing is prohibited, no means to an end denied' (Alsford, 2006: 83). Jung would consider this character under the influence of the shadow, a term he used for the archetype of evil, Satan, the enemy and so on (Stevens, 2002: 253). Irving Weiner acknowledges that 'every society has myths about evil' and suggests this is because 'we humans seem to need to give meaning to our suffering' (2003: 548). According to Edward Farley, human history also 'attests to the stubborn and pervasive facticity of evil' (1990: 62). Steven Bartlett agrees that mankind today 'is responsible for behaviour that jeopardizes our survival as well as that of other species' and this aggressive behaviour 'may be considered as pathological and thus as evil' (2005: 48). Stevens argues there is much evidence to suggest that aggression is innate, and furthermore that 'aggressive behaviour is an *a priori* characteristic in social mammals has been abundantly provided by ethology, and has been confirmed in human beings by all major schools of depth psychology' (2002 [1990]: 261). According to Konrad Lorenz aggression springs from an innate fighting instinct shared with many animals which is 'directed *against* members of the same species'

(1966: ix). Robert Baron and Deborah Richardson believe such an instinct evolved because it performed important functions such as 'being better able to protect and insure survival of their offspring' (2004: 16):

> Lorenz has suggested that in addition to an innate fighting instinct, all organisms possess inhibitions varying directly with their capacity to inflict serious harm on their victims. Thus dangerous predators such as lions and tigers, […] possess very strong inhibitions against attacking members of their own species, while less dangerous organisms, such as human beings, possess much weaker inhibitions of this type. When, early in their history, men and women aggressed against others primarily by means of teeth and fists, the lack of such restraint was not harmful; the probability that they would inflict serious injury was, after all, relatively low. As technological development made increasingly devastating weapons available, however, the absence of such inhibitions became increasingly dangerous until, at the present time, humanity threatens its own continued survival as a species. (Baron and Richardson, 2004: 16)

Eibl-Eibesfeldt suggests that children also express the aggressive instinct which he argues manifests itself in the universal phenomenon of bullying (Barlett, 2005: 149). Arguably when weapons are used to express aggression, even if there is a lack of cultural knowledge of specific weapons, the aggressive body language involved in an attack has the potential to make the behaviour accessible to all regardless of age or cultural background.

Child

Jung noted that children frequently appear in myths and pointed out the occurrence of the child motif in stories from Greece, Rome, India, Finland and many other sources (1959: 151). Whether they are child gods or orphan children, their role is usually to be in danger and thus in need of protection or rescue (Jung and Kerènyi, 2002: 32). This seems to reinforce the socially beneficial behaviour of nurturing and caring for young. Bowlby asserts that such behaviour can be 'found in almost all members of the human race and seem best considered as expressions of some common plan and, since they are of obvious survival value, as instances of instinctive behaviour' (1969: 39). He further explains how pre-programmed patterns in a child help direct them to quickly become focused on whoever is caring for them, most usually the mother, to form an affectionate bond (Bowlby, 1969: 305). Jung states that 'the child motif represents the pre-conscious childhood aspect of the collective psyche' (cited in Kirk, 1970: 277). Harvey Birenbaum points out similarities between myths and fairy tales and suggests that figures such as Hansel and Gretel are

expressions of Jung's child archetype. He argues that child characters are 'strictly typical, and they are limited in their range of experience, but they are *there* for us, with a natural sense of humanity that is emphasized by the fact that they are children […]' (1988: 138). Rod Plotnik and Haig Kouyoumdjian state that play behaviour is commonly associated with children and suggest it is because 'humans have innate biological factors or predispositions that make certain kinds of learning, such as play behaviour, very easy and effortless' (2010: 228) (see also Chapter Five). Namita Ranganathan differentiates between children's play and games by suggesting games predominantly involve rules which have to be followed whereas play 'is the spontaneous expression of innate patterns of behaviour' (2000: 178). She further proposes that all behaviour a child undertakes is innate because it is motivated by a simple need or 'innate urge' which she suggests 'directs and energises the behaviour' (2000: 154).

Mother

In myths and legends the mother archetype is often symbolised as Mother Nature, or Mother Earth where she represents 'fertility and [the] dispenser of nourishment' (Stevens, 2002: 108). According to Jung the qualities ascribed to the mother in myths are 'maternal solicitude and sympathy; the magic authority of the female; the wisdom and spiritual exaltation that transcend reason; any helpful instinct or impulse; all that is benign, all that cherishes and sustains, that fosters growth and fertility' (1972: 16). Laurence Coupe states that most early religions include mother figures that are depicted as compassionate, feminine and gentle, but warn she can also be depicted as 'the stern and unforgiving bringer of death' (2009: 200). Ethologists agree that the patterns of behaviour displayed by mothers such as caring, nurturing and protecting her young as the basic repertoire of affectionate behaviour is 'identical in all cultures' (Eibl-Eibesfeldt, 2007: 209). Bowlby (1969) argues that the behaviour is most likely to be expressed by maintaining proximity and/or communication hence the resulting attachment behaviour is the consequence of certain pre-programmed patterns of behaviour. Virginia Colin argues that because humans have adapted to many different environments then attachment and caregiving behaviours must be flexible and the way attachment behaviour is expressed 'must reflect some social learning' (1996: 5). However, it is arguable that the character of the mother would be widely understandable on stage through her caring and protective relationship with an infant,

148

despite cultural variations in the way this behaviour might be expressed, due to its innate nature.

Fool and Trickster

The fool 'often appears in myths and legends as a broad range of characters, such as, the village idiot, the harmless eccentric, or anyone seemingly lacking social graces and blissfully operating outside the laws of logic' (Towsen, 1976: 5). His behaviour would be characterised as 'someone lacking common sense, if not totally devoid of reason' (Towsen, 1976: 5). David Robb writes that although 'the fool may function in many ways, for instance, as a satirist, jester or clown, he or she will also undoubtedly serve as a catalyst for comic catharsis' (2007: 27). He infers a connection with innate structures when he states that 'fools embody a universal need for periodic self-abandon, laughter and rebellion' (2007: 27). The archetypal fool is often teamed up with a trickster-like fool to form a comic duo. For example, in Asian theatre Vita is a trickster because he is a cunning rogue and Viduska is the fool as he is slow-witted and always gets the blame. Dean Nicholas describes a trickster's behaviour as 'breaking social boundaries and using deception and trickery to survive. While cunning he is also made to look the fool, overcome by his voracious appetite--both gastronomical and sexual' (2009: 9). These behaviours concur with Jung's definition of the trickster archetype as 'a summation of all the inferior character traits in individuals' (1972: 177). Joseph Russo refers to the trickster in primordial terms supporting archetypes being housed in early areas of the brain when he writes that the trickster refers to 'an archaic level of consciousness, an "animal" or primitive self given to intense expressions of libido, gluttony, and physical abuse' (2008: 56). He cites examples of North American figures of Wakdjunkaga, Raven and Coyote, and African figures of Ananse, Eshu and Legba. The comic nature of this rule-breaking behaviour by fools and tricksters has the capacity to promote laughter (see Chapter Five) whose ethological function is that of 'social bonding and for the release of cathartic tension' (Eibl-Eibesfeldt, 2007: 315). More conclusively Mario Jacoby points out that in analytical psychology the fool or the clown is an archetype because he or she represents 'a disposition that belongs to human nature' (1990: 131).

Performing Archetypes

The concept of the archetypal character in performance needs further consideration, for as Pavis warns '[t]he body of the actor is also penetrated and moulded by "corporeal techniques" […] proper to his/her culture and by the codifications of his/her tradition of performing […]' (1996: 3). Phillip Zarilli agrees that the actor's body is affected by his cultural background:

> Although the actor's body has always been "there" as the actor's sole means of expression in live performance, the degree to which the body and/or a self-consciously constructed system of training toward performance is foregrounded, is variable since both are culturally, socio-economically, and historically specific. (1994: 71)

According to Thomas Green, the same applies to masked actors wearing culturally specific masks for he writes that '[c]ultural expectations, explicit or perceived, also impose restrictions on the sounds, gestures, and movements made when wearing certain masks' (1997: 539). Masking is specifically addressed in the next chapter, but given that cultural specificity will always be present to some extent, there is need to consider how best to design and use them so that characters realised in performance by actors (possibly from different training backgrounds) can be archetypal and thus arguably accessible to a wide audience. It follows that rehearsal techniques which might be suitable come from practitioners who acknowledge the influence of archetypes in their work. One such practitioner is Michael Chekhov who writes:

> There are two kinds of gesture. One we use both while acting on the stage and in everyday life--the natural and usual gesture. The other kind is what might be called the *archetypal gesture*, one which serves as an original model for all possible gestures of the same kind. The PG [psychological gesture] belongs to the second type. Everyday gestures are unable to stir our will because they are two limited, too weak and particularized. They do not occupy our whole body, psychology and soul, whereas the PG, as an archetype, takes possession of them entirely. (2002: 70)

An example might be that a gesture of stirring a pot for a mother character is too much of an everyday activity. Instead an archetypal gesture for a mother might be an embrace (to nurture) or an expansion (to give) (Ashperger, 2008: 244). Chekhov demands that a gesture be as simple as possible so that it can 'summarize the intricate psychology of a character in an easily surveyable form, to compress it to its essence' (2002: 71). He explains further that behind all possible types of lion 'there is an *idea* of a lion which is the source of all lions'

(1985: 112). Similarly, an archetypal character 'includes all of the possibilities that could make up a character of that type' (Chamberlain, 2004: 138). Lenard Petit explains how an actor might find a character using archetypal gesture in that '[c]onnections are made to larger trans-personal ideas as source material to create with' (2010: 68). He insists that it is through the archetype that the unconscious can communicate with the conscious and suggests that by 'making a psychological gesture that corresponds to an archetype, we can touch the vibration within the unconscious resulting in an excitation of the conscious' (2010: 68). Chekhov agrees that the right gesture 'stirs our will power, gives it a definite direction, awakens feelings, and gives us a condensed version of the character' (2002: 76). Franc Chamberlain's advice to an actor working on exercises exploring archetypal gesture is to 'notice the characters that will begin to emerge in your imagination and record them in words and images, so that you can work with them some more in the future' (2004: 135). For Chamberlain identifying the archetypes is just the starting point. There is more work to be done before the performance. The character must be 'made more and more individual according to what's necessary for the play' (2004: 141). Lenard Petit goes into more detail:

> To find the correct archetype as a model for the character is very simple. Aristotle said that a man is the sum total of his actions. You must read the play and make a list of the deeds done by the character in the course of the play. It is through what has been accomplished that we can understand an individual. Just stick to the facts given by the author within the finite world of the play. You can call this the deeds done list. When you have the list of these deeds, you will be able to draw a defining conclusion about the character. The archetype is the thread connecting these deeds to one another. (2010: 69)

But not all performances have a play text to develop their character from. As Alison Oddey writes '[d]evised theatre can start from an infinite number of possibilities, such as an idea, image, concept, object, poem, piece of music, or painting, and the precise nature of the end product is unknown' (1994: 7). Chekov acknowledges that the stimulus does not have to come from a play and that it is possible to create characters in one's imagination and find some 'physical gestures' for them (2002: 75). But Petit asserts that 'Chekhov did not recommend that the actor present the archetype as the character. The image has too much power; it is not a clearly defined individual. Actors presenting only archetypes in their performance appear strong, but general' (2010: 70).

However, Jerzy Grotowski used archetypes in performance precisely because they are powerful. He states that his methods give the actor 'the maximum of suggestive power' (2002: 131), and describes his methodology as 'a question of the very essence of the actor's calling, of a reaction on his part allowing him to reveal one after the other the different layers of his personality, from the biological-instinctive source via the channel of consciousness and thought, to that summit which is so difficult to define and in which all becomes unity' (2002: 131). Schechner noted that 'what Jung wrote about, Grotowski was trying to do', namely, 'identify and perform "archetypes" of human ritual' (in Turner, 1987: 15).

However, on further examination it seemed that Grotowski did not use archetypes to stimulate specific characterisations, as for him this would be 'familiar and banal' (Barba, 1997: 80). Grotowski writes that '[t]here is no Hero, no character set apart from the others by his own individuality' (2002: 64). Rather he used 'archetypal images and actions to unleash his attack on the audience. He breaks through the defences of the spectator's mind and forces him to react to what is going on in the theatre' (Barba, 1997: 497). From this it is apparent that Grotowski does not use archetype to create characters but to stimulate a specific effect in his audiences. The 'defences of the spectator's mind' that Eugenio Barba describes might well lie in the neo-mammalian brain where the conscious mind can perform sophisticated functions such as criticism, reflection, objectification, and analysis. Grotowski's theatre, which uses archetypal imagery and actions that are linked to instinct, might arguably trigger innate responses in the paleo-mammalian brain. The audience member has 'no defence' because their reaction is automatic; it cannot be controlled, because it uses innate releasing mechanisms, and therefore could be considered 'forceful' as it bypasses the rationalising, analytical capacity of the neo-mammalian brain and once triggered is impossible to stop completely. Grotowski himself states that '[i]f we really want to be creative, each of us must be a bridge between the past and the present, between our own individual roots and the archetypal roots of the past' (cited in Croyden, 1997: 84). For him these archetypal roots lie in 'gesture and sound' (Grotowski, 2002: 52), and he calls the archetypal actor 'an artificial actor who can enlarge on the images taken from the collective unconscious' (cited in Barba, 1997: 77). Further investigation of Grotowski's

approach to acting would help determine if adopting a similar approach would be useful to practitioners hoping to create widely accessible characters in performance.

To reduce culturally specific portrayals, a specific approach to characterisation would need to be devised that, as Grotowski suggested, forms a bridge between culturally specific individual roots, and the innate archetypal roots:

> [Grotowski's] underlying theory proposes that what is most intimate and hidden in each individual, what is core or deep or secret is the same as what is most archetypal or universal. In other words to search out "the intimate, most personal self" is to find the Universal Self. (Schechner and Wolford, 1997: 27)

This means that the archetypal patterns in the actors working on the production would have to be stimulated in order for them to physically manifest deeply innate behaviour. So how can this be addressed in the approach to rehearsal techniques? The key might lie in the work of Ekman who has scientifically proved that the nervous system works in two ways, as illustrated below.
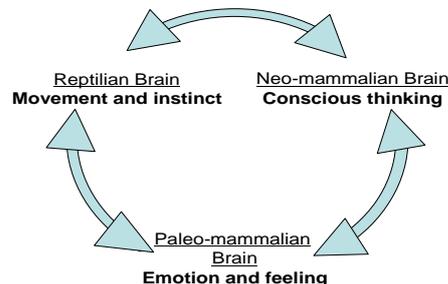
The suggestion that movement, (and thus behaviour) can stimulate emotions as well as a conscious stimulation of emotion (through the memory) is supported by Antonio Damasio who writes:

> In general, drives and instincts operate either by generating a particular behaviour directly or by inducing physiological states that lead individuals to behave in a particular way, mindlessly or not. Virtually all the behaviours ensuing from drives and instincts contribute to survival either directly, by performing a life-saving action, or indirectly, by propitiating conditions advantageous to survival or reducing the influence of potentially harmful conditions. Emotions and feelings, which are central to the view of rationality I am proposing, are a powerful manifestation of drives and instincts, part and parcel of their workings. (1994: 115)

Any movement, therefore, will always have a physiological state associated with it rather than being movement for movement's sake. For example, walking is widely known to alter the physiological state of the walker through the release of endorphins (neurotransmitters which promote a feeling of pleasure). Ekman proved the connection between muscle movement and emotion in a research project with professional actors. First he asked them to recall consciously a series of Stanislavskian style emotions while he measured their ergotropic physiological responses in the autonomic nervous system (ANS) such as heart rate and body temperature. Ekman's experiments show that 'the six "target emotions" of surprise, disgust, sadness, anger, fear, and happiness elicit "emotion-specific activity in the ANS"' (Schechner and Appel, 1990: 30). What is more interesting is that he asked another group of actors just to pull faces as instructed, muscle by muscle. The faces corresponded to the target emotions, but the subjects were not aware of this. The result was that the subjects experienced the same physiological changes as the group recalling emotion. This outcome illustrates that the reptilian brain can stimulate a response in both the paleo-mammalian brain and the neo-mammalian brain. This is further supported by Robert Levenson (1999) who writes that '[i]n fact, all of the major systems typically thought to be part of the emotional "response" can also function to initiate emotion' (1999: 490). Therefore, if the actors working on this research project were directed to make postural adjustments, changes in muscle tension and changes in their facial expression, then these changes to the body's physicality, controlled by the reptilian brain, should stimulate appropriately expressive feelings and emotions in the paleo-mammalian brain, thus triggering corresponding innate behaviour.

Before this hypothesis could be taken into the rehearsal room, it needed to be tried and tested. The first problem to overcome was finding an appropriate set of physicalities to test. An experiment was devised, inspired by the work of Grotowski. His actors 'each had his own silhouette irrevocably fixed' (2002: 77) into a set body posture. He also directed that 'the actor must himself compose an organic mask by means of his facial muscles and thus each character wears the same grimace throughout the play' (2002: 77). Similar techniques were adopted on the actors working on this research project. They were directed to adopt specific postures and maintain facial expressions based on evidence from ethological

findings of innate postures and the facial expressions deemed universal by Ekman (2005). From these starting points improvisations would be set.

The postures and expressions can be summarised as follows:

<u>Fool</u>: Head lowered, linked to low status (Eibl-Eibesfeldt, 2007: 485), also physically slumping from constantly feeling dejected (Leigh, 2000: 8) and an open mouth depicting the constant need to listen intently (Darwin, 1999 [1872]: xxi), in the fool's case due to low intellect.

<u>Child</u>: An upright stance depicting being alert (Leigh, 2000: 8). Eyes would be open wide, linked to the child's need to play and be inquisitive, based on Ekman's (2003) universal facial expression for surprise, in this case the surprise of making new discoveries.

<u>Hero</u>: The posture would follow Darwin's description of a human 'who will not submit […] holds his head erect, squares his shoulders, and expands his chest. He often clenches his fists […] and, being determined, closes his mouth.' (1999 [1872]: 272).

<u>Mother</u>: Open arm and hand gestures when sincere. More sustained direct eye contact when goodwill, honesty and sincerity are present (Leigh, 2000: 8). The face would be maintained in a smile, the universal facial expression for happiness (Ekman, 2003).

<u>Evil Villain</u>: The actor would be asked to draw themselves up to their full height based on ethological findings of 'people worldwide standing straight when confident' (Leigh 2000: 8). The head tilted up and back associated with universal expression of rejection (Eibl-Eibesfeldt, 2007: 455 and 492), and adopt the universal facial expression of anger (Ekman, 2003).

After adopting the relevant physical postures and facial expressions the actors were given improvisational tasks which were designed to give an appropriate environment to stimulate the predicted behaviour as suggested by the researcher. For example, the hypothesis predicts that if the posture and face adopted by the actor playing the mother stimulated the correct archetypal instinct then nurturing would be evidenced when the mother figure was placed with a young child, whereas, if a baby was placed with the villain character then nurturing behaviour would not occur or be perceived by the audience. The actors were not told their character types so that verbal associations would not influence their stage behaviour.

Mother and Baby

The mother was given a baby puppet and asked to interact with it. The actor held the puppet so that mother and child were staring into each other's eyes. The puppet's hand was manipulated to make contact with the mother's cheek. The mother twirled the baby round then hugged him to her chest. This spontaneous, simple improvisation illustrated a warm loving relationship, and seemed to encapsulate the innate quality that Jung described in the archetypal mother as 'cherishing' (1972: 16) and corresponds with the innate behaviour of nurturing young and the display of attachment behaviour described by Bowlby above.

Villain and Baby

The villain wandered round the space and picked up a stick. He poked the baby puppet and then proceeded to use the stick as a tool for destruction with flagrant disregard for the baby's safety, for example, chairs where knocked over and other characters were intimidated. This behaviour seemed to fit the description of the archetype of evil proposed by Henderson as one who 'knows no difference between right and wrong' (cited in Stevens, 2002: 180).

The Hero and Child

The hero was asked to watch other characters and only interact when compelled to do so. As the child explored the environment, the hero watched. A character, in the guise of a dog-like animal with a large asymmetric face, was introduced in to the scene and whenever it approached the child, the hero character stood in between the animal and the child in a strong, upright posture until the animal moved away. This seemed to correlate with protective behaviour, characteristic of a hero (Jung, 1990: 110).

Child and Balloon

The child character was given a balloon. The direction given was that it was the first time a balloon had been encountered. The child investigated the weight of the balloon, its flexibility, and the noise it made when rubbed, and finally popped the balloon when it had been squashed too much. The playful behaviour seemed to fit into the innate category of 'exploring the environment' as defined by Stevens (2002: 45).

The results of these simple improvisations suggested that archetypal behaviour had been triggered. Bowlby writes that 'species-specific behaviour patterns are often activated by the perception of fairly simple visual or auditory gestalts to which they are sensitive' (1979: 30). This research indicates that behaviour patterns might also be sensitive to simple somatic *gestalts*. But these experiments can in no way be considered scientific or conclusive as the environmental situations given to the actors to explore were led by a hypothesis of the expected behaviour rather than testing behaviour in a variety of situations. To some extent this was an inevitable consequence of the financial and time constraints under which the rehearsal operated. However, the results were deemed strong enough for the facial expressions to be incorporated into the designs of the masks, and the body posture adopted as starting points for all the improvisations during the devising process.

Costume

A brief word is required about costume because this is another key signifier of character. Mark Fortier describes most costume as 'more like an index than an icon: its purpose is less to look like reality than to point to it' (2002: 30). The concept of social specificity in relation to clothing is addressed by Sadri and Flammia who write that 'generally we have ideas about the appropriate way for individuals to dress and look based on their age, gender, social role, and status in society' (2011: 169). A logical conclusion might be to dispense with costume altogether, but even so-called neutral black clothing (Evans, 2009: 127) is only deemed neutral by those cultures familiar with the specific iconography. Therefore the concept would not be widely accessible. Instead, costume design was based on manipulation of the nervous system's innate response to visual stimulation. For example, the same principles in colour stimulation that apply to the design of the mask were applied to the design of the costume (see Chapter Seven). In principle colours such as red and yellow could be used for certain characters to stimulate an excitatory ergotropic response, or colours such as blue and green could be adopted to stimulate a phototropic response to calmer characters (see pages 171-173). The peak shift effect (see Chapter Seven) could also be used by exaggerating the size or height of a character to increase the excitatory response it would trigger. Similarities to this have been noted by ethologists as common worldwide, but with certain cultural differences. For example, because 'body size is equated with strength and power, in order to express dominance--men emphasize their

body size in various ways: using decorative feathers, fur hats, and other head adornment' (Eibl-Eibesfeldt, 2007: 485)**.** A physiological response to the exaggerated features will be generated, and help create a similar response to the character no matter the cultural background of the viewer. These principles are dealt with in detail in the next chapter with respect to mask design.

Conclusion

This chapter argued that it is behaviour that largely helps create a 'reading' of character on stage (along with many other signifiers such as costume and facial expression). It pointed out that some basic behavioural patterns are innate and therefore are common to all humans and proposed that if the behaviour viewed on stage corresponded to innate patterns of behaviour then it is possible that people of different cultures and ages might be able to 'read' character, setting and related theatre elements in a similar manner. Links between innate behaviour and certain archetypal characters that occur in myths and legends from around the world were explored. The chapter argued that their patterns of behaviour might produce widely accessible character types.

The chapter also proposed that audience reception of these behaviours might rely on the ability of the brain to plan. It made a case for how mirror neurons with predictive capacity might be involved in the complicated process of matching outcomes with any possible pre-existing patterns (and sometimes even creating new patterns). It argued that due to the heuristic operations of the brain, the information received does not have to correspond with any specific cultural knowledge or personal experience of the audience, as long as the objectives motivating the behaviour are clear enough and there is enough corresponding information to link the objective with an innate behavioural pattern, then meaning should be apparent. Thus it should be possible to stage characters that have the capacity to be 'read' and understood by a range of people regardless of their age or background thus helping increase the accessibility of the theatrical performance.

Chapter Seven - Masks

> The impulse to mask takes us back to earliest human history. The mask seems to be, as the phenomenologist Gaston Bacheard suggests, "the object of a veritable instinct of the human race." (Eldredge, 1996: 3)

Masks 'have appeared in virtually every region of the world' (Nunley and McCarty, 1999: 15) and Norman Laliberté notes that '[m]asks, or the idea of covering or disguising the human face, may be as old as man himself. The origin of the mask is not clear, but evidence of its presence has been found in the artefacts, literature, and lore of practically every society known to us today' (1973: 7). Canadian mask maker Xstine Cook suggests this global phenomenon is due to the fact that masks 'speak to a very deep and ancient part of our humanness. They sail across all kinds of barriers and are not limited by language, age or culture' (cited in Bell, 2010: 9). Katharine Hitchcock and Brian Bates agree that masks serve 'a mediatory role between myth and reality. As personifications of archetypes, masks can be seen to re-present, show us, what Carl Jung called the universal patternings of our psychological experiences' (1991: 21). Ladislas Segy, who has studied African Masks, points out that masks fulfil 'an essential human desire' and considers them 'a universal phenomenon' (1976: 2) and 'a ritual way of doing things' (1976: 9). He asserts that '[t]he fact that despite the great diversity of cultures masks have dominated the daily life of people all over the world is already a confirmation that some universal constant is operating' (1976: 52). This chapter explores what this constant (or constants) might be by considering innate visual mechanisms. Initially Vilayanur Ramachandran and William Hirstein's universal laws of art are examined and then these principles are applied specifically to the viewing of masks by an audience. It considers how neurological mechanisms such as how we respond to colour and facial expression might influence the design of masks to make them accessible to a wide audience.

The Peak Shift Effect and Universal Laws of Art

The peak shift effect is a well known psychological phenomenon seen primarily as a 'principle in animal learning' (Holopainen, 2008: 44). Sara Shettleworth explains this effect

as 'stimuli with more extreme values than those normally present evoke the most responding' (2010: 186). Jussi Holopainen illustrates this with shape, and describes how if an animal 'is taught to discriminate a square from a rectangle, the animal's response to a rectangle which is longer and thinner than the original one is even stronger' (2008: 44-45). Of particular significance is the fact that the more exaggerated the ratio of the rectangle, the bigger the response will be and if this is a pleasurable response then, as Anthony Freeman suggests, the response to this rectangle will be deemed 'better' (2003: 215). Shettleworth also points out that this additive effect 'may mean that objects never found in nature are more effective than natural objects' (2010: 208). Ramachandran and Hirstein claim that the peak shift effect is one of the principles of how human aesthetic experience is constructed and argue that this might explain 'many aspects of art' (1999: 15). In an article entitled *The Science of Art: A Neurological Theory of Aesthetic Experience,* they propose that the peak shift effect along with the principles of grouping and focusing on a single cue are the three primary 'laws' of artistic experience. They outline five further principles (contrast, perceptual problem solving, an abhorrence of unique vantage points, visual metaphors and symmetry) and suggest that 'a great deal of what we call art is based on these eight principles' (1999: 50). They argue that certain simplified and exaggerated images 'appeal to our emotions and have the innate ability to give us pleasure' (cited in Mitter, 1999: 64) and suggest that the role of the artist is to 'not only capture the essence of something but also to amplify it in order to more powerfully activate the same neural mechanisms that would be activated by the original object' (1999: 17). Ramachandran and Hirstein's approach is summarised thus:

> The accentuated hips and bust of the Goddess Parvati in the Chola Bronze, for instance, give what is essentially a caricature of the female form. The artist has chosen to amplify the essence of being feminine by moving the image abnormally far toward the feminine end of the male/female spectrum. Ramachandran conjectures there may be neurons in the brain that represent sensuous, rotund feminine form as opposed to angular masculine form. The result of the artistic amplifications is a super stimulus in the domain of male/female differences, to which these neurons respond. The artist striving to evoke an emotional response may exploit the peak shift effect in other ways than shape. (Freeman, 2003: 215)

Ramachandran and Hirstein's ideas are supported by Richard Gregory who writes that the 'application of this well-known principle of animal discrimination learning certainly does seem plausible and appropriate in this context' (1998: 54) and by Julia Kindy for whom

there are 'great moments in the history of art which support the idea of the peak shift effect. Vincent Van Gogh was the first artist to put pure colour (straight from the tube) into his canvas with the stated intent of heightening the viewer's emotional response' (1999: 61-62). Others have been highly critical of Ramachandran and Hirstein's ideas. Some feminists feel Ramachandran and Hirstein are confusing high art with pornography, which they strongly deny (Freeman, 2003: 217). Partha Mitter is more strident in his criticism and argues:

> While claiming to construct 'universal' rules based on neural mechanisms, they illustrate their universal examples from Western and Indian cultures. These examples contain cultural assumptions and biases that are accorded scientific laws. […] Therefore, if the authors are to convince us of their theory, they would need to do cross-cultural experiments to prove the universality of artistic response. At present the data is too limited and culturally biased. (1999: 64-65)

Gregory sees past the criticism stating that although 'some might consider "eight laws of aesthetics" to be a highly reductionist approach to human experience, nevertheless, if treated as a heuristic this can only help to focus scientific enquiry in a useful way' (1998: 55). In their defence Ramachandran and Heirstein point out that they were careful to state in their paper that their laws only provided 'a framework that cut across different cultures' and that 'of course their final expression and the manner in which any given artist chooses to deploy these principles is going to be strongly influenced by culture' (1999: 74). And it is with this in mind that this thesis applies some of their universal laws of art to the design of theatrical masks to help this study understand how particular masks might achieve an effect on the viewer.

The Peak Shift Effect and Masks

According to the peak shift effect if a mask maker has exaggerated the natural ratio of the animal or human features portrayed, those looking at the mask would experience increased stimulus of their reward mechanism and a heightened pleasing effect should result. The image of the cow mask (see picture 1.) made by Indians in the Rio Grande, illustrates how the peak shift effect works in a mask. Features such as the eyes and ears have been exaggerated and the shape of the face emphasised.

Picture 1. (Teuten, 1996: 69)

Similarly, in the mask of a sickness demon from Ceylon (see picture 2.) the feature of the mouth has been exaggerated into a very wide smile revealing a large set of teeth, the eyes are large and bulging, and the lashes thick, long and attractively coloured.
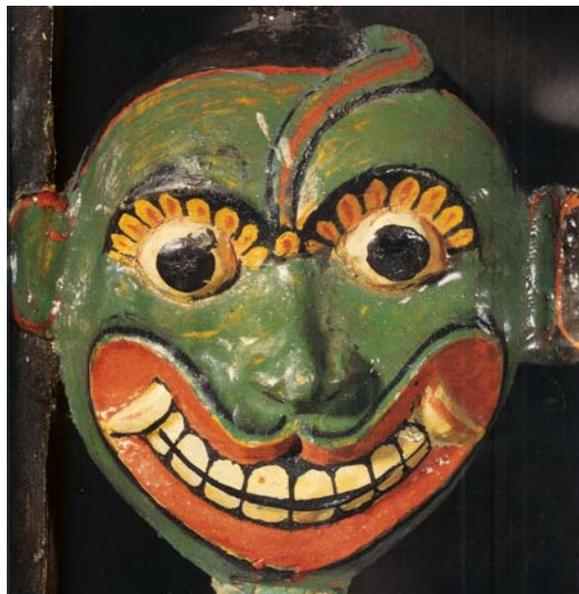


Picture 2. (Lommell, 1972: 54),

Clearly, both these mask makers have indeed exaggerated the ratios of the object being represented. Thomas Green suggests that exaggeration seems to be a key feature of many masks. He points out that '[b]ulbous noses, puffy cheeks, and monstrous mouths appear on masks in many societies' (1997: 539). Kim Hŭnggyu states that many Korean masks 'show greatly exaggerated expressions' (2003: 308) and Roberta Markman and Peter Markman describe an ancient Mayan mask as having 'exaggerated nose, elongated upper lip, curving fangs and distinctive ear and eye treatment' (1989: 60). Lee Parsons *et al.* writes that there is 'an undeniable element of caricature and exaggeration' in Olmec masks (1988: 34). Jean Cocteau suggests masks give a heightened experience and act 'as exaggerations of that which is real, performing this real as even more real' (cited in Bateson, 2005: 98).

Law of Isolation

Ramachandran explained the law of isolation by suggesting that if brain imaging experiments were performed on people viewing outline sketches and caricatures in comparison to full colour photos of the same object then there would be 'a greater neurological response in the brain to the outline drawings' (2003: 61). Experiments have now been carried out at Harvard University that have proved this to be true (Ramachandran, 2011: 60). Ramachandran argues that this is due to the design of the processing mechanisms in the brain, which can work very quickly, but can only deal with one pattern of neural activity at any one time. Therefore, a 'predetermined order of preference has evolved for looking at complex images' (2003: 60-61). This is supported by Christof Koch and Joel Davis who write that in neuroscience 'a great deal of physiological, lesion, and anatomical data are reasonably interpretable as evidence for some kind of hierarchical organisation' (1994: 25). Ramachandran suggests that this innate ordering system favours making sense of an outline before assessing the detail. Therefore the clearer and better defined the outline is, then a peak shift response takes place and the human receives a larger pleasure reward. This can be related to survival by the recognition of potential predators, and the brain is programmed to do this quickly by assessing the outline first. There is supporting evidence from Gillian Rhodes and Ian McLean (1990) who report that 'untrained viewers recognised caricatured birds as accurately as undistorted images.

163

Bird experts even found caricatures more recognisable than undistorted images' (Freeman, 2004: 366). This leads Norman Freeman to conclude that 'caricatures are pictorially powerful in their effects on perception and memory' (2004: 367).

This isolation effect can be seen in the pictures used by Terry Landau in his book *About Faces* to illustrate the minimal information needed to communicate emotion (see picture 3.). It could be argued that these highly stylised faces are evocative of particular emotions because they are providing a caricature that exaggerates the essential essence of that emotion. Toby Wilsher has drawn remarkably similar outline faces in his book *The Mask Handbook* as guidance on how to make a mask. He insists that the two 'magic lines' of the mouth and the brow are what 'give us the essence of the character's attitude, its emotional state' (2007: 166).
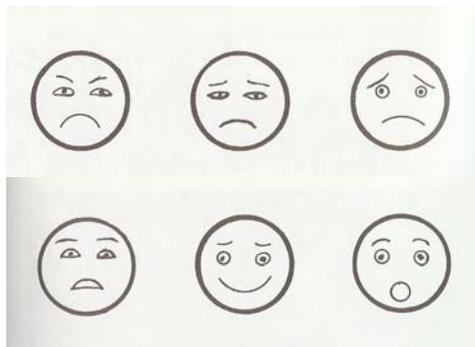
Picture 3. (Landau, 1989: 138)

The effectiveness of this technique is supported by physiologist Semir Zeki who notes that 'it may not be a coincidence that the ability of the artist to abstract the 'essential features' of an image and discard redundant information is essentially identical to what the visual areas themselves have evolved to do' (1999b: 79). Thus, a mask which uses caricature according to the universal law of isolation should provoke an innate reward response in the viewer because the distillation of the information the brain needs to 'read' the essence of the face triggers the peak shift effect.

Symmetry

Symmetry is another of Ramachandran's universal laws that ensures pleasure reward in the brain. Thus an activity such as looking through a kaleidoscope with its ability to give symmetrical image after symmetrical image is an 'aesthetically pleasing' experience (Ramachandran and Hirstein, 1999: 27). The relationship between symmetry and pleasure is supported by Siân Ede who notes that many biologists take the view that symmetry is pleasing in nature because 'it presents evidence that the organism has not been subject to adverse mutation or parasitic infection […]' (2005: 83). Gregory (1998) interestingly points out that symmetry is a characteristic of living organisms (flora and fauna) and suggests a preference for symmetry has evolved to help humans discriminate between organic and non-organic material. Following on from this Ramachandran reminds us that the human face is naturally asymmetrical, but proposes that the more symmetrical a human face is, the greater stimulus the reward mechanism receives. This is supported by psychological studies which have shown that most people rate as attractive faces that 'tend to symmetry' (Ede, 2005: 84). The female *Noh* and *Kyogen* masks from Japan are wonderfully symmetrical, and the mask maker has to be highly skilled in order to achieve this (see picture 4.).

Picture 4. (Iwasaki, 1984:184)

The women this style of mask portrays are considered to be very beautiful in Japanese culture and this is possibly down to the perfect symmetry that real human faces cannot attain. When a Japanese viewer looks at this mask, the peak shift effect is triggered. Consequently opioids are released into the nervous system and there is an automatic increase in stimulation in the reward mechanism. The neo-mammalian brain becomes aware of the feeling and allows the viewer to interpret the face as beautiful. It is possible to argue that cultures unfamiliar with the Japanese iconography with respect to mask would still have an overall positive response to the symmetry. This is supported by Herbert Blau who writes that the current view of beauty as culturally produced has been questioned and arguably invalidated by recent studies which indicate that 'the major elements of attraction are, not withstanding disparate features, universal across cultures' (1999: 221). Ramachandran and Hirstein explain the ethological reasoning behind different responses to symmetry and asymmetry:

> Intriguingly, it has recently been shown experimentally that when choosing a mate, animals and humans prefer symmetrical over asymmetrical ones and evolutionary biologists have argued that this is because parasitic infestation--detrimental to fertility--often produces lopsided, asymmetrical growth and development. If so, it is hardly surprising that we have a built-in aesthetic preference for symmetry. (1999: 27)

Gene Wallenstein describes experiments that support this notion, in which symmetrical and unsymmetrical faces both have either symmetrical or asymmetrical patterns painted on them and subjects are asked to rate their attractiveness. Results proved that 'the application of an asymmetric design to a symmetric face decreased its attractiveness, while the application of a symmetric design increased the attractiveness of asymmetric features' (2009: 167). This suggests looking at asymmetrical forms is not as pleasing as viewing symmetrical ones. If the audience were required to have a positive response to a character, the face could be designed as symmetrically as possible. When the audience are meant to feel disarmed by a character, the mask could be designed to be asymmetrical. If a large negative response is desired the asymmetry could be further exaggerated by increasing the size of the mask to trigger a further peak shift response, so that arguably the audience might feel even more perplexed and discomforted by what they saw.

Character

When a performance mask represents an exaggerated human face, the peak shift effect in the audience has the potential to be even more pronounced because reading facial expression is so very socially advantageous that the brain has an area specifically for this function called the fusiform gyrus. Landau writes that '[b]iologically speaking, face recognition is a highly specialised form of pattern recognition. Our brains are neurologically organised to recognise patterns in general and faces in particular' (1989: 55). Experiments with newborns have proven that facial recognition is innate (Hepper, 1991: 347; Rakover and Cahlon, 2001: 127) and furthermore that the fusiform shows a greater neurological response to human faces than for any other pattern (Leeland, 2008: 84). So essential is the skill of facial recognition that preferential neurological pathways have evolved to facilitate this (Landau, 1989: 58) so that all we need to be presented with is 'a few well chosen lines and we see a face, complete with an expression' (Gregory, 1998: 6), which is why we often see faces in bundles of clothes or in vegetables, or even on the moon. Landau argues that when we view a face, the experience is more pleasurable than viewing other objects such as trees, or houses (1989: 54) or as Wallenstein points out 'the face might be regarded as a veritable treasure trove of pleasure inducing stimuli' (2009: 154).

When designing masks with human faces that aim to be widely accessible, the main problem to be solved is that if the facial features were based on a particular theatrical form, such as *Noh* or *Topeng,* then the masks would not be fully accessible because different cultures use culturally specific semiology in the design of the masks which would be unfamiliar to other cultures. For example, the masks used in traditional Balinese theatre contain cultural references such as a long jagged tongue to symbolise an evil witch, and dangling attachments to symbolise human entrails (Coldiron, 2004: 201-202). If a naturalistic approach were to be adopted and the design of the masks mirrored human facial features then there would be more problems because research conducted by Ray Birdwhistell (1970) has identified culturally specific kinemes (the smallest communicative element of kinesic signalling in the face), for example, Americans alone have fifty or sixty (1970: 27). Further tests have proved that 'the attitude to faces of a different race is different from the attitude to faces of one's own race' (Rakover and Cahlon, 2001: 59). So

designing the masks around the specific facial features from a particular racial background would affect both accessibility and audience response.

Paul Ekman has conducted studies in literate and preliterate cultures and come to the conclusion that there is 'now a large body of evidence that specific patterns of facial actions universally signify particular emotions' (1997: 176). There have also been twenty seven independent studies all of which have replicated the finding that there is 'universal recognition of facial expressions of emotion' (Matsumoto *et al.,* 2010: 223). If a mask maker constructed masks using a selection of kinemes from a proven universal emotional range, then the masks should potentially stimulate similar responses from audience members from a range of cultural backgrounds. For example, Landau indicates that '[s]tudies of smiling conducted independently by psychologists and anthropologists reveal the smile to be a universal signal of friendliness and approval, and secondarily a signal indicating a sense of pleasure' (1989: 145). Arguably, a mask with a smile would be recognised as being a positive friendly character by anyone viewing the mask, and due to processing by mirror neurons the audience should experience for themselves a comparable neurological response as if they had smiled themselves. This response happens unconsciously in the older parts of the brain, but the neo-mammalian brain can interpret the physiological effects cognitively and therefore imbue the masked character with an emotional resonance, and conclude that the character is of a happy disposition. A mask that has captured the essence of any of the universal facial expressions might well connect to the innate centres of the brain and therefore elicit a similar response to that mask in anyone who viewed it. This would help explain why practitioners such as Keith Johnstone, who has worked extensively with masks, can claim that '[w]e have instinctive response to faces' (1989: 150). It would also explain why 'the primitive masks of Africa send shivers of recognition down the spine of twentieth century man' (Corey, 1975: 3).

But there is more to a mask than just conveying an emotional state: 'The mask must be latent with possibilities of the dominant qualities of the character, its physical and emotional states, its behaviour' (Eldredge, 1996: 172). John Emigh writes that masks 'serve to essentialize the character traits of human agents' (1996: 105). Arthur Schopenhauer goes into more detail:

> The arts whose aim is the representation of the *Idea* of man, have as their problem, not only beauty, the character of the species, but also the character of the individual, which is called, *par excellence*, character. But this is only the case in so far as this character is to be regarded, not as something accidental and quite peculiar to the man as a single individual, but as a side of the *Idea* of humanity which is specially apparent in this individual, and the representation of which is therefore of assistance in revealing this *Idea*. (cited in Zeki, 1999a: 170)

Although not referring directly to masks, we can learn from Schopenhauer that it is important for the mask maker to ensure the idea or essence of the character has been captured and thus is recognisable as being the common characteristic, not of one specific face or mask, but common to, and therefore recognisable by, the human race in general. Indeed the mask maker should try to imbue the very essence of the character type in the facial features and expressions of the mask. An ability to assess the human face in order to infer traits in terms of character is central to both the Chinese art of reading faces called S*iang Mien* and the western practice of physiognomy. Critics of physiognomy say 'that the analysis is merely based on appearance rather than internal processes which contribute to the essence of the character' (Heper, 1991: 41). Diane Berry and Leslie Zebrowitz-McArthur take the argument further:

> The theoretical framework favoured by early physiognomists was simple: People believe that facial appearance and behaviour are related because facial appearance is an accurate indication of character (e.g. Lavater, 1783). Although this may in fact prove true for at least some face/behaviour correspondences, most psychologists today are rightly sceptical of the notion that a facial feature like the length of a person's nose or the size of a person's eyes could really bear a direct relationship to his or her character. If we reflect this view, the question then becomes "why do people *believe* that there are correspondences between facial appearances and character?" (1988: 65)

Thomas Alley agrees that scientific research has found no validity in the claims of physiognomy but points out that scientific research has continued 'to explore the relationship between *attributed* psychological characteristics and facial appearance' (1988: 173). Sears Eldredge points out that although physiognomic stereotypes are generally culturally specific, researchers have found 'some to be cross-cultural' (1996: 104) and it is these that are most interesting for this study. For example, Alley found several research studies that indicated a protrusive chin was linked to strength of will, or determination and a retrusive chin was linked to weakness of will and lack of determination (1988: 183). He points out that this is probably related to ethologists' observations that 'humans jut out their

chin as a signal of belligerence, whereas those shrinking from aggressive encounters retract their jaws back toward their necks' (1988: 183). Research for this project compared western physiognomy and Chinese *Siang Mien* and found some interesting parallels. For example according to *Siang Mien*, 'a crooked mouth is a symbol of dishonesty and cunning' (Kuei, 1994: 113), and according to western physiognomy, 'if the mouth is askew or clearly misshapen, this is a sign of a nasty, vicious individual' (Lefas, 1975: 64). This particular example resonates with a number of studies, as discussed above, which suggest that asymmetry would receive a universal negative response. The presence of some cross-cultural facial interpretation is supported by Jean Lefas, who states that '[s]poken languages are varied and subject to change, whereas the vocabulary of physiognomy is the same throughout the world, and in all cultures' (1975: 5). Eighteenth century physiognomist Johann Lavater noted something similar, although he had no scientific evidence at this time to support his ideas. He defined a physiognomical sensation as 'those feelings which are produced at beholding certain countenances' and called them 'universal' (cited in Hartley, 2001: 37).

These sensations could be explained to some extent by experiments conducted by Ekman that noted that some facial expressions elicit a universal response (see Chapter Six). For example, if a person's face is set in a permanent scowl with kinemes that tend towards those associated with the universal emotion anger, when the face is viewed, the viewer has a subconscious physiological reaction, facilitated by the mirror neurons, which the conscious brain is likely to associate with this negative emotion and therefore may judge the person in a negative light. However, if the viewer gets to know the person in more depth and discovers that the initial response is misleading, then the conscious brain has the capacity to override the instinctive response and judge the person's character on other qualities. This initial character judgement might also manifest itself in some unmasked actors who are typecast. It is arguable that their face is so strongly indicative of a particular character type that casting directors feel the audience might not be able to override their strong instinctive response to their face, despite the actions the character undertakes in a contrasting role. Alternatively this process can be manipulated to produce dramatic tension. For example, if a character with asymmetrical features that tend to simulate anger kinemes is romantically pursuing a beautiful heroine with facial features that tend to symmetry, then

the audience might 'instinctively' mistrust the character and 'sense' that his intentions are not good, no matter the goodness of the actions he portrays. The neo-mammalian brain assesses the actions as good, but the paleo-mammalian brain responds in a contradictory manner, and hence a sense of unease might be produced by the physiological contradictions that the two systems stimulate.

Michael Merrill suggests that a theatrical mask could potentially trigger a common response whatever the cultural background of the viewer:

> A mask created by an artist who has tapped into the vein of ancestral myth-wisdom awakens something primal and liminal in the unconscious awareness of the viewer; and in so doing, awareness transcends cultural, religious and social boundaries. (2004: 19)

This response is what Lefas might call the 'physiognomic instinct' (1975: 5). It is arguable that if similarities from the art of *Siang Mien* and western physiognomy were incorporated into the design process along with kinemes associated with universal facial expressions which have been proven in scientific experiments conducted by Ekman to have universal properties (1982: 141), there is the potential to positively affect the reading of the character depicted in the masks, thus aiding the accessibility of the character portrayed. Jennifer Foreman notes the opposite would apply to culturally specific masks and suggests that those 'outside the culture or with no understanding whatsoever of the mask's iconography may receive only confused impressions' (1999: 19).

Colour

Objects around us 'are not coloured *per se*' (Zeki, 1999a: 83). Their colour is only the brain's interpretation of reflected light waves from their surfaces, and is determined by the wavelength of the rays that are most predominantly reflected in relation to the surrounding environment (Zeki, 1999a: 183-190). According to Landau, the brain's evolution from seeing in black and white to colour vision was so essential to survival that it 'became a matter of life and death' (1989: 5). Certain colours seem to stand out from others and are called advancing colours, whilst those they advance from are called background colours. An example of an advancing colour is red, which is why it is used in traffic lights to stop vehicles, and on the brake lights of vehicles, because the eye and brain respond quickly to this colour. Other advancing colours are orange and yellow, those colours with a longer

wavelength. The background colours are violet, blue and green and all have shorter wavelengths (Luckiesh, 1965: 136-137). Frank Mahnke describes human biological reactions to colour as physiological and asserts that colour can affect 'cortical activation, functions of the autonomic nervous system, and hormonal activity' (1996: 2). He observes that '[t]hrough our evolutionary development as a species we have inherited reactions to colour that we cannot control, that we cannot objectively explain, and that we cannot escape. Colour is a part of our psychological and biological heritage' (1996: 9). Jeanne Kopacz describes three different responses to colour as subconscious, semiconscious and conscious. Conscious and semiconscious responses are both acquired. Conscious responses are 'the preferences and associations made by each individual based on personal experience' (2004: 95). Semiconscious responses are tied to one or more geographic regions and are recognised by several generations which 'make the response reliable within the appropriate context' (2004: 95). As might be expected Kopacz describes the subconscious response as innate and 'occurring instinctively without formal thought' and that 'most humans share the experience' (2004: 95). Most interestingly for this study she writes that 'unconscious colour responses are the most difficult to change in people' (2004: 95). In Mahnke's view, although colour response is both innate and learned, it is 'to the greatest extent innate therefore archetypal, which means universal' (1996: 54). This suggests the possibility of being able to predict a general common response to colour.

Indeed experiments have proven that 'the underlying dimensions of colour emotions are consistent across cultures' (Ou and Luo, 2004: 185-189). Advertisers and designers are aware of this and manipulate emotional responses to their products through their choice of colour. Given the interlinking nature of the neural circuits within the brain, it is no surprise that colour 'profoundly affects our emotional state' (Gregory, 1998: 121). This has been supported by experiments with animals that have shown that 'colour is a powerful biological trigger' (Hardin, 2000: 121). For example, monkeys were put in a room where one of the walls could be illuminated with different colours. When the wall was red (an advancing colour), the monkeys became agitated and restless. When the wall was blue (a background colour) the monkeys became calm. In humans a similar phenomenon has been noted for experiments in which people from a range of different cultures were asked to rank coloured chips according to how participants perceived each colour in terms of warmth or

coolness (this concept is dealt with below but also see Taft and Sivik, 1992). The results showed that the advancing colours (red, yellow, orange) were categorised as warm, whereas the background colours (blue, green) were categorised as cool. Although many argue that the association of colour to temperature is culturally acquired, experiments have been conducted which suggest there might be a neurological explanation. In these experiments (Katra and Wooten in Hardin, 2000) used contrasting colours red/green and yellow/blue and measured the positivity or negativity of the resulting electrical impulse triggered when the colours were viewed, in the appropriate cone cells in the eye (the opponent channels). The results showed that:

> The attribution of thermal properties to colours may be linked to the low-level physiological processes involved in colour perception. Higher ratings of warmth corresponded with levels of activation of the opponent channels in one direction, while cooler ratings corresponded with activation in the opposite direction. This suggests that a link to the activation level of the opponent channels, rather than the psychological quality of hue, drives the association of temperature with colour, and that the association is more than simply a cognitive process. (Hardin, 2000: 120)

E. Katra and B.R. Wooten's research suggests that colour response is triggered by physiological phenomena connected to the workings of the nervous system. This is supported by Alex Byrne who writes that 'the way in which humans categorize colours is universally prewired rather than individually acquired' (1997: 345).

If theatrical masks were painted with specific colours, then it would be possible to argue that different audience members would have a similar physiological response to the masks. The choice of colour could be used to help stimulate an emotional response appropriate to the desired audience reception of the character and therefore the colours could help direct the audience response to a mask in the same way that advertisers use colour to promote a response to their products. For example, a mask painted red, yellow or orange, the advancing colours, would have an arousing effect on the audience and therefore heighten the neurological effect of the mask through the peak shift response. It does this by the colour acting as a sign stimulus that triggers an ergotropic response in the sympathetic nervous system, such as, increasing heart rate, blood pressure, and sweat secretion, and also increasing production of stimulators such as adrenaline. Emotions would be experienced more strongly in this state (Gross, 1996: 65); therefore these colours would arguably be

suitable for characters that required an aroused emotional state in the audience, for example, energetic characters, funny characters, or evil characters. Painting a mask a cool colour, such as blue or green, would have a calming effect. This occurs because the colours act as a sign stimulus to trigger the parasympathetic nervous system that governs basic vegetative and homeostatic functions by reducing the heart rate, blood pressure, sweat secretion, and increasing the production of estrogens, insulin, and androgens. Emotions would be experienced to a lesser extent in this state (Gross, 1996: 65). This would arguably complement the kinemes that portrayed perhaps a slow witted, or aging character, certainly a character with low status and that is non-threatening, and generally any character which required a lower level of response.

Life

There is one further consideration for the design process to consider, for as Jacques Lecoq states, '[a] mask can be technically well made, beautiful to look at but impossible to work in' (cited in Rudlin, 2000: 45). Creating an effective design that an actor can work successfully in is a different matter to merely following design methodologies that conform to Ramachandran's universal laws of art and colour reception theory, for as Lecoq points out a 'good expressive mask must be able to transform, to be sad, happy, excited, without ultimately becoming fixed in the expression of a single moment' (2000: 56). This is difficult to achieve because the construction process ultimately demands exactly what the design process apparently needs to avoid in achieving a transforming affect, that is, the fixing of a single expression.

Lecoq illustrates how difficult it is to create a good mask with a story from early in his career when he was working with Amleto Sartori in the 1950's. Both shared an interest in developing masks for performance, so they went to the museum of the opera in Paris to look at an ancient mask of Zanni (a low status commedia character). They studied it closely, returned to the studio and made their own version. Lecoq remembers how they 'tried putting it on and making it live, but in vain. It did not work. […] I still keep that mask at home, hanging on the wall of my studio, which is a sad fate for a mask' (cited in Rudlin, 2000: 45). The key word in this statement is the word 'live', it is central to the differences between a well made and a badly made mask. Research into the writings of those who work

extensively with different styles of mask from all around the world contain the connected words 'life' and 'alive'. John Emigh writes that '[w]hen a Balinese actor holds a new mask in his hand, gazing upon it, turning it this way and that, making it move to a silent music, he is assessing the potential life of the mask' (1996: 275). A Japanese *Noh* actor, Udaka Michishige, states that '[m]any carvers do not seem to have the time or the inclination to see *Noh* in performance. As a result, the masks these carvers create are not alive' (cited in Teele, 1984: 134). Eldredge, a western practitioner asserts that '[a] mask must be alive in silence and in stillness on the living actor' (1996: 73). It is clear that to be considered effective in a range of cultures; a good mask must have 'life', which is defined as an ability to appear to transform itself into a range of different facial expressions, moods and conditions.

Thomasina Carlyle Palmer (2004) of *Trading Faces Theatre Company* and Toby Wilsher (2004) of *Trestle Theatre Company* evidence this phenomenon, as both relate tales of audience members who were convinced that the masks had changed expression during the performance. It is possible that a neurobiological explanation exists to explain this phenomenon:

> Furthermore, our mind supplies reasonable inferences to our consciousness about a visual scene which may in fact be absent in the object. We 'see' behind occluded objects, feel motion, and react emotionally to provocative themes even though these things may not literally exist. In the cognition of art, our past knowledge supplies consciousness with context. (Solso, 2000: 76)

It is clear that physically speaking a mask is indeed fixed and on one level our neo-mammalian brain knows that it cannot move and change, yet the information it receives from the paleo-mammalian brain not only contradicts this knowledge but has the capacity to override it. According Richard Gregory 'the fact that perceptions can depart from physically accepted realities of objects has philosophical implications and practical consequences. It tells us that our perceptions are not always […] directly related to physical reality' (1998: 196-197). The neurobiological explanation for this phenomenon could lie with the predictive quality of mirror neurons in the brains of those observing the mask. This is explained by Vittorio Gallese:

> My proposal is to interpret the motor activity of mirror neurons in terms of an *efference copy* of the motor program signal. […] This signal would act as a sort of "stimulator" of the programmed action. This simulation of the action is used

175

to predict its consequences, thus enabling the achievement of a better control
strategy. (2001: 40)

The advantage in evolutionary terms of being able to predict the outcome of the actions of others is clearly linked to survival, but there are also implications for audience reception of theatrical performance. When viewing a masked actor performing an action, the mirror neurons can predict the outcome of that action. This prediction could include a change of facial expression in empathetic response to what is being viewed, for 'what makes the behaviour of other agents intelligible is the fact that their body is experienced not as material object […], but as something alive [...], something analogous to our own experienced acting body […]' (Gallese, 2001: 43). The cognitive mind is bypassed in this process because the neural mechanisms are located in the earlier parts of the brain that evolved, and Gallese proposes that this 'implicit, automatic and unconscious process of motor simulation enables the observer to use his/her own resources to penetrate the world of the other without the need for theorising about it […]' (2001: 41). In evolutionary terms, early responses such as flight or fight did not allow a theorising process to take place. A response needed to be undertaken quickly with no weighing up of the pros and cons of each possible action. In the same way the cognitive areas of the brain that understand that a mask is fixed and cannot move are by-passed and so an illusion of movement is created.

Mask makers too can make use of the mirror neuron phenomenon whilst making masks. They can place themselves in the shoes of the audience and experience a response to the mask's movements as if being worn by an actor. Therefore it is important that during the making process the designer is aware of how the light plays on the curves and contours of the mask because it is this which interacts with the actor's movements and helps the audience predict illusional changes in expression. The designer has to be aware he or she is creating a complex performance text for the character in much the same way that a playwright creates text for a character; the difference is that with masks the text is sculptural, and the viewer has to interpret a complex three-dimensional form. Director and designer Julie Taymor states that as a mask maker 'you only have one stroke, one fixed sculpture to say it all about a character. You have to be able to do it within a few shapes lines and forms' (cited in Irvin, 2003: 140). So how can a badly made mask, one without life, be avoided? The key could be in movement during the design process. Experienced

mask makers in Bali who carve their masks out of wood use their feet not only to secure the mask while carving it, but to constantly move the mask round, to play with the light before each stroke of the pahat (chisel) not only to check 'the balance and symmetry of the mask' but most importantly to check for 'the continual signs of life' (Naverson, 2004: 41). It is possible that the mask maker is using the mirror neurons in his brain to assess the face continually.

If the definition of a good mask, a mask with life, is such that the kinemes with which the mask is constructed resonate with Ekman's universal kinemes then it is possible to argue that no matter the cultural background of the actor who wears the mask, similar performance qualities would be released. This is because the actor's interpretation of the mask would be directed by the universal kinemes in the facial expression of the mask which should stimulate the same innate physiological changes in their body. This is not to say that the masks will be played in exactly the same manner, but the essence of character should be the same. Keith Johnstone describes a mask he had just made and '[a] student tried it out and turned into a hunched, twisted, gurgling creature. Then a latecomer arrived, picked up the same mask, and the identical creature appeared' (1989: 165). Clearly this mask had life. The author of this study has conducted mask workshops with the same set of training masks all over the world, and it never ceased to amaze that the masks would regularly stimulate identical rhythms, tensions, and behavioural patterns in actors from different cultural backgrounds. This chapter offers a possible neurological explanation for this phenomenon, which is supported by John Rudlin, who states that a good mask will work 'immediately it is put on by no matter whom' (2000: 40), therefore it is vital for the mask designer to create masks with life, their role is paramount to the whole process. If the masks they create don't have life, they will not live on stage, and for the audience. The quality of life is essential in mask making and performance for as Rudlin points out 'a badly made mask […] is not a mask at all and might as well be thrown away, or hung on a wall (if it has any decorative value)' (2000: 40). Furthermore it can be argued that when used in a performance a mask with life would be accessible to members of the audience because it stimulates similar innate response in every viewer.

Conclusion

Masks have the potential to be very accessible theatrical devices because they are responded to by innate mechanisms within the nervous system:

> Functional specialisation in the visual cortex is one strategy that the brain uses to extract the constant and essential features of objects and surfaces. Its demonstration focuses attention on the fact that, during evolution, the brain has devoted more space, and indeed entire cortical areas, to those features of the external environment which are of special use and importance to it. […] Among these one can include colour, form, motion, faces, facial expression and even body language. (Zeki, 1999a: 81)

The majority of the special and important features Zeki describes are applicable to mask design. Each of these phenomena acts as a sign stimulus that triggers automatic, innate processes within the ANS. The design of the human nervous system suggests that the physiological response is similar in every viewer. As it is this that directs the viewer's response to the mask, arguably the audience would have a similar response to masks in a performance, as long as they follow the above principles. For example, the pleasure reward system will be stimulated in response to design features such as exaggeration, caricature and symmetry. The ergotopic or trophotropic systems will be triggered by colour. A response to character is determined by the mirror neurons responding to facial kinemes. The conscious paleo-mammalian brain then detects the physiological changes that occur as a result of the activity of either the sympathetic or parasympathetic nervous systems and can consciously articulate any pleasure or excitement that is being experienced. Thus masks designed with these considerations have the potential to increase the accessibility of the overall performance to audiences.

Chapter Eight - Practical Methodology and Results

A trait or complex more widespread than chance alone can account for is called a "statistical universal." (Greenberg, 1975: 78)

This research project was designed to investigate how a devised full-masked performance might achieve wide accessibility. The thesis initially examined innate neurobiological responses in human behaviour and the findings informed all the major dramaturgical decisions involved in the devising process, for example, the character types the masks should represent, the design features of the masks, the writing of a narrative-based scenario containing mythic elements, the design of exercises undertaken in the rehearsal room to promote innate behavioural patterns and the directorial approach adopted during the devising process to stimulate play behaviour in the actors and the suitability of an original sound score created by the musicians. The resulting performance called *The Magic Fruit* was tested for its accessibility on a wide range of audience members. This chapter addresses the methodology undertaken and analyses the results drawn from monitoring the audiences' response. It begins with a summary of the creative process, then addresses the design of the questionnaire, and moves on to analyse the results of data gathered with regard to the ages and ethnicities of the audience and the variety of venues in which *The Magic Fruit* was performed. Thereafter the chapter follows the three interlinked lines of enquiry informing the investigation:

Character: To what extent were decisions surrounding the character types successful in creating widely accessible characterisations?

Humour: To what extent were the decisions surrounding the comedic elements successful in creating humour that was accessible to a wide audience?

Understanding: To what extent were the decisions surrounding the structure, form and content successful in creating a full-masked performance that was widely understood?

Each of these will be considered in a separate section. Analysis within each section is based on quantitative data collected through the questionnaire and observed behaviour collected through video recordings. The results were analysed by age, ethnicity and venue, before conclusions were drawn as to their interconnectivity. Quantitative data was analysed using

mean and standard deviation calculations. Where appropriate a t-test was conducted (see appendix S). The t-test for unrelated or independent samples determines 'whether the means of two such samples differ' (Cramer, 1994: 121).

Summary of Methodology

The first stage of the creative process was to write a narrative that had a simple structure, incorporated archetypal characters, mythic elements and oppositions, and opportunities for play behaviour.

The next was to design the masks. This was undertaken by the author of this thesis by creating a clay positive for each character which was then covered in plaster of Paris to form a plaster negative. These were then filled with four layers of *papier-mâché* and finished with a smooth thin coat of plaster of Paris by mask maker Ninian Kinnier-Wilson before being painted with acrylic paint.

The puppets of the Devil Dog and the Evil Ruler were commissioned from a professional puppet maker, Eilidh Bryan, to designs created by the author (see appendices U and V) influenced by elements of Balinese theatre.

Costumes were initially designed by Rebecca Hickie, a PhD student at Loughborough University, to a brief set by the author but adapted when early informal testing of the characters in their costumes proved they were confusing. For example, the Mother figure originally had a pair of trousers so the test audience decoded her as a father figure, but this was changed by the author to a skirt to enhance gender recognition. The child had long trousers and this was changed by the author to shorts to help with age recognition.

The set was designed by the author to be flexible enough to play in non-theatrical buildings and open air venues. The tree was constructed by a local company, Garmendale Engineering, a company that builds steel constructions for the entertainment industry.

A cast of five performers were assembled through an open audition process for professionals and graduates who had the relevant experience of working with masks. They

underwent an intensive two week rehearsal period under the artistic direction of the author of this thesis. Primarily this involved free-flowing improvisations where the characters interacted with the voice of the artistic director in a spontaneous flow of ideas within set objectives and a pre-written scenario. For example, as the characters explored the performance space, the director would ask if there was anything they particularly liked about it. If one of the characters pointed to the fruit on the tree, then they would be told that they could play with it if they could get it down. If the character went to get a chair, they were told they could not do this and must find another way. A question might be asked "who would like to help?" with the hero predictably raising his hand high and moving quickly into position. Various unsuccessful attempts might be made until another suggestion was put forward by the researcher, for example "try getting on his shoulders". Thus the stage action emerged and the desired narrative unfolded through spontaneous action discovered by the characters.

Professional percussionists Julie Latham and Jo May were invited to create an original score for the performance. They worked in collaboration with and under the musical direction of the author. They observed the scenes that had been devised, listened to the instructions from the director and created appropriate music/percussive sound. For example, they were directed that the child's entrance and subsequent exploration of the balloon must be accompanied by high pitched music with a simple discernible tune, which must be repeated and be moderately fast, with a regular rhythm.

The first performance was given at an intercultural festival in Kettering to over 250 people. This performance was recorded using a single video camera purely as a record of the proceedings and has been submitted as evidence of a creative artefact as part of this thesis. Please watch this recording now (see appendix W).

Audience Reception
Research in audience reception 'usually proceeds in two phases' (Balme, 2008: 40). The first involves identification of semiotic signs and codes within a production and in the second, audience reaction is gathered using questionnaires or discussion (Balme, 2008: 40). In this study phase one proceeded in the usual manner (detailed below) but phase two was

changed in line with the phenomenological approach adopted by this study in which there is 'an emphasis on the total embodied experience' (Allain and Harvey, 2006: 186). Stage two involved video recording the audiences' reaction in order to monitor their innate physiological response through outward visible signs such as changes in facial expressions, activation of the startle mechanism and audible signs such as phatic cries or laughter. In conjunction with this, a paper-based audience questionnaire was used to collect quantitative data with regard to their numerical rating of clarity of character, overall understanding and enjoyment of the performance, informed by conscious consideration of the internal physiological changes triggered by watching the performance (see appendix Q). Research methods then continued under the 'usual procedure' proposed by Balme in which data from stage one and stage two 'are then compared, with a view to ascertaining the success of the production in reaching its audience' (Balme, 2008: 40).

General Development and Design of the Questionnaire

Given the tight tour schedule, a paper based questionnaire was considered a more appropriate method of collecting data from audience members than conducting a questionnaire via personal interviews because this would mean that information could be collected quickly from a large number of people at the same time. Given that 'the moment your questionnaire is more than a page long, its likely completion rate begins to plummet' (Rugg and Petre, 2007: 147), it was crucial to keep the questionnaire brief, particularly as audiences might disperse quickly at public venues such as in the street and in parks where the apparent time it might take to fill in a questionnaire could affect the individual's decision to remain behind and participate. Bearing this in mind, tick-box and ringing-an-option responses were favoured as their presence in the structure also meant that respondents would be 'more likely to answer all the questions' (Dawson, 2002: 88). This generally limited the questions to 'closed questions', that is, questions where the possible answers are already set out in the questionnaire. A ten point numerical scale was considered appropriate for attitudinal questions as it was assumed that most people would be familiar with the concept of rating from one to ten as it is 'the most popular form of expressing belief' (Kapadia and Borovcnik, 1991: 122). Wherever a categorical scale was required it was decided to limit the number of options to five or six given 'the need for brevity and relatively simple questions' (Gillham, 2000: 8).

General Considerations in Formulating the Questions

The choice of words used and the formulation of the questions were extremely important because 'in a research instrument […] they have an effect on the type and quality of information obtained' (Kumar, 2005: 132). The biggest consideration was the intentionally large range of people that this questionnaire would target and their diverse ethnic and educational backgrounds. Given that children would be asked the same questions as adults, the general principle of keeping them 'short and simple' (Dawson, 2002: 89) was particularly applicable and the language employed was kept as simple as possible. Also translators were available at venues where this was appropriate, and teachers or research assistants were available to deal with young children and those who could not read.

Question One was a simple empirical question asking the age of the audience. Its purpose was to ensure that people from a wide age range had participated. A categorical tick box was used with numerical values ensuring proportional response in each category.

Question Two enquired into ethnic origin. Its purpose was to ensure that people from culturally diverse backgrounds had participated. In the first draft of the questionnaire the form used by the government department for children, schools and families was used which involves closed tick-box questions (see appendix R). In a pilot run of the performance (conducted for training purposes for the research assistants operating the cameras and the piloting of the questionnaire), verbal response indicated that the phraseology 'Which groups do you most identify with' was a little confusing, particularly for children. The length of this government document also meant that the overall questionnaire was two pages long. Therefore in the final draft of the questionnaire, the question on ethnicity was shortened by making it an open question 'What is your ethnic origin?' This simplified the question and shortened the questionnaire to one side of A4. Further categorisation of this information undertaken during the data analysing process is outlined below.

Question Three asked the audience how much they had enjoyed the show. Its purpose was to gauge the success of the inclusion of stage business designed to trigger the pleasure reward system. The word 'enjoy' was specifically chosen because according to Paul Ekman it encompasses a dozen or more universal emotions such as amusement, happiness,

wonderment, and contentment all of which result in a smile (2003: 204). This supports the phenomenological approach to this research. A one to ten attitudinal scale was used due to its familiarity.

Question Four asked the audience how much of the show they had understood. Its purpose was to determine the extent to which the use of simple objectives in the structure had successfully created narrative meaning despite a complete lack of language. A five option tick-box categorical question was adopted asking the audience to quantify the extent to which they had understood the performance. The titles 'all of', 'most of it', 'half of it', 'less than half' and 'not very much' were used in preference to asking for a percentage (for example, 0% -25%, 25%-50%, 50%-75% and so on) in case the children and less educated adults were not familiar with the concept.

Question Five asked how clearly each of the characters in the play had been portrayed. Its purpose was to determine the extent to which a multifarious system of signs (including the implementation of archetypal characterisations in terms of innate behaviour and physical expression gleaned from ethological studies, the facial expressions on the masks based on universal facial expressions and signs encoded in the costume and music) had been successfully decoded by the audience for them to recognise specific character types on the stage, despite there being no language to inform the decoding process. A one to ten attitudinal scale was used for its familiarity. The question was worded to elicit honest responses. For example, if the question had been worded to read "How much of the character did you understand?" then it could be construed as having 'prestige bias' which 'refers to questions which could embarrass or force respondents into giving false answers' (Dawson, 2002: 89). In this instance the respondent might feel that the question implies that it is possible to understand the character very well, and it is their cognitive ability to do so which is being tested, making them not want to appear stupid through lack of recognition and thus giving a higher rating than the character deserved. Phrasing the question so that it is clearly the performance that is being scrutinised not the respondent, it was more likely to generate honest, critical responses.

Limitations of the Questionnaire

Due to budget limitations, it was not possible to print the questionnaire in many different languages. Thus equal familiarity with the language of the questionnaire could not be guaranteed particularly as 'some words have different meanings for different groups of people' (Dawson, 2002: 89). This is particularly true of Question Five where the audience were asked to indicate the clarity of the character which had already been identified on the questionnaire using English words such as hero, mother, evil ruler and so on. This was mitigated as far as possible by having translators available in each venue.

Filling in the questionnaire was a voluntary act, and therefore not everyone in the audience responded, especially when the performance was outdoors in a shopping or recreational area where, in general, the response to filling in the questionnaire was very low. This had a negative effect on the percentage of audience members who took part in the quantitative element of the research. At Northampton Carnival the response was negligible, as the audience dispersed to see the main parade which arrived just as the questionnaires were being distributed. Similarly at the NACO Community Care venue there was also no response as the performance finished at the same time as the club ended and parents arrived to take their children home. These unforeseen situations mainly affected quantitative data collected from young members of the Black African community. Overall, a total number of 356 questionnaires were filled in, this represents 34% of the overall audience attendance which was estimated at 1,050 people. (This number is an estimate because the overall attendance was determined by a head count at the mid-way point of the performance at venues where attendance was transient such as in the street, in parks and at the carnival). This is in line with general response rates in similar social research as according to Bill Gillham '[i]mpersonal questionnaires typically attract a response rate of around 30 per cent' (2000: 9).

Given that questionnaires are considered 'of most value when used in tandem with other methods' (Gillham, 2000: 1-2), it was extremely important that the results of the questionnaire were analysed wherever possible, in conjunction with the results from monitoring the phenomenological response of the audience that captured innate responses. These responses are detailed below in the sections on humour and understanding.

Audience Range - Venue, Age and Ethnicity

A standard ethnographic research method called sampling was used, which is defined by Steven Schensul *et al.* as 'the process of identifying from a large population a smaller group which not only shares the former's characteristics but is more manageable (1999: 231). Thus a total of eighteen performances were given within the geographical community of Northamptonshire, where towns such as Northampton, Kettering and Wellingborough were chosen because they were generally known to have ethnically diverse populations. Users of venues and audiences at events were chosen to take part in the research so that overall, people from a wide range of social, ethnic and age groupings would experience the show (see fig. 1). This is known as a convenience sample which 'consists of any group readily accessible to the researcher that reasonably might be assumed to possess characteristics relevant to the study' (Schensul *et al.*, 1999: 233).

Venue

The wide range of venues helped ensure that people from a wide range of social and ethnic backgrounds participated in the research. These were identified by descriptions arrived at through discussion with venue managers, teachers and organisers who acted as the contact point for performance bookings. This evidence suggests that sufficient people from a reasonable range of social, age and ethnic backgrounds took part in the research for inferential analysis to be informative.

Comparing the research data gathered at each venue should give an indication of how those from different communities of interest received the performance. A similar response to *The Magic Fruit* across venues would provide a strong indication that social background in terms of personal experience and education makes little impact on audience reception, and would thus support the hypothesis that there is sufficient innate material present to make the performance widely accessible. If audience members across all the venues gave a different response or one or two venues gave a response markedly different to other venues, this would need further analysis, and could potentially disprove the hypothesis.

Venue/Event	Audience description
The Cornmarket Hall, Kettering, hosting the Kettering Intercultural Festival	An integrated audience of all ages from a wide range of social and cultural backgrounds.
African Elders Club (Rock Street Community Centre, Wellingborough)	Senior citizens who migrated to this country when adults.
Afro-Caribbean Club (Rock Street Community Centre, Wellingborough)	Young black British children
Hemmingwell Centre, Wellingborough	Youth group and young children from a council estate.
County Council Offices, Northampton	Council employees, reasonably well educated.
NACO Community Care – After school club (Northampton Afro-Caribbean Organisation)	Young African Caribbean children from a working class area of Northampton.
Dostiyo Day Centre, Northampton	Asian women, families and children's club
University of Northampton Avenue Campus	General public, students and lecturers attending a gallery viewing evening. Most with experience of the arts and theatre in particular.
Doddridge Community Centre Northampton	Senior citizens lunch time club
Abington Street, Northampton	Mixed general public
Victoria Centre, Wellingborough	Mixed race youth group and their parents
Wrenn School, Wellingborough	Drama/music club for children under-12
Wrenn School, Wellingborough	Drama/music club for children age 12 - 15
Northampton Carnival Delapre Park (morning)	General public including families from a range of ethnic backgrounds
Northampton Carnival Delapre Park (afternoon)	Mixed general public including families from a range of ethnic backgrounds
The Racecourse (park), Northampton	Mixed general public including families from a range of backgrounds
Abington Park, Northampton	Mixed general public including families from a range of backgrounds
University of Northampton Park Campus	International students studying for a degree in a variety of subjects

Fig. 1

Age

The survey revealed that people within a wide age-range attended the performances (see fig. 2). The percentage of those who filled in the questionnaires is heavily weighted to the under-13 age range due to the high response of the captive audience at two performances at the Wrenn School in Wellingborough where 100% of the audience participated. The adults in the higher age-ranges were much more likely to disperse before filling in the questionnaires due to the transient nature of the venues they attended.

**The percentage of the total audience in each age range**
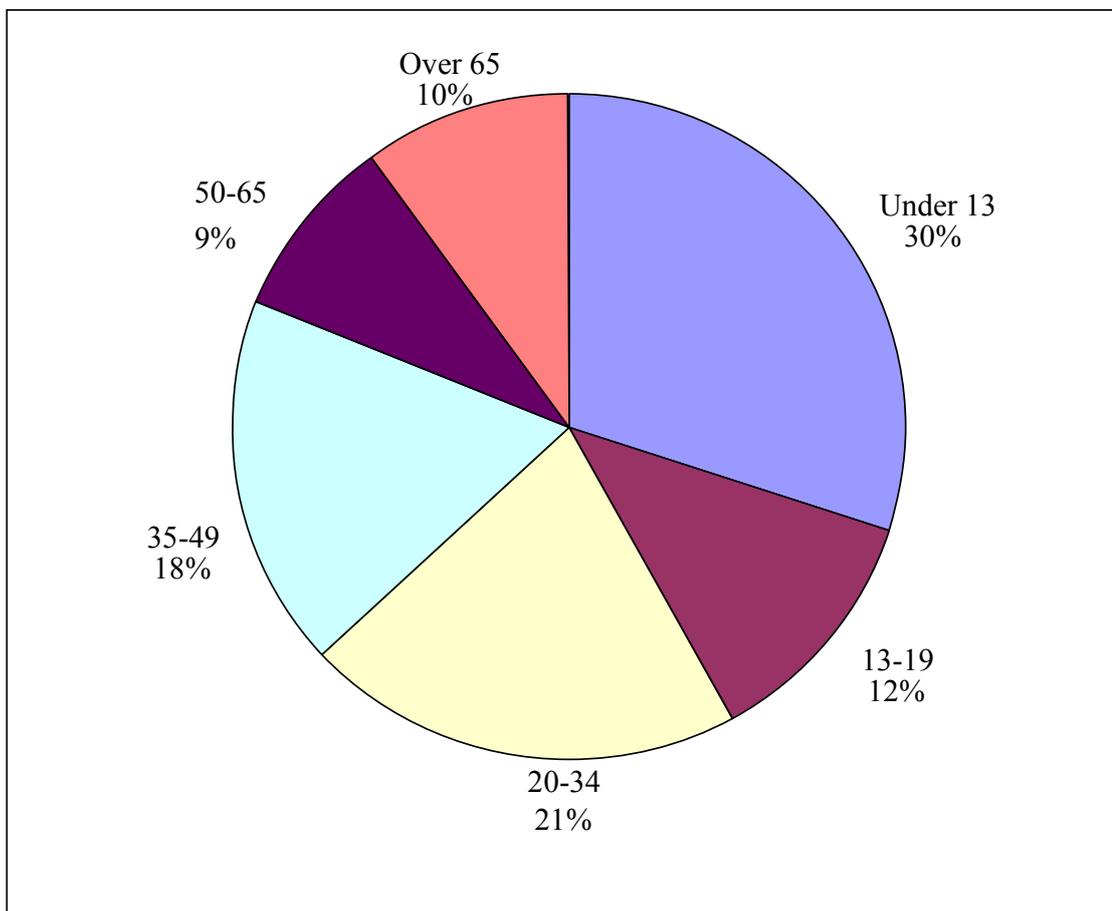
Fig. 2

Comparing the data collected from within each age group should reveal if age made any impact on audience reception. If results were found to be similar across all ages, then the

188

hypothesis that innate material had been encoded successfully into the performance and was a contributory factor in the level of reception would be supported. If the response of any one age group were to be significantly different this would require further analysis and would potentially disprove the hypothesis.

Ethnicity

The questionnaires invited the audience to disclose their ethnic background using self-descriptors (see fig. 3).

Audience by ethnicity self-descriptors

(As exactly declared on post-show questionnaires)

African Caribbean	French	Polish Irish
Arabic	Hindu Gujarati	Scottish
Asian	Indian	Spanish
Bajan	Irish	Thai
Black African	Italian	West Indian
British Asian	Jamaican	White British
British Indian	Mexican	White European
Chinese	Muslim	
English	Pakistani	

Fig. 3

This indicates that people from a wide range of ethnic backgrounds viewed the performances and remained behind to fill in the questionnaire. These descriptors were categorised further into sub-headings of White British, Black British, Asian British, Other White Background, Black and Asian. Those who had defined themselves by religion or had not responded were categorised as 'other'. From this it was possible to determine the percentage of the audience represented in each category (see fig. 4). This indicates that 63%

of the total audience who filled in questionnaires considered themselves British, whilst 32% were not British. Given that all the performances were staged in Britain, the percentage of those not British is good within the boundaries of this study, particularly as statistics given by the government (Office for National Statistics, 2004) indicate that 95.51% of the population in East Northamptonshire are White British and in South Northamptonshire 95.65% are White British.

**The percentage of audience members in each ethnic category**
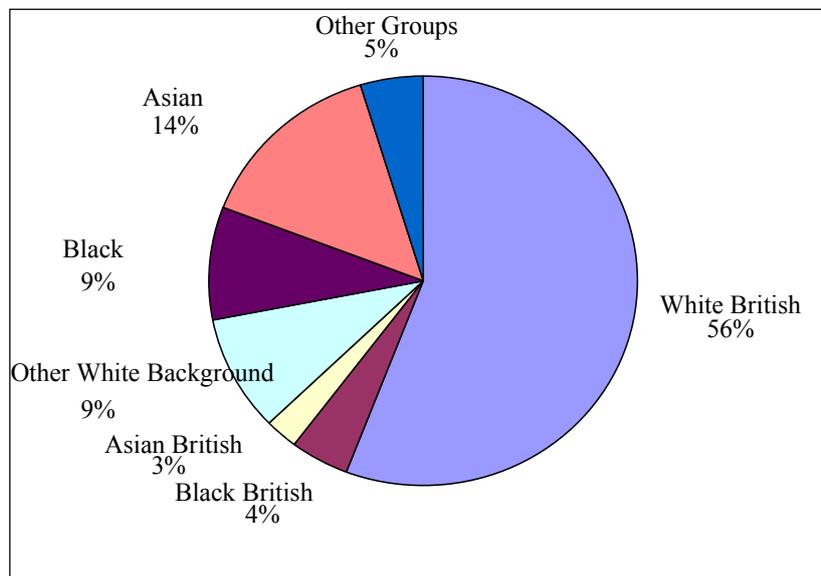
Fig. 4

A similar response from all ethnic groups to such features as character or humour would support the hypothesis that sufficient innate material had been encoded into the performance, but a markedly different response from one or more ethnic groups would require further examination and could possibly disprove the hypothesis.

Section One - Character

Chapter Four concluded that archetypal characters such as fool, hero, mother, child (Jung 1959, 1972, 1990) were most likely to be accessible to a wide range of audience members due to their underlying innate influences. The staging of these character types were further influenced by ethological behavioural patterns seen in all cultures (Brown, 1991). Audience reception of these characters would be influenced by several theatrical signs, for example, the masks, the behaviour of the characters, and the costume. The design of masks was influenced by the universal laws of art as proposed by Vilayanur Ramachandran (2003), universal facial expressions proposed by Ekman (1997, 2003) and/or kinemic elements from *Siang Mien* (Kuei, 1994) and physiognomy (Lefas, 1975). The colour of the masks and the corresponding colour on the costumes were influenced by neurobiological response to colour (Thomson, 1995). Musical elements in the sound score which accompanied each character were influenced by innate response to pitch, speed and volume. The hypothesis was that if these theatrical signs were significantly informed by an understanding of innate biological systems, then this would maximise the number of audience members who should be able to 'read' the character successfully no matter their age, or social and ethnic background. To test this hypothesis, the audience were asked to rate the clarity of each character depicted on the stage, where [1] was not very clear and [10] was very clear. If in the design of the mask, the behaviour of the character and the costume all worked synergistically then the character should be clearly understood and a rating close to ten would be achieved. If however, any of these elements did not correspond in the view of the audience, then the rating would be significantly lower.

The results for each character will be analysed in turn, with regard to the age of the audience, the ethnic background and the venue. The mean figure of the response will be calculated to help indicate whether the response in general was high or low for the category. To determine the extent to which age, ethnicity or social experience affected the audience understanding, the mean will be compared across all three categories. If the hypothesis is supported, then the mean figure should be similar across all three categories. The standard deviation will indicate the extent to which agreement on the clarity of

character was achieved in each category. The lower the standard deviation, the more closely the audience members within each category rated the clarity of the character, thus indicating that the majority of people understood the character to a similar extent. All results have been rounded to the nearest two decimal places.

Hero

The behaviour of the hero character was informed by hero myths (Jung, 1990: 110). The mask (see appendix A) was informed by kinemic elements of *Siang Mien* (Kuei, 1994) and physiognomy (Lefas, 1975) which convey strength of character (see appendix B). The colour for the mask and costume was yellow, an advancing stimulating colour designed to arouse an excitatory response (Luckiesh, 1965: 136-137). The asymmetry of the costume (see appendix C) would also have an arousal response (Ramachandran, 2003). His musical theme was a fast, loud, repetitive drum sequence designed for a strong arousal response (see DVD *The Magic Fruit* performance).

The results broadly show that across venue (see fig. 5), ethnicity (see fig. 6) and age (see fig. 7) the hero was clearly recognisable, with all three categories scoring very high mean scores of over nine points out of a possible ten. This supports the hypothesis that the encoding used for this characterisation triggered sufficient innate responses for a highly accessible reading to be possible. However, a more detailed analysis of the results in each category will reveal any anomalies that need further investigation.

The mean level of understanding of the hero character across venues was 9.07. This indicates that in general people from a range of social and educational backgrounds all found the character of the hero easy to recognise. The standard deviation was 0.38 which indicated that in all venues the individual ratings of those present were in close agreement.

Venue and Hero Understanding
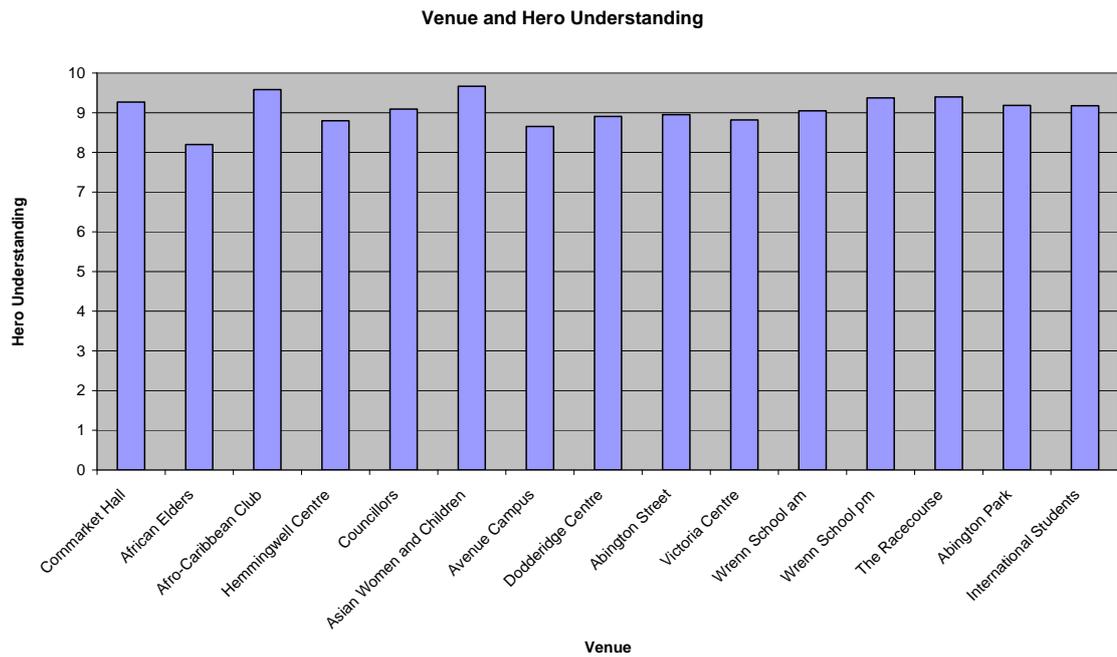
Fig. 5

Those at the venue for the African Elders group found the character harder to recognise than those at other venues, rating their understanding at 8.20 (see fig. 5). This venue had a high percentage of people over 65 years old in the audience compared to the majority of other venues, so it is possible that age was also an influencing factor. When the results from all audience members in the age range of over 65 (see fig. 7) were analysed it revealed a rating of 8.74 against a mean of 9.10. This disparity in relation to age emerged as a repeating factor within the research results and, although this pattern will become clearer as each element is examined in turn, it may be useful to make some tentative suggestions as to why this was the case.

Age being an influencing factor could be explained by loss of brain function in the elderly. Terry Fulmer *et al.* point out that from 'a physiological perspective, studies of intelligence and aging find cognitive ability changes with age as permanent cellular alterations occur in the brain, resulting in loss of neurons, which have no regenerative powers' (1992: 165). There are certain tasks that engage multiple areas of the brain including those integrally

193

involved with viewing non-verbal theatre, such as visual perception, attention and visual scanning (Connor and Obler, 2000: 221). These in particular will be negatively affected by the aging process, making it harder for the elderly to process the visual information being received. In studies of the elderly, Fulmer *et al.* have also noted a phenomenon called persistence of stimulus (after-image) where '[o]lder people can confuse a previous symbol or word with a new symbol or word' (1992: 119). Here, Mauther neurons, which allow meaning to be created, are clearly not being appropriately stimulated. This would create a problem in the pattern recognition needed to understand all elements of the performance including character. Physical changes to the eye also effect visual ability, particularly with viewing colour. Fulmer *et al.* point out that the lens becomes 'progressively yellowed and opaque resulting not only in visual acuity difficulties but also in the ability to discriminate between blue and green' (1992: 168). This would have reduced the effect of the colour stimulation encoded into the performance.
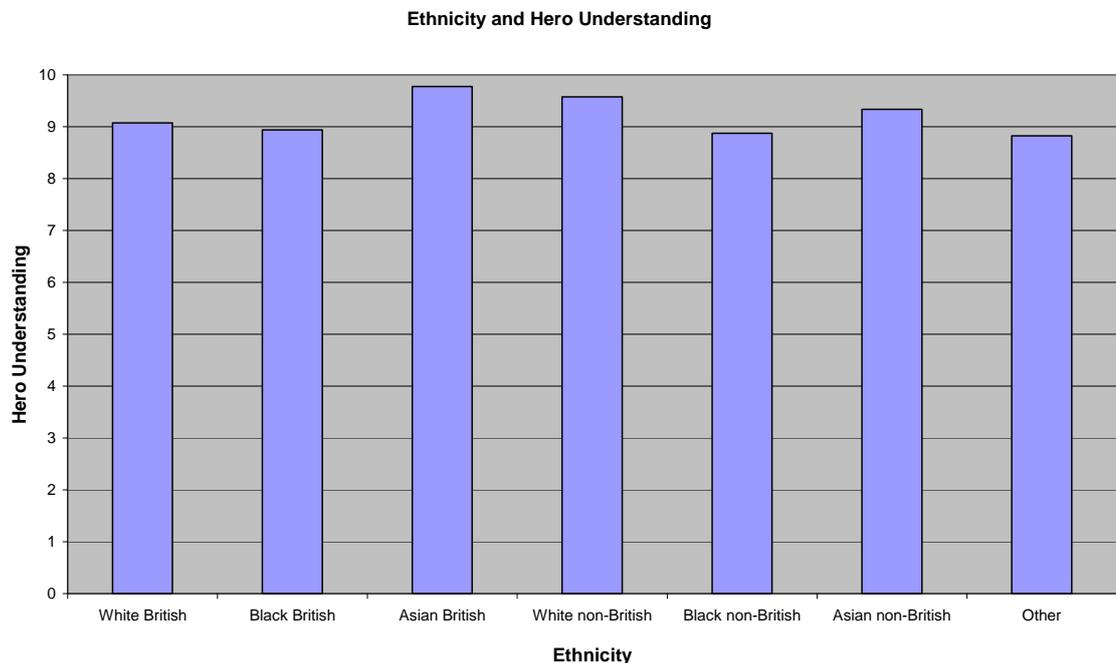

Fig. 6

Many elderly people have hearing impairments that involve loss in the higher and middle ranges (Fulmer *et al.*, 1992: 168). The effectiveness of the sound stimulus encoded in the performance would have been reduced, affecting the understanding of elderly audience members to a certain extent.

Ethnicity might also have been an influencing factor within the African Elders group and this therefore needed closer examination. The mean level of understanding of the hero across ethnic groups was 9.20, indicating that understanding was overall very good (see fig. 6). There was no significant difference in the level of understanding between those audience members who were British and those who were not British as both of these categories scored exactly the same mean of 9.26. A t-test conducted on the results gave a value of $t = 1.06$ (see appendix S) confirming that these results were very unlikely to have occurred through chance. Therefore ethnicity was not an overall influencing factor in the audience reception of the hero. The highest level of understanding came from Asian British elders (9.78), and the second highest from other White backgounds (9.58) closely followed by Asian backgounds (9.33) indicating that the character reading was not necessarily biased towards a British audience. The low standard deviation of 0.37 indicates that all the individual responses were in close agreement. This data supports the hypothesis that this character was widely recognisable to a high degree regardless of ethnicity and therefore ethnicity does not appear to have been the crucial influencing factor in the results of the African Elders.

The level of understanding of the hero across age categories showed no significant differences (see fig. 7) with a mean understanding of 9.10 indicating a very good level of understanding. The lowest rating was in the over 65 category (8.74), in which age and biological conditions have previously been shown to be an influencing factor in reducing understanding to a slight degree. The low standard deviation of 0.19 indicated that there was close agreement of all individuals within each category. These figures support the hypothesis that the hero was very well received and understood as a character regardless of the age of the audience.

Age and Hero Understanding
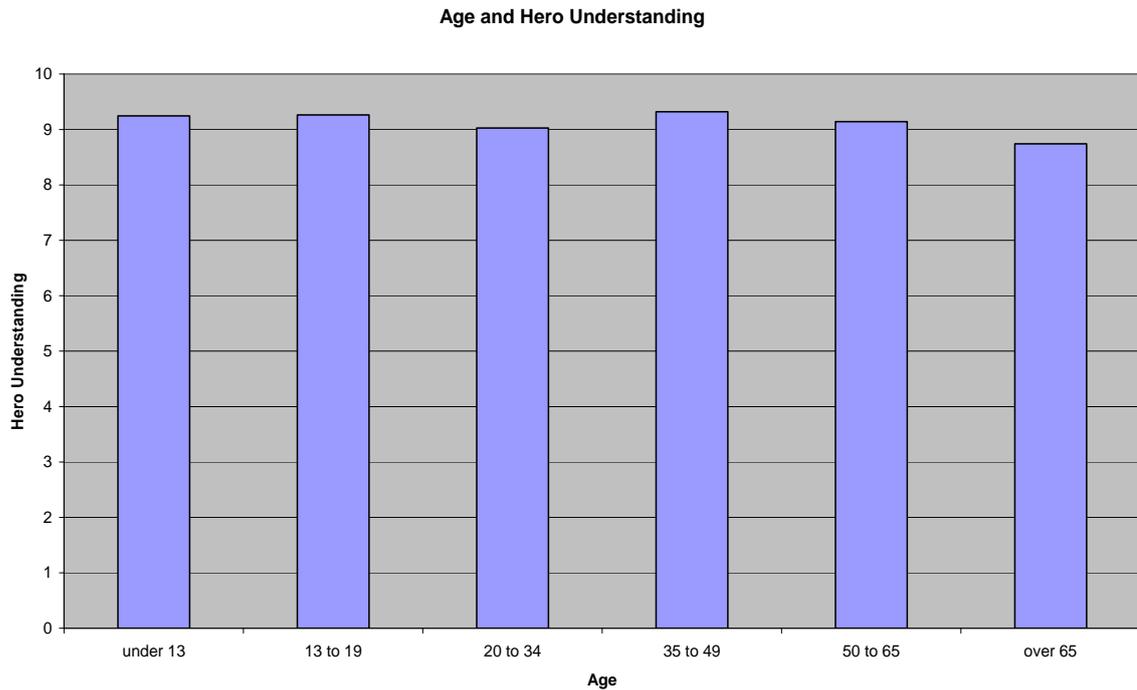
Fig. 7

Evil Ruler

The evil ruler was informed by the Jungian archetype of the collective evil that 'can be represented by such archetypal images as the devil, the enemy, the bad guys, and the evil empire' (Walker, 2002: 34). His mask (see appendix D) was informed by the universal facial expression of anger (Ekman, 2003) and kinemic elements from S*iang Mien* (Kuei 1994) and physiognomy (Lefas, 1975) indicating a bad character (see appendix E). The peak shift effect (Ramachandran, 2003) informed the design process for the costume which exaggerated his height. Red was used in the mask and costume as, according to Matthew Luckiesh (1965), this is the most excitatory colour (see appendix F). His music motif was a drum-roll which gave further stimulation to the audience due to the rapid speed of the sound stimulus (see DVD *The Magic Fruit* performance). When all these factors are taken together, this study hypothesizes that the audience would have a strong physiological reaction to this character, triggering a strong negative emotional response to the perceived evilness of the character.

196

Venue and Evil Ruler Understanding
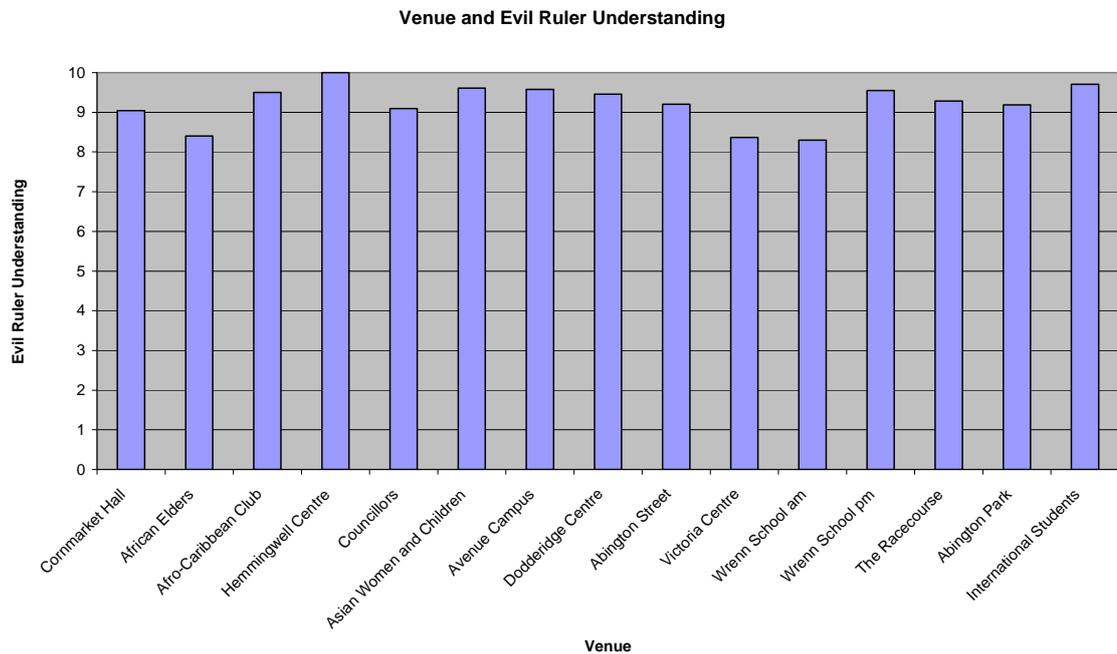
Fig. 8

Results showed that across venues the audiences thought that the character was very clearly depicted with a mean rating of 9.22 out of ten for clarity (see fig. 8). The standard deviation was 0.51 indicating that the majority of individuals were in close accord with this rating. The lowest scores came from the African Elders (mean 8.4), The Victoria centre (mean 8.36) and Wrenn School (mean 8.30). Given that these venues represented some of the youngest and oldest viewers, it is possible that age is an influencing factor in audience reception of the character. This is supported by the rating of understanding of the character across age groups (see fig. 9) where some of the youngest children and some of the oldest adults returned the lowest scores of 8.86 and 9.03 respectively against a mean of 9.20.

However, the results from The Hemmingwell Centre where the youngest children were present, many of them pre-school age, did not support this hypothesis as they rated the evil ruler ten out of ten for clarity. It is possible that these young children did not fully understand that they were being asked to be critical about the clarity of the character

depicted, because at this age 'the neo-cortex, seat of rational thought [has] yet to become fully developed' (Goleman, 1996: 22).

**Age and Evil Ruler Understanding**
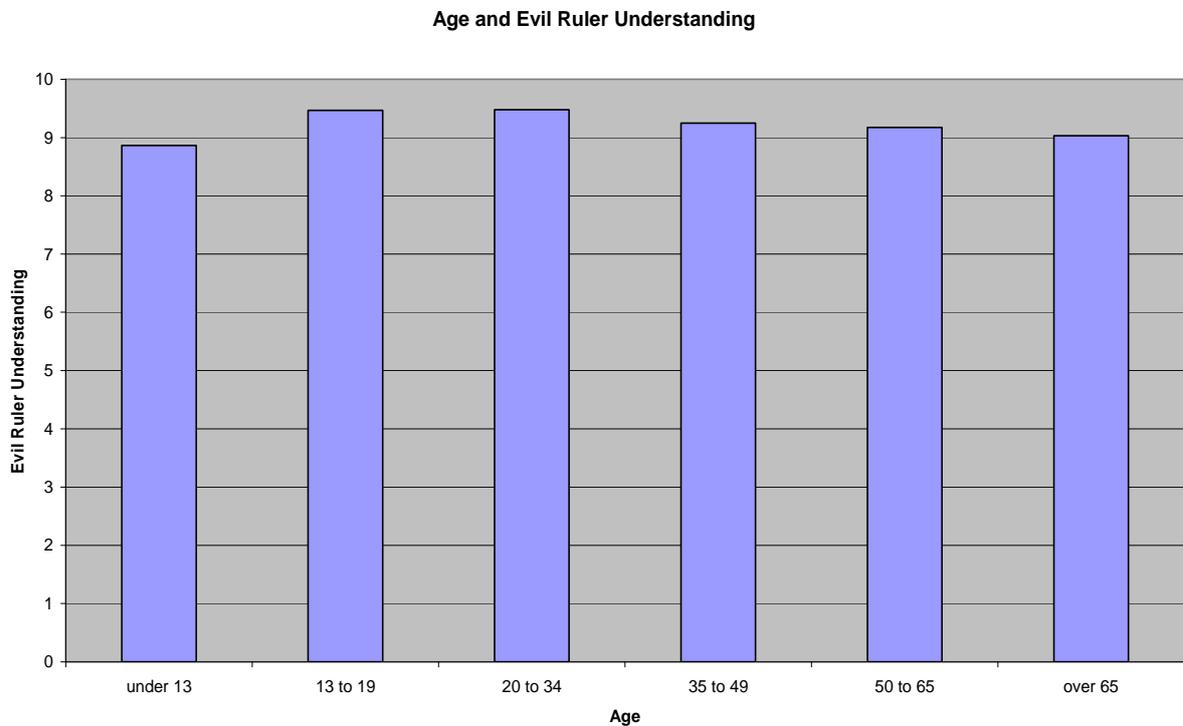
Fig. 9

In contrast, the amygdala, the area of the brain that regulates emotion, 'is more or less mature at birth and thus capable of full activity' (Carter, 1998: 90). This is important for survival because the young human needs to respond quickly to new objects and events in their environment. There might be no template in the memory for a new predator or a new event such as a fire, and there is no time for a measured rational response. The physiological aspects of the fight or flight instinct must occur quickly to help ensure survival. Young children then would have had a strong emotional response to the stimulation given off or signalled by the character. The angry face, the red colouring and the music would have all triggered arousal quickly, leading to a heightened fear response. As the 'cells in the prefrontal lobe, where rational processing of emotion takes place, do not mature fully until adulthood' (Carter, 1998: 90), it is unlikely that this fear response would have been calmed by rational thought, such as "it's only a person in a costume". Given that 'conclusive evidence for the involvement of amygdala in learning and memory has been

198

found in […] tasks, which engage fear and emotion memory' (Dudai, 2002: 13) it is quite possible that when the research assistant asked the children about the character, they recalled the strong emotional response they had had and therefore gave the ten rating.

The results according to ethnicity show that the character of the evil ruler was clearly understood with a mean of 9.13 and a standard deviation of 0.39 (see fig. 10). The mean rating of British audience members was 9.27 whilst the mean of non-British audience members was 9.07. This slight differentiation, although not statistically significant as supported by a t-test value of 0.10 (see appendix S), may have been affected by the African Elders group who represent 27% of the non-British audience and whose age probably affected their understanding as described above.

With a mean of 9.22 across venues, 9.20 across age and 9.13 across ethnicity, it can be concluded that the innate signs encoded in this character enabled it to be successfully read by the majority of audience members regardless of their age, social experience or ethnicity.
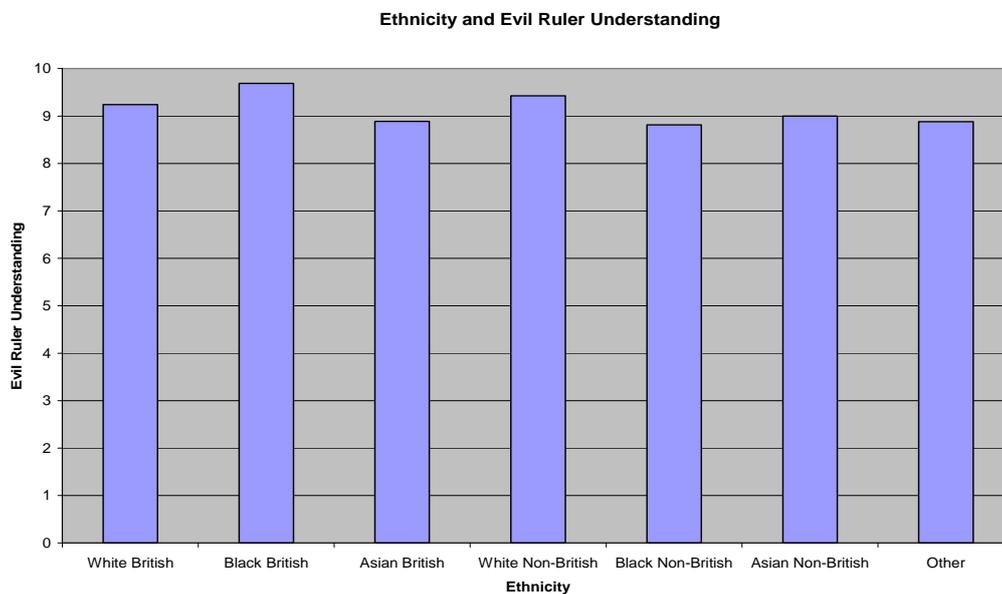
Fig. 10

Child

The behaviour of the child was informed by the universal concept of play (Murray, 2003: 123). The mask (see appendix G) was informed by universal facial expressions of happiness and surprise (Ekman, 2003), and kinemic elements of *Siang Mien* (Kuei, 1994) and physiognomy (Lefas, 1975) that represent youth, excitability and childlike qualities (see appendix H). The colour of the mask and costume was a mixture of calming blue with a hint of excitatory red to make the overall response just slightly arousing and therefore pleasurable (Luckeish, 1965) (see appendix I). The accompanying musical theme was a percussive high-pitched tune, which was simple and repetitive to stimulate pleasurable excitement (see DVD *The Magic Fruit* Performance).

Venue and Child Understanding
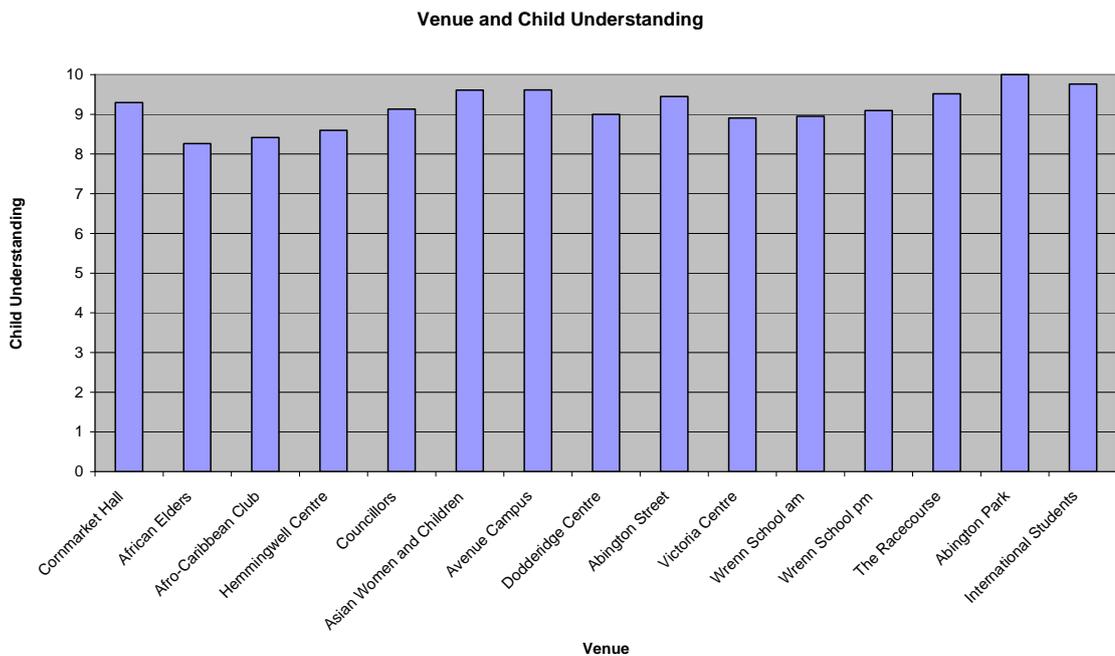
Fig. 11

Results showed that across venue, the character of the child was judged to be very clear with a mean rating of 9.18 and a low standard deviation of 0.50 (see fig. 11). The venues with significant lower ratings were the African Elders group, the Afro-Caribbean after

school club and the young children at the Hemmingwell Centre in Wellingborough. These venues represent the youngest and oldest members of the community, so age might be a contributing factor.

This is supported by the ratings across age for those over 65 (see fig. 12) but not for those under-13. The disparity comes possibly from the questionnaire not differentiating the under-13 age group into young and very young children. This is because the presence of the very young children at The Hemmingwell Centre was unexpected and unplanned for in the design of the questionnaire. The under-13's who attended the Wrenn School were in the age range 10 to12 and their recognition of the character was much higher at 8.95 for one group and 9.1 for the other. It is also likely that the large sample size (71) affected the smaller sample size from The Hemmingwell Centre (5) to produce an overall rating of 9.08.

Age and Child Understanding
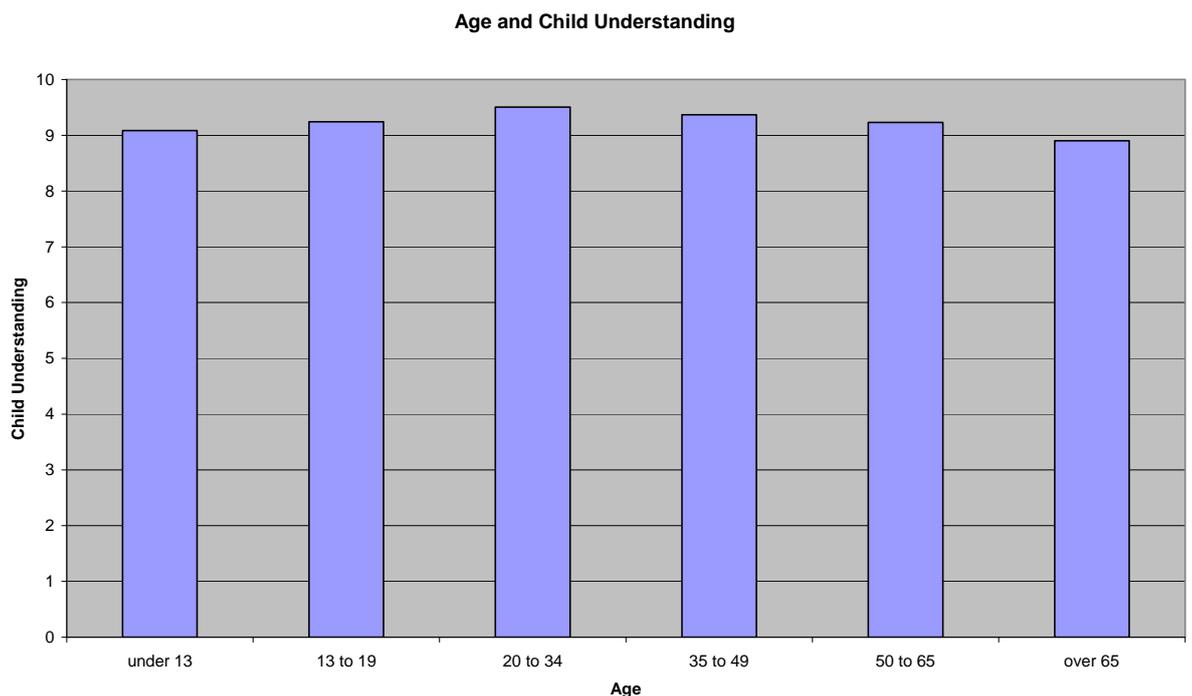
Fig. 12

Across ethnicity the clarity of the child had a mean rating of 9.13 and a low standard deviation of 0.37 indicating that overall the character was clear (see fig. 13). There

appeared to be very little difference in rating by British people with a mean of 9.19 and non-British people with a mean of 9.20. This is supported by a t-test with a t value of 0.35 (see appendix S) indicating that this is not a statistically significant result. Black audience members had the lowest rating of 8.60 but as with other characters it is possible that this has been affected by 27% of this category falling into the over 65 age group, where age has been seen to affect the results probably due to the degeneration of brain processes in the elderly.

Ethnicity and Child Understanding
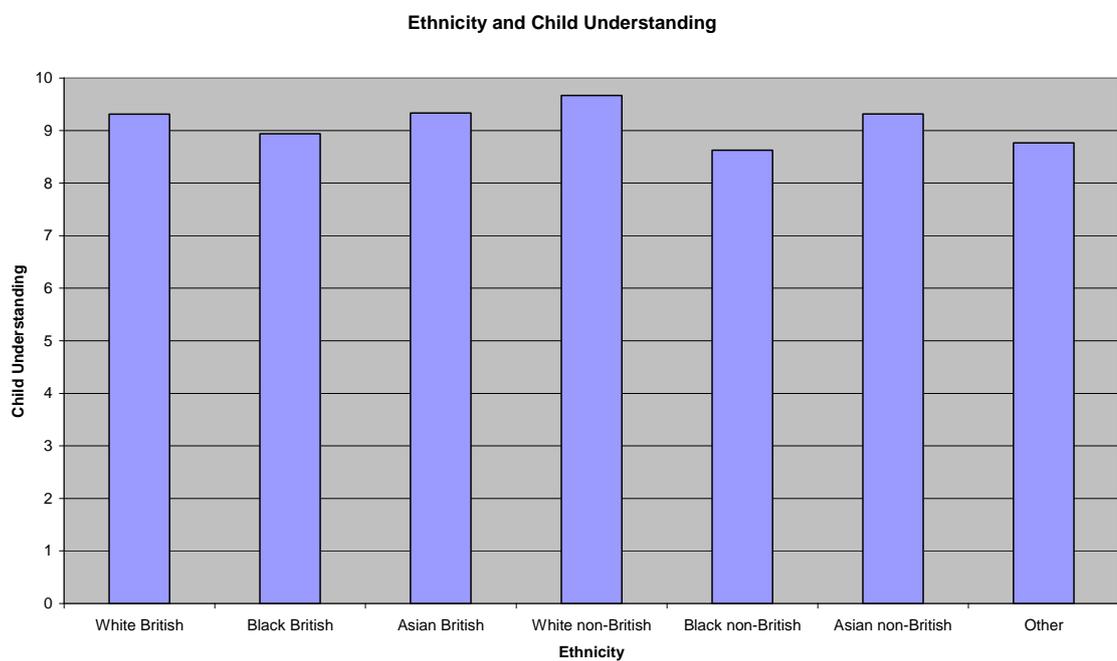
Fig. 13

It can be concluded then that ethnicity did not significantly affect audience reception of this character nor did social background, but age was an influencing factor, with very young children and adults over 65 giving the lowest rating. However, the difference is only minor, supporting the overall hypothesis that if sufficient innate signs were encoded in the creation of a character it would be generally understood by the audience.

Mother

The behaviour of the mother was informed by proven ethological findings that universally mothers nurture and care for their offspring (Brown, 1991: 136) and was further influenced by the Jungian archetype of the mother (Jung, 1972: 16). The mask (see appendix J) was informed by the universal facial expression for happiness (Ekman, 2003) and kinemic elements of *Siang Mien* (Kuei, 1994) and physiognomy (Lefas, 1975) that indicated maternal qualities such as warmth, sincerity, joviality and gentleness (see appendix K). The colour orange was used on the mask and costume because it is a warm advancing colour which would give mild pleasant arousal (Luckiesh, 1965) (see appendix L). The theme music was a moderately fast, repetitive percussive pattern to stimulate pleasurable arousal (see DVD *The Magic Fruit* performance).
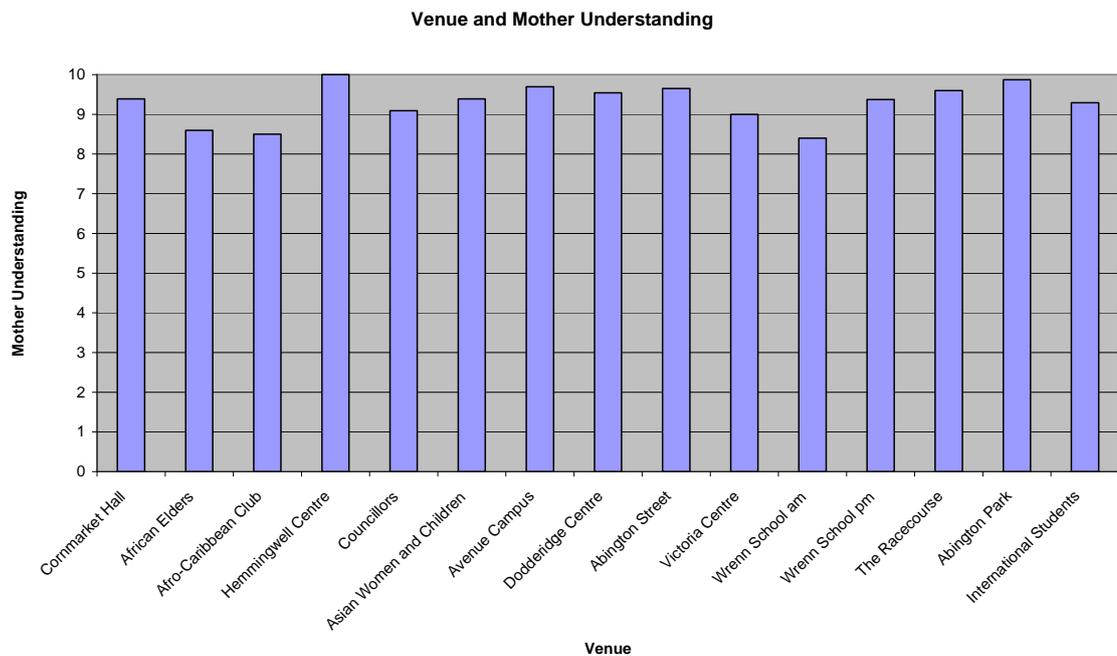
Fig. 14

Results showed that across venues the mother character was clearly read with a mean of 9.37 out of ten (see fig. 14), and a low standard deviation of 0.22. The children at the Wrenn School, the Afro-Caribbean after school club and the over 65s at the African Elders were again the lowest scoring suggesting age was a contributing factor, and this is

203

corroborated by the findings for age (see fig.15). It was interesting to note that the very young children at The Hemmingwell Centre all rated their understanding of this character as 10 out of 10. This could possibly be explained by a concept called attachment, which is an innate phenomenon designed to enhance the survival of the child through protection (Bowlby, 1998a: 27). The bond between an infant and their primary carer (usually the mother) is very strong. It lessens as the child matures but is still present in adults and some theories suggest that it affects their ability to form intimate relationships (Simpson, 2007: 59). The very young children at The Hemmingwell Centre would be in a period of their lives when they were still experiencing a strong attachment response in daily life. When they viewed the mother figure on stage displaying attachment behaviour (such as cuddling, making prolonged eye contact, and nuzzling her baby) the children might have received a similar stimulation as if they were experiencing the behaviour themselves due to their mirror neurons working in conjunction with the 'as if body loop' (Damasio, 2000). If this was the case, they would have experienced an increase in the levels of oxytocin in their bloodstream, which promotes feelings of 'calm and security' (Simpson, 2007: 74). When asked about the mother figure, the children might have recalled the strong feelings the character produced and as a result given the optimum rating.
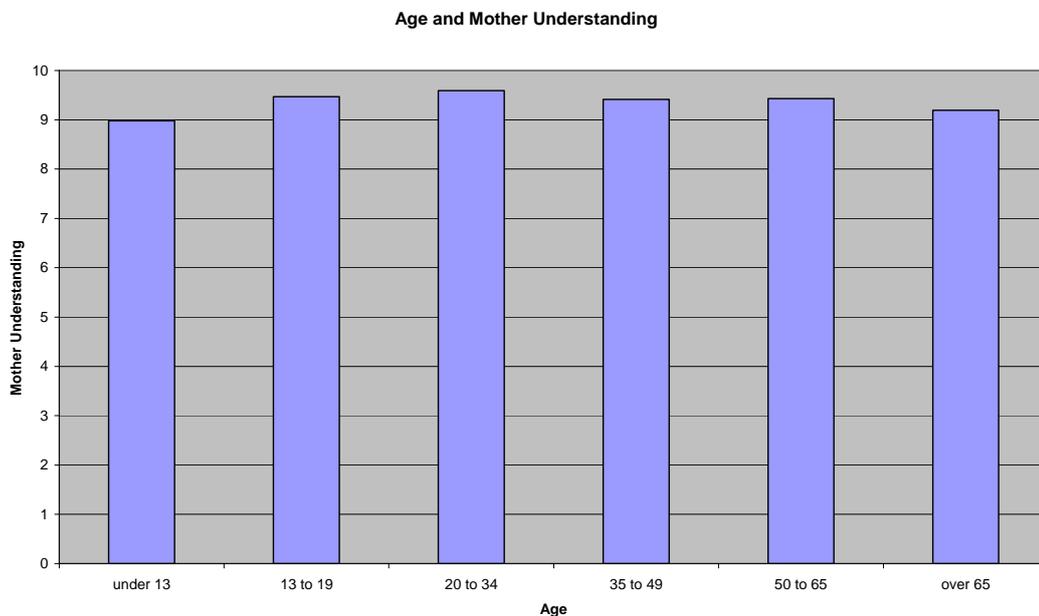
Fig. 15

Results of the Mother figure across ethnic backgrounds evidenced that the Mother character was depicted clearly with a mean rating of 9.36 out of ten and a low standard deviation of 0.33 (see fig. 16). There was a slight difference between British audience members (9.40) and non-British audience members (9.23). A t-test conducted on these figures gave a result of t = 0.33 (see appendix S) indicating that the difference is not statistically significant. However, this difference could have been affected by the low rating in the African Elders group who make up 27% of this sample, and age has already been noted as a contributory factor affecting understanding.

Ethnicity and Mother Understanding
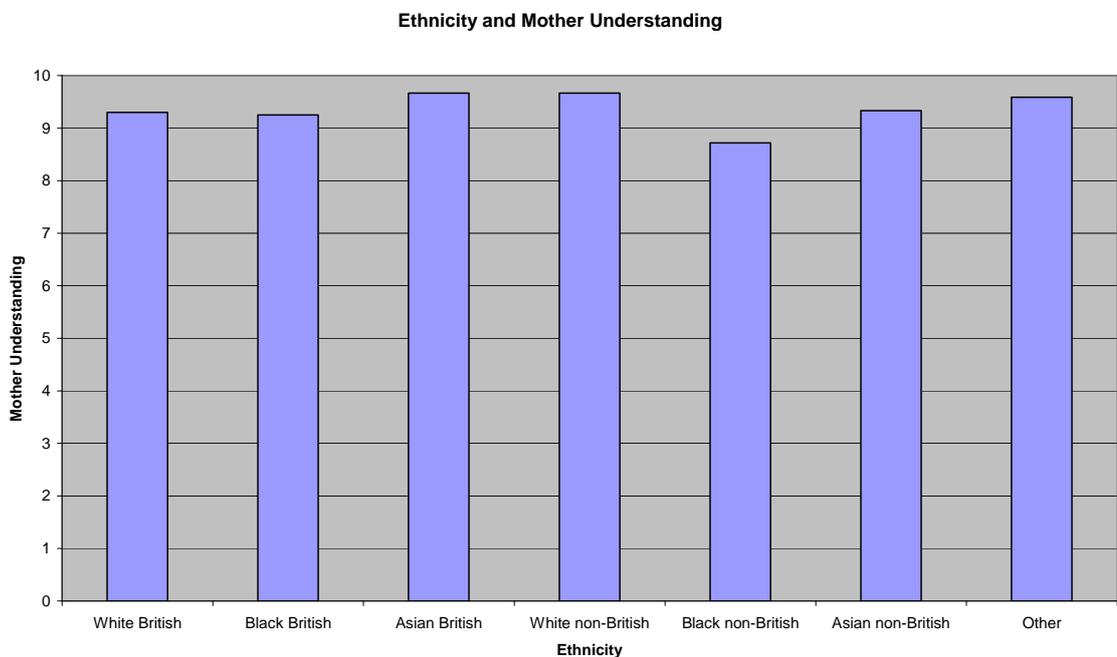
Fig. 16

Overall the mother character was read reasonably clearly by all age groups (mean 9.34), all ethnic backgrounds (mean 9.36) and all those of different social experience (mean 9.37) thus supporting the hypothesis that sufficient innate signs had been successfully incorporated into the portrayal of the character.

Devil Dog

Having an animal on stage was inspired by the Jungian archetype of the Trickster (Jung, 1972: 159-179). He 'appear[s] in myths and folktales of cultural traditions throughout the world' (Stookey, 2004: 179) where he often appears in the guise of an animal. The costume was inspired by the Barong figure in Balinese performances and utilises the peak shift effect (Ramachandran, 2003) to enhance the physiological response to the asymmetric face, and exaggerated features (see appendix M). It was designed for the audience to feel quite strongly that this is not a friendly animal. His musical theme was a loud drumbeat designed to further heighten the response (see DVD *The Magic Fruit* performance).
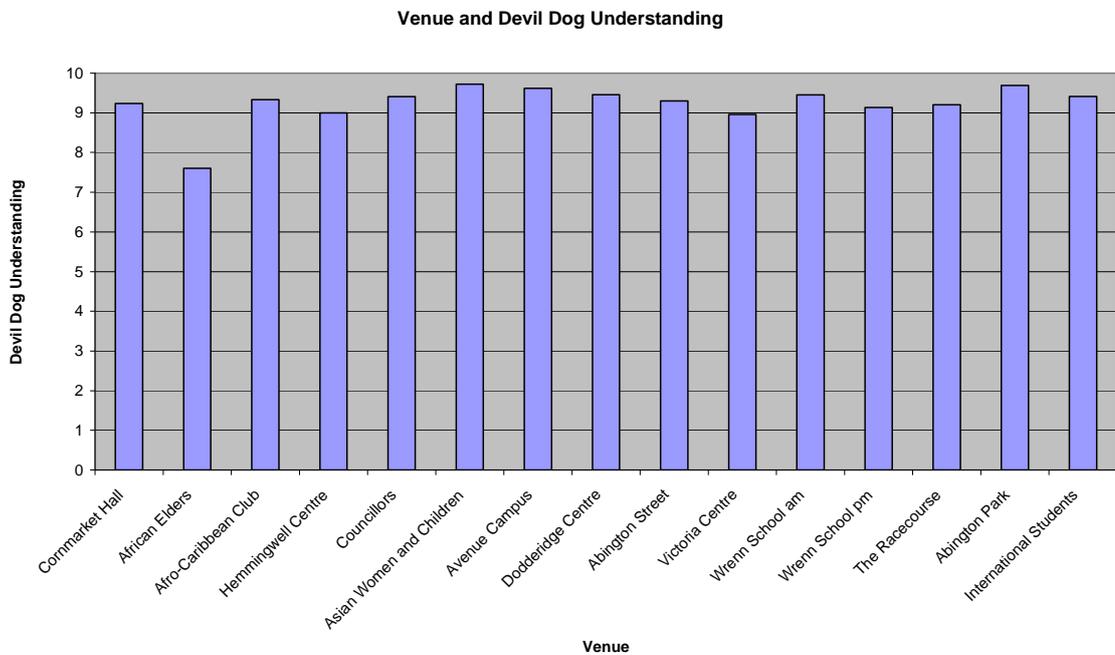
Fig. 17

The results showed that across venues the audience generally understood the nature of the character clearly, with a mean rating of 9.23 and a low standard deviation of 0.50 (see fig. 17). A t-test comparing the mean rating by British audience members with the mean rating of non-British audience members gave a result of $t = 1.85$ which indicated that the

difference was not statistically significant. However, the relatively high t value could possibly be explained by the African Elders group who found the character the hardest to 'read' with a mean rating of 7.6. Their age might have been a contributory factor which is supported by the results across age groups (see fig. 18) where the over 65s had the lowest rating.

Age and Devil Dog Understanding
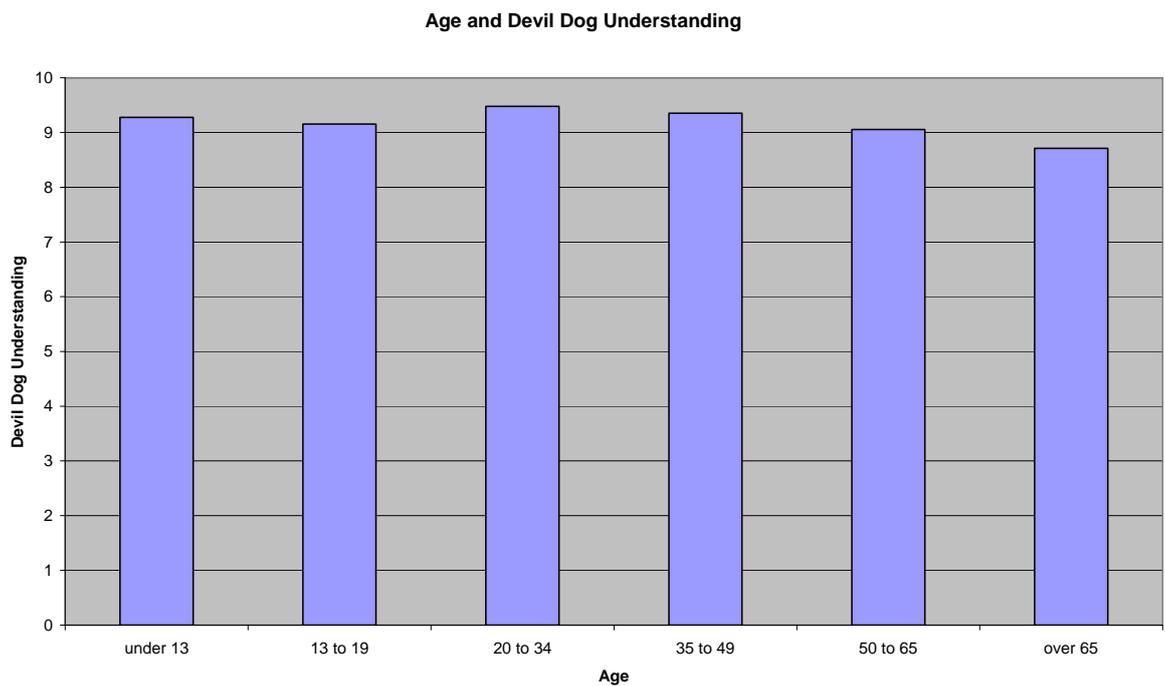
Fig. 18

Ethnicity was possibly also a contributory factor (see fig. 19) where black audience members had the lowest rating of 8.25 out of ten. However, if we compare this to Asian audience members who rated the character at 9.3 and take into consideration that 27% of Black audience members fell into the over 65 category (see fig. 18), then it is possible to argue that it was age alone that affected the results and not the ethnic background.

Ethnicity and Devil Dog Understanding
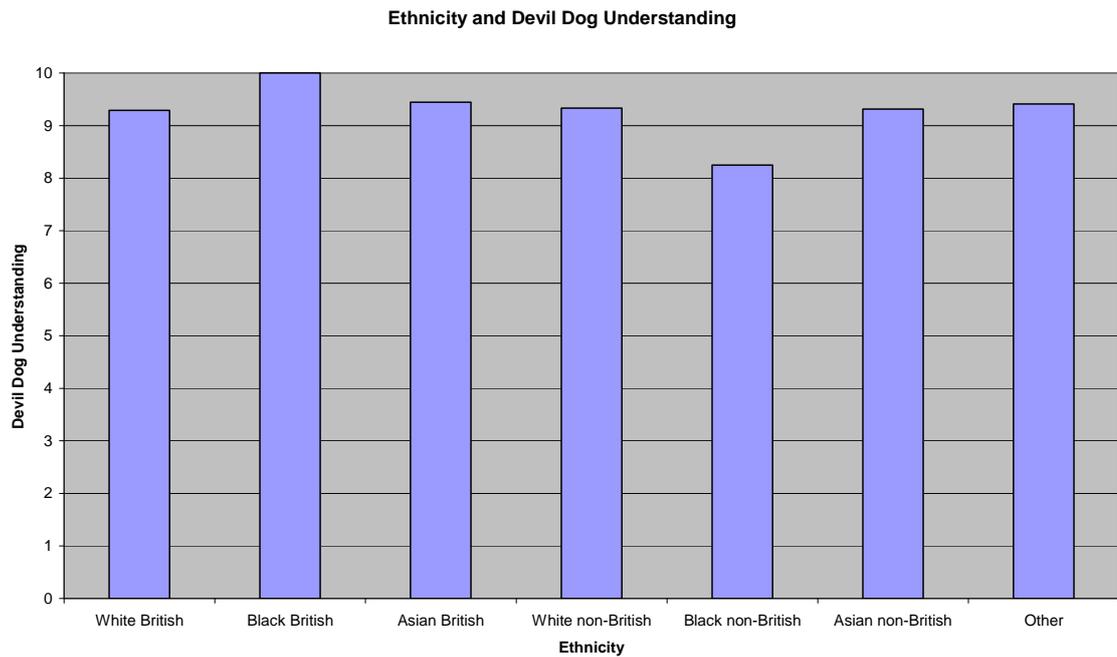
Fig. 19

Overall, given a mean rating across venues of 9.23, across age of 9.17 and across ethnicity of 9.29, it can be concluded that the character of the devil dog was sufficiently encoded with innate signs to enable a clear reading from the majority of audience members with the exception of the Black African elders, possibly due to their age.

Old Fool

The character was inspired by the figure of the fool or clown who appears in cultures across the globe and is 'primarily a butt or laughing stock' (Welsford, 1935: 314). His mask (see appendix N) was informed by the universal facial expressions of fear and surprise (Ekman, 2003) because according to Enid Welsford a fool is defined as 'he who gets slapped' (1935: 314). Elements of *Siang Mien* and physiognomy that suggest foolishness, low intelligence, and low status were included in the design (see appendix O). The designated colour for mask and costume was blue, a cool receding colour, which calms rather than stimulates (Luckiesh, 1965) to reflect the passive nature of the character (see appendix P). His theme

music was a soft repetitive drumming pattern that stimulates pleasant arousal (see DVD *The Magic Fruit* performance).

The character of the old fool gives this research project an interesting dilemma. The character's behaviour on stage reflected some of the innate principles of clowning. Therefore the clarity of the role depended on the audience recognising his foolish qualities and laughing at his antics. The more laughter he produced, the clearer his character as a fool would be. If he were not funny, then his character design was faulty despite the fool being a universal concept. However, due to inaccurate labelling on the post-show questionnaire he was called the old man. This mislabelling changed the objective and focus of the question into a gender issue. Effectively, the audiences were being asked if it was clear he was a man of advancing years. This is not an appropriate question for this study because the research is testing whether the amount of innate stimulation encoded in the performance was enough for the show to cross ethnic, social and age boundaries. Gender recognition is culturally constructed with key signifiers including hairstyles and clothing (Romaine, 1999: 1). However, ethologist Karl Grammer argues that some gender recognition is innate, he states that '"*gestalt* perception" seems to play a prominent role in sex detection […]. Individuals refer to the proportion of shoulder width to waist in order to discriminate male figures, and the proportion of waist to hip for female figures' (1998: 223). If this research project wished to test innate gender recognition then consideration would have been given to the above ratios in the design of the costumes. However, this was not the case. Indeed any gender recognition was further complicated by the character being played by a male actor at times and a female actor at other times. Therefore the results of the survey on the clarity of this particular character have not been included, as they do not test for the appropriate elements of recognition.

Section Two - Humour and Enjoyment

Laughter has been proven to be a universal phenomenon (Ramachandran, 2003: 23), though what makes people laugh is not necessarily the same for everyone. In order to create comedy that would trigger laughter in as many audience members as possible, clowning techniques were analysed (Lecoq, 2000) in conjunction with innate play behaviour (Piaget, 1951; Winnicott, 2005 [1971]) and incorporated into the content of the performance alongside constructed moments triggering neurobiological responses to shock and surprise. Elements of slapstick were included and sequences of action utilising the function of the mirror neurons, and the predictive nature of Mauther neurons to promote relief from neurobiological tension (Spencer, 2004 [1868]).

The hypothesis was that if innate modes of creating comedy had been successfully devised then smiles and phatic cries such as laughter would be triggered in the majority of the audience regardless of their age, social or ethnic background.

Data Collection Method

The changes in facial expression and the auditory response were recorded with two video cameras. The operators were directed to achieve close-up head and shoulder shots at key moments in the performance where an innate response was predicted. If the hypothesis was correct, there would be some clear visual response, such as a smile, or a clear audible response, such as laughter or other phatic cries, would occur. Any moment where there was no response would need further investigation and might disprove the hypothesis.

Problems with the Method

The methodology used encountered several problems which affected the results.

Human error: For example, the research assistants not switching the camera to record, research assistants panning the camera at key moments rather than holding it steady so that facial expressions could be noted, and research assistants not transferring all the recorded information from the camera onto the DVD for analysis.

Technical problems: On one occasion, a camera failed to record any sound. On others, the cameras were unable to pick up clearly the sound from the show due to noise pollution from nearby events (for example, noisy carnival stalls in close proximity to the stage, brass bands playing, chainsaws being used nearby and so on).

Positioning problems: The performance was given in a traverse formation. The research assistants had to film the audience through the stage action. At key moments the performers would sometimes walk in front of the shot either partially or wholly blocking the faces of the audience. In an attempt to reduce the effects of this blocking, two cameras were always used. Where both cameras were blocked, and the sound was not clear, then no result was recorded and a dash inserted in the chart (see fig. 20).

Ethical Considerations

Innate responses were measured by recording the audience's reaction during the performance. This necessarily involved capturing facial expressions as well as making sound recordings. Ethics expert Helen Simons asserts:

> While some of the ethical issues that confront image-based researchers are the same as those which "wordsmiths" experience, there are others that are unique to the visual image. There is no possibility of anonymising the person photographed by changing the face in the way that one can change the name in a written text; there is also little scope for disguising the context. (2000: 8)

Clearly then, obtaining consent was of paramount importance. Each venue was informed that the audience would be filmed. Venues with a membership system had already obtained general permission from their members for such events, but out of courtesy an announcement was made at the beginning of each show just in case people had forgotten what they had signed, were not aware what they had signed or did not want to be filmed on this occasion. When it was known that non-English speakers were present in the audience then a translation was provided. However, at non-membership venues such as on the street, in parks or at the carnival, some audience members might not have been present at the beginning of the performance, or non-English speaking audience members might have been present that we were unaware of. Thus it is possible that there might have been people who either missed or did not understand the announcement and therefore might not have been aware that they were being filmed. Robert Perloff and Evelyn Perloff consider involving

people in research without their consent as a fundamental breach of ethical principles (Simons, 2000: 53) and this was of grave concern to the author.

At some venues, the audience comprised children who were not accompanied by their parents. The organiser in *loco parentis* gave permission for the children to be filmed, which is in accordance with guidelines produced by the British Psychological Society that states 'where research involves any persons under 16 years of age, consent should be obtained from parents or from those in loco parentis' (Smith *et al.*, 2003: 586). Although a pre-show announcement was also made, I was uncomfortable that parental permission had not specifically been granted for the performance because I would have considered that filming was a special circumstance, whereas the organisers clearly did not.

It seemed to be that despite taking preventative action, there was no guarantee that the adults being filmed were aware of their involvement, or that the parents of the children being filmed would have given their consent if specifically asked. Considerations of this nature have led the author to take the action of not publishing any recordings of facial expressions as part of this research project for ethical reasons:

> Underlying any such action is a complex professional judgement that is guided by ethical principles, to be sure, but also by appeal to the basic values of the researcher and his or her sensitivity to the balance that needs to be maintained in research studies between participants "right to privacy" and the generation and sharing of public knowledge. (Simons, 2000: 39)

In this case, it was felt that the right to privacy was of prime importance. The research findings could be served well enough without the faces of audience members being revealed. Instead the results could be presented in descriptive form. Therefore, analysis was based on matching the audience response at key moments to the criteria shown in fig. 20 and grading them accordingly (see fig. 21).

A chart to show the criteria applied to determine the audience's response

Grade	Criteria
-	It was not possible to give a rating due to circumstances beyond our control e.g. technological malfunction or human error.
0	No response at the exact key moment being analysed.
1	A clear change in facial expression such as a smile. or Some clear gentle laughter. or Some clear but localised phatic cries. or An isolated somatic response such as an individual flinching.
2	Prolonged change in facial expression. With some Clear and Prolonged laughter. And/or clear phatic cries and/or some body movement from more than one person.
3	Sustained change in facial expression and many loud cries of laughter which were collective and sustained and many phatic cries. and/or a large physical response such as an individual getting out of a chair and moving away.

Fig. 20

Key Moment Descriptors

Key moment one: The balloon popping

A loud sudden sound over-excites the nervous system. This can stimulate a somatic response such as facial flinching or physically 'jumping', or a phatic response such as a gasp followed by laughter (Davis, 1984). Any audible or visual response would indicate that the stage action had successfully engaged the innate systems of the audience at this point.

213

Key moment two: The devil dog

The large size of the mask and the asymmetrical design utilised the peak shift effect (Ramachandran, 2003) to heighten response to the character. If the design was strong enough then there should be either a phatic or a somatic response to the character indicating an innate response. Relieving laughter should follow (Spencer, 2004 [1868]).

Key moment three: The old fool gets stuck in the tree

This utilised incongruity theory and the concept of surprise (Cooke, 2007: 1). The old fool is accidentally deposited by the hero character in a tree. Not only is this a surprise but it also subverts the 'normal pattern of human behaviour' (Hokenson, 2006: 24) and therefore should stimulate a facial response such as a smile or a phatic response such as laughter.

Key moment four: The baby is thrown into the tree

This is a moment of slapstick that utilises the same neurobiological response as rule breaking (Gruner, 1997). The baby becomes the butt of the joke and the behaviour is clearly inappropriate. Relieving laughter should occur when the potential danger is removed by the hero grabbing the baby before it reaches the tree.

Key moment five: The baby is sick on the audience

This stage action is a shock as the baby vomits. If the stage action is successful there should be relief laughter from those who have got wet, and the 'as if body loop' (Damasio, 2000) operates in the audience members who did not get wet but react as if it had happened to them and therefore experience the same relief through laughter. Therefore the laughter should be general and not localised.

Key moment six: The balloon is inflated in the hands of the child (magic)

This stage action is a moment of magic where there is no immediate logical explanation for what appears to be happening. This utilises pattern recognition theory, or rather, the lack of a recognisable pattern which is described by Herbert Spencer as an 'ascending *incongruity*' which fails to cause laughter and 'the emotion we call wonder results' (2004 [1868]: 168), and therefore should have no immediate phatic response.

A chart to show the audience response to key moments in the performance

Venue	Key Moment One Balloon	Key Moment Two Devil Dog	Key Moment Three Old Fool	Key Moment Four Baby	Key Moment Five Baby Sick	Key Moment Six Magic
Cornmarket Hall	3	3	3	3	3	1
African Elders	2	1	1	1	2	0
Afro-Caribbean Club	2	1	1	1	2	0
Hemmingwell Centre	2	3	1	0	2	1
NACO Community	0	2	1	1	3	2
Councillors	1	1	1	2	2	1
Asian Women & children	2	2	1	0	2	1
University Avenue Campus	1	1	1	1	2	1
Dodderidge centre	1	-	1	0	1	0
Abington Street	1	1	-	1	2	0
Victoria Centre	1	1	1	1	2	1
Wrenn School am	1	1	2	0	2	1
Wrenn School pm	1	1	2	0	3	1
Carnival 1 Delapre Park	1	2	2	2	2	1
Carnival 2 Delapre Park	1	2	2	1	3	-
Race Course	1	2	2	1	3	1
Abington Park	1	2	2	1	2	1
International students	1	1	2	1	2	1

Fig. 21

215

Key Moment Analysis

Key moment one: The balloon popping

The balloon popping triggered a visual and auditory response at the majority of the venues. The phatic response was generally localised to those positioned nearest to the balloon when it burst. In this case the proximity of the sound made the innate response strongest; the closer the unexpected sound, the more imminent the danger, and therefore the more intense the arousal and hence a phatic response. It is possible that other members of the audience also experienced a facial response, but this was not recorded due to the limitations of the research methods used. The response to a loud sound is called the 'startle pattern' and is typified by a closing of the eyes, the widening of the sides of the mouth into a grin, a forward head movement and a rising of the shoulders (Landis *et al.*, 1939). The cameras were focused on the facial expressions of only two audience members whilst the sound recording picked up auditory response of the whole audience. The methodology could have missed a startle response from the majority of the audience in which case the rating would have been different to reflect the higher number of respondents.

The response at the NACO community care after school club received a zero rating. Neither of the two faces being filmed responded to the sound nor was there an immediate phatic response. This atypical result was due to the balloon not bursting but splitting. The resulting sound was not short, sharp and loud but longer in length and quieter. As a result the startle pattern was not triggered, for an innate response requires the precise stimulation to be detected by the innate releasing mechanism.

Key moment two: The devil dog

The response to the devil dog varied across venues but it always received a response of some kind. The entrance did not generally receive laughter, only facial responses, but as the creature promenaded round the performance space, the section of the audience it drew nearest to began to respond vocally with laughter. In this instance, the spatial proximity of the potential threat triggered a more highly aroused state resulting in a phatic response. Sometimes the audience physically moved away from the creature, but this was not counted as an innate somatic response because it could have been a conscious decision to retreat from an imminent threat. It was only rated as an innate somatic response when the creature

216

unexpectedly snapped its jaws at the audience thus triggering the startle response. A laughter response to a threat situation such as this is explained by one of its original evolutionary functions being its 'effectiveness in averting attack' (Andrew and Huber, 1972: 82). Laughter acts as submissive behaviour and therefore often arises when aggression is encountered. This phenomenon is known more commonly as nervous laughter.

Key moment three: The old fool gets stuck in the tree

The old fool getting stuck in the tree triggered a response at all venues where it was possible to give a rating. In this case the laughter was caused by an expected pattern being broken. The predictive nature of pattern recognition would have expected the old fool to continue moving in the same direction at the same speed. When the visual brain was suddenly presented with different incoming information, the perceived novelty triggered an aroused state that, in this instance, was intense enough to produce a phatic response in the majority of cases.

Key moment four: The baby is thrown into the tree

It was predicted that this slapstick moment should trigger a response in the majority of people. However, it had the unexpected result of having no response at five out of the eighteen venues. Closer examination of the evidence revealed an interesting phenomenon. Instead of laughing at the moment the baby was flung into the air, the laughter happened earlier in the narrative. When the audience saw the hero walking towards the outstretched cloth held by two other characters, they predicted exactly what was going to happen, that is, the baby would be placed on the cloth and launched into the air. It was this pre-knowledge, enabled by the predictive nature of the pattern recognition systems (Gregory, 1998: 8), which triggered their laughter. Instead of evidencing lack of engagement, this response would not have been possible without good engagement with the visual narrative.

Key moment five: The baby is sick on the audience

This stage action produced a consistently high rating of either 2 or 3 across the majority of the venues because the laughter was widespread amongst either a large section of the audience (rated 2) or the vast majority of the audience (rated 3). This result was mainly due

to a combination of two neurobiological phenomena, namely the 'as if body loop' (Damasio, 2000) and relief theory (Spencer, 2004 [1868]). The relief theory explains the laughter by those who got wet. The strong arousal caused by the shock of being sprayed with water needed a release to prevent nervous damage. Members of the audience watching this response would have themselves joined in the laughter. This is explained by the psychologist James Russell who writes:

> When you yawn in response to witnessing a yawn, or laugh in response to a laugh, you are not making a conscious effort to imitate someone. More likely you are experiencing the trigger of a neurobiological "stimulus feature detector" (ethological "innate releasing mechanism" or IRM) that activates the species-typical, stereotyped (fixed) action pattern of the yawn in the visual domain or laughter in the auditory domain […]. Such sensory feature detectors are likely to have evolved to select the simple, stereotyped species-typical acts of yawning or laughter than more arbitrary and variable behaviour learned during the lifetime of the individual. (1997: 161)

Thus, the resulting laughter at this point in the performance was clearly innate rather than a culturally conditioned response. It is a natural, biologically innate way of giving a community a coping mechanism for dealing with stress that might have a negative effect on everyone within the community unless it is dissipated. In this case, it heightens the feeling of pleasure the audience is getting on viewing the performance.

Key moment six: The balloon is inflated in the hands of the child (magic)

The expected response to the illusion on stage (which was designed to appear magical due to the absence of an immediate logical explanation as to why a hand-held balloon would suddenly inflate) was silence, with a change in facial expression where the mouth falls open due to muscle relaxation. However, the audience tended to respond vocally, and sometimes did not respond at all. The reason for this could be explained by Spencer in his essay *The Physiology of Laughter* (2004 [1868]) in which he argues that '[w]hen after something very insignificant there arises without anticipation something very great, the emotion we call wonder results, and this emotion is accompanied not by an excitement of the muscles, but by a relaxation of them' (2004 [1868]: 206). The relaxation only occurs if the new state of consciousness 'demands far more nervous energy than that which it has suddenly replaced, and this increased absorption of nervous energy in mental changes, involves a temporary diminution of the outflow in other directions: hence the pendant jaw and the relaxing grasp'

(2004 [1868]: 206-207). It is most likely that the predicted effect was not achieved because the difference in the stimulus being received from the moment just before the balloon was inflated and the moment of inflation was not great enough to trigger the relaxation effect innately. In other words, the magical effect was just not magical enough. In some of the outdoor venues when the audience might not have been present at the start of the performance, they would not have seen the balloon being burst and put in the child's pocket. Therefore, its inflation after it had been taken out of the pocket would not have been quite so surprising. Also, if the narrative was not strong enough or sightlines were poor, then the audience might not have understood that the dog licking the balloon had the magical effect of causing the balloon to inflate.

Post-Show Questionnaire on Enjoyment

The results from monitoring facial expression and recording phatic cries indicated that innate responses were triggered in audience members in all venues at some point in the performance. However, it was not possible to determine the age or ethnicity of the respondents using this method, so supporting methodology was also applied in drawing conclusions.

Each time a phatic response was made, feel-good chemicals would have automatically been released into the nervous system. This would create a feeling of pleasure or well being. Each audience member was asked to monitor this feeling consciously in a post-show questionnaire which requested them to rate their enjoyment of the show on a scale of 1 to 10. This way each individual would be able to articulate the pleasurable feeling produced by the chemicals that had been innately released in their bodies in terms of their enjoyment of the show. The hypothesis was that if the show successfully triggered innate responses in the audience, then their conscious rating of enjoyment should be nearer to ten. If the show was unsuccessful in promoting laughter and phatic responses, then there would be little change in the feel good chemicals in the nervous system at the end of the show and therefore the enjoyment rating would be mid-range. If the audience had been bored or uninterested then the rating would be low. A high score in all age groups, all ethnic groups and across all venues would indicate that the hypothesis was supported. A low standard deviation would indicate that most individuals were in agreement as to the rating. A

comparison of the mean between age, ethnicity and venue would indicate if any of these was an influencing factor in the overall enjoyment of the piece.

Results showed that the audience enjoyed the show to a large extent regardless of their age (see fig. 22). The mean rating of enjoyment was 9.19 across all age groups which suggested a very high level of enjoyment. The low standard deviation (0.18) means that the majority of individuals gave a similar rating. This is a little surprising as it was expected that the children would have a heightened response to the show because they are more reliant on instinctive responses until adulthood (Winnicott, 2005 [1971]). Their neo-mammalian brain is not fully developed, their culturally learned experiences and responses are still unrefined and they have not mastered the art of self-control that our culture demands of its adults. The results might have been affected by some of the young children being scared of the evil ruler and the devil dog. It was observed at some venues that some young children burst into tears on the entrance of these characters. The tears indicate a heightened innate response that needed relief (Spencer, 2004 [1868]), but without the life experience to override the innate response to the perceived danger, in conjunction with the response being further exaggerated by the peak shift effect in the facial expressions of the mask, it might have meant a reduced rating when asked how much they had enjoyed the show.

It is interesting to note that those aged over 65 had the highest rating of enjoyment at a mean score of 9.45. Yet this age group had the lowest rating for their overall understanding of the show (see fig. 25) with a rating of 3.97 out of 5 indicating that they had understood most of the show but not all of it. This age group also thought the characters were not as clear as other age groups (see fig. 7, fig. 9, fig. 12, fig.15, fig.18). This suggests that enjoyment of the show was not dependent on either the overall understanding or the clarity of the characters. This supports the notion that innate responses were involved in creating the pleasurable feeling associated with the show.

Age and Enjoyment

Fig. 22

The age group that enjoyed the show the least was the age group 35 to 40 with an average rating of 8.90. As this age group are most likely to be accompanying their children to the performance and their attention is being divided between them and the show, then a possible explanation might lie in selective attention theory. Selective attention means that there will be 'appropriate filtering to eliminate all sensory input except for a carefully selected small subset' (Nieber and Koch, 1998: 163). This condition leads to a state of vigilance and the biological advantage of this is clear, as a 'vigilant animal can alertly and freely explore its environment; such exploration allows it to learn, adapt, and survive' (Parasuraman *et al.*, 1998: 221). However, this ability also has a negative effect for 'information to which attention is selectively allocated is processed more efficiently than non-attended information' (Umiltà, 2000: 393). In other words, when attention is split, the information being received that is not the primary focus of attention will be 'filtered out' (Umiltà, 2000: 393). This does not mean it is ignored completely, but merely that it is processed less efficiently. If adults had their focus split between the show and their family welfare, if they were consciously checking that their children were not being frightened by the characters or action, then this might have affected their own response. They would have

still been aware of the show going on whilst they were attentive to their children, but active processing of the information would have been reduced. Therefore gaps in the narrative would occur, and innate responses to colour and music and action would have been reduced at these moments. At the end of the show, there would have been a slightly lower level of opioid chemicals in their nervous system possibly affecting their rating of their enjoyment.

The results show that ethnicity did not significantly effect the enjoyment of the show (see fig. 23). A mean enjoyment rating of 9.31 indicated that enjoyment was very high. A low standard deviation of 0.26 indicated that the majority of individuals in the survey were in close agreement with the average score.
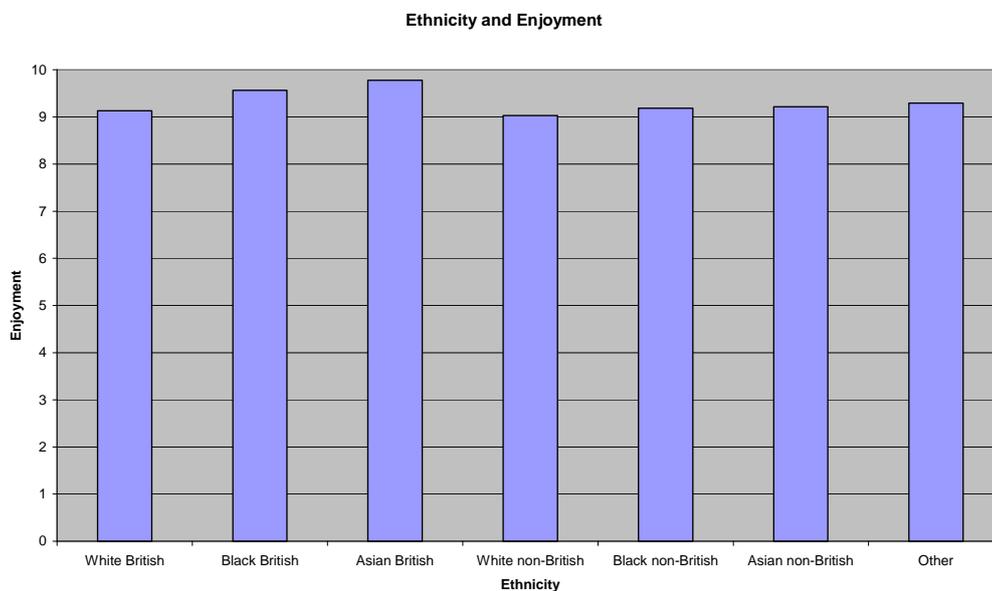
Fig. 23

The mean rating of British audience members was 9.49 compared with 9.14 for non-British audience members. A t-test gave a value of t = 0.21 (see appendix S) indicating no significant statistical difference. However it does indicate that British people found the show slightly more enjoyable than non-British people. It is interesting to note that Black British and Asian British audience members enjoyed the show slightly more than White British audience members, and Asian and Black audience members enjoyed the show slightly more than white people from other backgrounds.

This might be due to the regular use of masks within both Black and Asian mainstream cultural life, whereas in the West, where the current theatrical hegemony is still toward naturalism, masks are more a fringe or alternative form of entertainment. Susan Smith writes in her book *Masks in Modern Drama* that 'to an audience conditioned by realism, it is an act of aggression to be confronted by a masked actor' (1984: 179). Therefore the westernised White British and White audience members from other backgrounds might have needed slightly longer to feel comfortable with the style of performance which might have marginally inhibited the innate response of laughter.
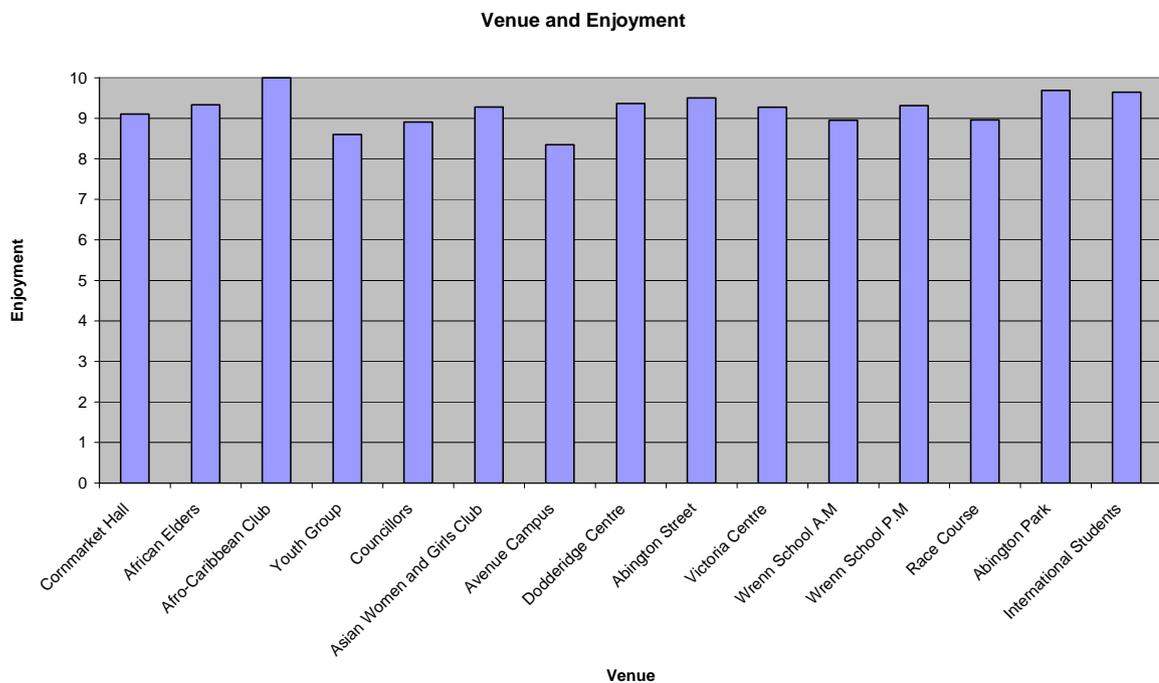
Fig. 24

The venue did not significantly affect the audience's enjoyment (see fig. 24). The mean rating of enjoyment was 9.22 which indicated a high level; the low standard deviation of 0.42 indicated that the majority of individuals were in agreement with this rating. It is interesting to note that the venue with the lowest enjoyment rating was a University Campus. Here the audience were students and lecturers of drama and performance alongside a few members of the general public. Arguably this audience were more

knowledgeable and experienced in viewing and analysing theatre. It is possible that this audience was trying to respond to the performance on an intellectual level thus being in a telic state instead of the paratelic state necessary to respond to the performance in a playful manner. Peter Brook suggests 'the intellect alone--protects us from true feeling, stifles and camouflages the spirit in a blind collection of facts and concepts' (cited in Heilpern, 1999: 72). Brook prefers the more natural, and therefore direct, response of children and has been known to workshop sections of performance with an audience of young people to help him monitor if the content is engaging or not. He believes that '[t]hrough experience and understanding the adult struggles to arrive at the same point the child reaches through innocence' (cited in Heilpern, 1999: 206). This is supported by the survey results from the Afro-Caribbean after school club where all the children under the age of thirteen who responded rated their enjoyment at ten out of ten.

Section Three - Understanding

It order to maximise understanding of the performance, its structuring was informed by the innate systems of pattern recognition inherent within the brain (Dodwell, 1970). A simple narrative structure was employed (see DVD *The Magic Fruit* performance) which included mythic elements, for example the stuggle between good and evil, and followed Victor Turner's concept of social drama (1982). The 'breach' was represented by a baby being taken away from its family under orders from the evil ruler. The 'crisis' was the hero fighting the evil ruler to secure the baby's safe return and the 'redress' involved both 'schism' with the overthrow of the ruler and 'reintegration' of his sidekick, the devil dog, as an accepted member of the community.

To aid understanding further, the relationship between pattern recognition and the physiological response to music was considered. An original musical score was composed using a range of instruments from around the world, and was informed by primitive grouping theory (Bregman, 1990). It underscored the desired emotional response to both character and action (see DVD *The Magic Fruit* performance). For example, the entrance of the evil ruler was underscored by an arousing drum-roll (fast and loud), whereas the

entrance of the child was underscored by a high-pitched, repetitive tune to arouse mildly and give pleasure (Balkwill and Thompson, 1999). A fight sequence was underscored by loud, unsequenced, arhythmical and therefore unpredictable sound which would trigger an aroused, alert state (Mandler, 1984), whereas a harmonious scene with community dancing was enhanced by a fast paced, loud drumming sequence to arouse the audience with repeated motifs to give pleasure (Balkwill and Thompson, 1999). Silence was deliberately employed on occasions, such as the apparent death of the old fool, to eliminate any auditory arousal thus supporting the *gravitas* of the occasion.

The hypothesis was that if the concept of pattern recognition had informed the structure of the show successfully and this was supported by appropriate musicality to help trigger the desired emotional response, then the audience should have been able to understand the performance regardless of their age, ethnic background or social and cultural experience, despite the fact that no language was used at all in the performance. To test this, the audience were asked how much of the show they understood, where a score of [1] indicated none of it, [2] less than half, [3] half of it, [4] most of it, and [5] all of it. To correlate this data the numerical value of each statement was taken from each questionnaire to calculate an average level of understanding across venue, age and ethnic background. If the hypothesis was correct then most of the show would be understood and the mean would be near to 5. If the show was not understood very well then the mean would be nearer to 1.

Results showed that understanding was high in all age groups (see fig. 25) with a mean rating of 4.3 evidencing that the majority of people understood most of the performance. A low standard deviation of 0.19 meant that all individuals were in close agreement with this rating. The age group which evidenced the lowest mean level of understanding was the over 65s with a mean of 3.96 which nevertheless indicated that they had understood most of the show. In *The Handbook of Aging and Cognition* Naftali Raz writes that 'aging is associated with decline in several global properties of the brain, both structural and functional. Those changes must be considered in any theoretical account of age related differences in cognitive performance' (2000: 13). It must be considered then that the reduced level of understanding in the over 65 age group might not be a reflection of the performance *per se* but rather a reflection of the aging state of the older brain, for 'older

225

adults may be slowed relative to young adults by a constant proportion regardless of the nature of any specific task' (McDowd and Shaw, 2000: 223). The task in this case demanded unfamiliarly long periods of sustained visual attention. Given that deficits in visual selective attention amongst older adults have been identified by a number of different studies (McDowd and Shaw, 2000: 223), then it is entirely possible that those in the older age group could not sustain attention for long enough periods to receive all the information necessary to process the patterns being created in the narrative. With some gaps in the visual patterns, the narrative would not necessarily be as clear. However, those in the age group clearly enjoyed the performance rating their enjoyment at a mean of 9.45 out of 10 (see fig. 22), suggesting that they were still receiving the aural stimulation from the music and general visual stimulation from the colours and exaggerated faces of the masks, all of which aroused the emotional limbic regions of the brain. The slower processing of this information was not detrimental; the stimulation was still received, just at a slower pace. This is supported by evidence that 'emotional functioning is well maintained in later life […]' (Isaacowitz *et al.*, 2000: 594). We can conclude then, that the findings do not necessarily disprove the hypothesis. The fact that the older people's understanding, although lower than other age groups, was still very high suggests that the show was still suitable for the older generation.
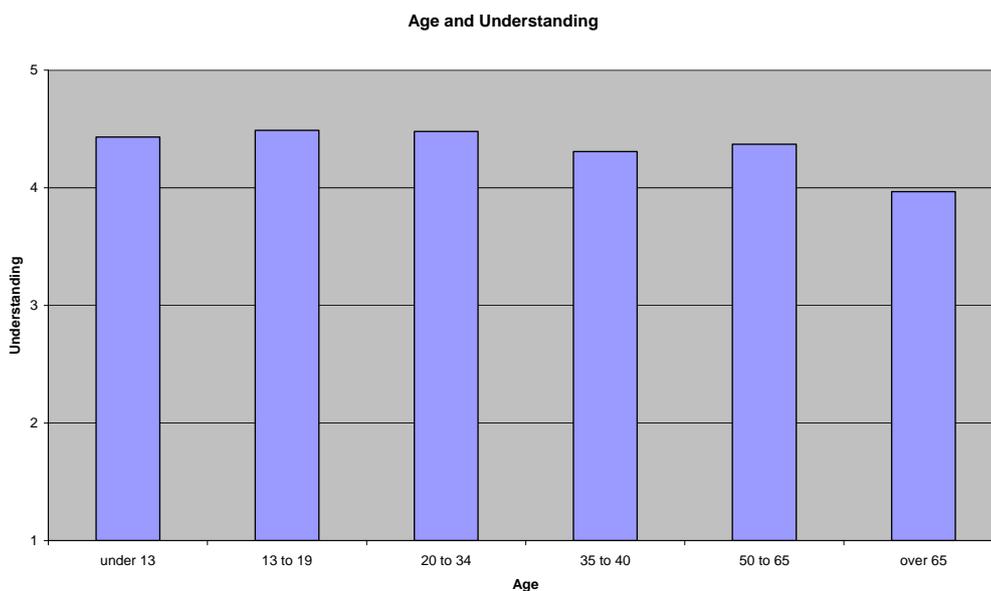
Fig. 25

There was a high level of understanding throughout all ethnic groups (see fig. 26) with a mean understanding of 4.31. This indicates that although not every single aspect of the show was understood, by far the greater part of it was comprehensible. The low standard deviation of 0.17 indicates that each individual was in close agreement with this rating. The lowest rating came from Black audience members at 4.06. Given that 27% of this category also fell into the over 65 age group (due to the performance given to African Elders) it is possible to suggest that age was the key influencing factor in this result. It is possible to conclude that ethnicity did not influence understanding to a significant degree.
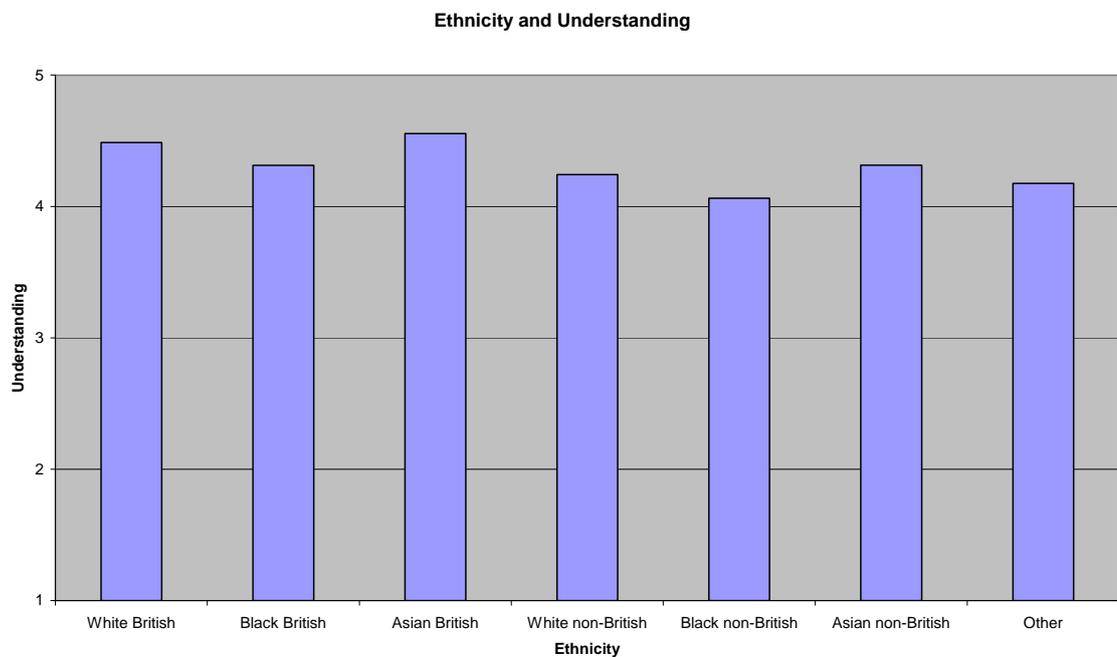
Fig. 26

The results where understanding was rated against venue evidence that at most venues understanding was high with a mean of 4.26, indicating that most of the show had been understood (see fig. 27). However, there was one anomalous result with regard to The Hemmingwell Centre, where the show was rated 2.4 indicating that under half of the

performance was understood. The Hemmingwell Centre is on a council estate in a deprived area of Wellingborough. The performance took place on an outdoor basketball court which was normally used as such during youth club hours. The youths who wanted to play basketball were very displeased at having their court taken over, and before the show started were showing their discontent by riding their bikes over the stage, taking small musical instruments from the set and riding off with them.

Venue and Understanding
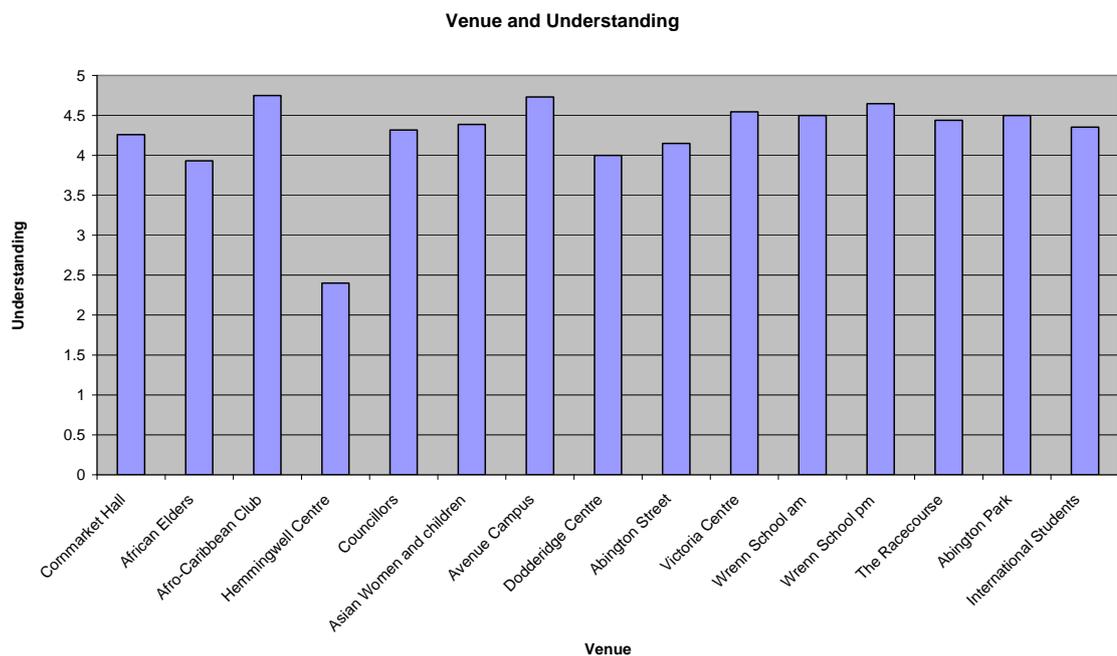
Fig. 27

Order was eventually restored and the show proceeded as planned. None of these youths watched the show from the designated audience space, though some did stay viewing through the surrounding mesh fencing. It was a measure of success that the performance itself was not disrupted. None of these youths stayed behind to fill in questionnaires, neither did many of the seated audience. As a result, the sample taken was very small indeed (just five responses), all of which were from very young children who had emerged from the surrounding houses when they realised a performance was going to be given.

These children were of pre-school age and could not read very well. The questions had to be read out to them by the researchers who then noted their responses. Two of these youngsters replied that they had not understood very much of the show and this significantly affected the result due to sample size. Two others understood half of the show and one understood most of the show. Despite the small sample size, young pre-school children did experience some difficulty understanding the content. Jerome Kagan (1984) proved that 'based on the growth of the brain and body systems, new abilities and higher-level capacities for organizing experience emerge across time' (Davies, 2004: 3). It is possible then that the brain of pre-school age children is not developed enough to process the complex information that it was receiving from the non-verbal performance. The fact that 'the brain does not reach adult weight until 12.5 years of age' (Sireteanu, 2001: 629-630) lends further support to this suggestion.

Watching a visual performance requires a mixture of pattern recognition and interpretive analysis to attach meaning to the incoming stimuli. Given the clear link between pattern recognition and narrative, it is no surprise that child development expert Douglas Davies has shown that constructing narrative is 'an accomplishment that preschool children practice and school-age children achieve' (2010: 401). It is possible to deduce from this that the pattern recognition mechanisms are still immature in preschool children. Indeed, in terms of brain development, 'higher order visual functions […] require even longer development periods, extending well into late adolescence. The progressive maturation of visual functions in childhood reflects the asynchronous development of the neural structures involved in the process of seeing' (Sireteanu, 2001: 629). This under-developed visual ability in pre-school children has also been noted by child psychologists Jean Piaget and Bärbel Inhelder, who concluded after conducting several experiments with different age children that 'there is some inadequacy in visual structuring at 4 years' (1997: 42).

These findings have shown that the hypothesis that the content of *The Magic Fruit* should be equally accessible to all members of many diverse communities has been proved incorrect in that there appear to be limits as to the degree of understanding achieved based on age. This research has found that there is a lower age limit to which performance material of a visual nature can be understood. The affected age group seems to be pre-

school children. That noted, three of the five children rated their enjoyment at 10 out of 10, one at 8 out of 10 and the fifth 5 out of 10. Clearly their pleasure reward systems were receiving the stimulation from laughing, surprise, movement, colour and music to warrant a pleasurable emotional response to the show despite their lack of understanding of the narrative.

Interconnectivity

For the purposes of this research, it was necessary to break the audience reception down into three categories, clarity of character, understanding of narrative, and level of enjoyment. However, in terms of brain function, all these elements are interlinked and therefore interdependent to a certain extent. This interconnectivity is explained by psychiatrist Sarah Meadows:

> All stimulation of the intact nervous system goes to the cerebellum, the brain stem and the limbic centres, the parts of the brain which organize balance, arousal, emotion and other vital functions. The cerebral cortex receives input via the thalamus. As I said earlier, each primary sensory area of the cortex is connected to its secondary sensory area. Each secondary area is connected with the corresponding area in the other hemisphere, with all other sensory areas in the same hemisphere, and with the association areas, which as their name implies are concerned with connecting the various kinds of input to make a coherent system. (1993: 275)

This interconnectivity is why what we see or hear can engender physiological change, can trigger emotion and is also why somatic changes can stimulate both memory and emotion. Clearly the ability to 'read' the character affected the general understanding of the show. One possibly surprising result was that the understanding of the performance did not seem to affect enjoyment. On closer examination this should not have been unexpected given that the aim of the devising process was to create material which would stimulate innate responses. The innate human neurobiological system is designed to support survival by enabling a quick response to specific changes in environment. To achieve the necessary speed, the neo-mammalian or conscious brain receives the information for processing after the subconscious, innate areas of the brain (Ekman and Rosenburg, 2005: 21-35). It is the neo-mammalian brain that is involved in cognitive processing and will make sense of incoming stimulation to produce meaning. However, the innate response will already have

started and although it can be impeded or slowed down by the neo-mammalian brain, it cannot be stopped (Ekman and Rosenburg, 2005: 21-35).

Conclusion

When drawing conclusions from this type of data it is important that they are appropriate for the research methods employed. Sherri Jackson notes that this is particularly important for quasi-experimental methods as used in this study, where she suggests conclusions should be tempered due to inherent limitations. These limitations she lists as: 'open to many confounds, no comparison group, and no equivalent control group' (2009: 325), and explains:

> This means that, although we may observe a relationship between variables, we cannot conclude that it is a causal relationship because there could be other *alternative explanations* for this relationship. An *alternative explanation* is the idea that it is possible that some other, uncontrolled, extraneous variable may be responsible for the observed relationship. […] Thus, because these methods leave the possibility for alternative explanations, we cannot use them to establish cause-and-effect relationships. (Jackson, 2009: 17)

This is supported by Paul Heppner *et al.* who state that in 'low control studies, researchers can make inferences about relationships but not about causality' (2008: 68) and K.D. Broota also agrees that 'the conclusions cannot be drawn with as much confidence as from the studies employing experimental designs because the assumptions (e.g. randomization) underlying the statistical test are violated in the quasi-experiments' (1989: 10). However Broota points out that 'the statistical tests applied to the data obtained from quasi-experimental designs are the same as those applied to data in experimental designs' (1989: 10). It is merely the conclusions that differ. This is supported by Jackson who agrees that if researchers adopt quasi methods, even though they use the same statistics as in true experiements, they are limited in the conclusions that can be drawn (2009: 325).

Thus the conclusions summarized below do not seek to determine cause and effect but instead suggest possibilities that are plausible given the analysis of the data, but clearly require much further research before anything is proven (if indeed that is possible). In making the tentative conclusions there is inherent acknowledgment that many other factors might have influenced the results, some of which are considered in detail in the next chapter, and some of which might never be known.

The informed decisions underpinning the behaviour of the characters, supported by the design of the masks and accompanying music, were possibly successful in contributing to the depiction of archetypal characterisations that were very accessible to the vast majority of audience members surveyed regardless of their ethnic or social background. However, age probably had the affect of slightly reducing the accessibility to young pre-school age children and senior citizens over the age of 65 years.

The informed decisions underpinning the creation of the overall narrative structure alongside the internal games structure possibly contributed in making the narrative very accessible to the vast majority of the audience regardless of their ethnic or social backgrounds. However, age probably affected the overall understanding of the show with reduced accessibility to those of pre-school age and senior citizens over 65 years old.

The informed decisions regarding the use of play and clowning techniques such as slapstick possibly contributed to making the humour of the piece very accessible to all audience members regardless of their ethnic or social background or their age.

.

Chapter Nine - Conclusions and Implications

> It is this process of triggering uncontrollable involuntary responses that is of most interest to any discussion of how we can account for the role of sensation in communication, perception, and theatrical expression. If we understand how this happens, then we can understand how we can harness it to create a powerful theatrical experience. (Di Benedetto, 2010: 8)

Research Findings and Implications

This thesis started with a research problem concerning the viability of creating a widely accessible piece of masked theatre that might be understood and enjoyed by anyone who saw it regardless of their age, social background or ethnicity. A working hypothesis developed that considered whether accessibility might be widened through the consideration of neurological responses in human behaviour during the creative processes. In doing so the thesis did not seek to suggest that these considerations alone might be responsible for any findings relating to accessibility, but rather it sought to question whether applying this knowledge might have a noticeable impact on the wide number of variables that affect audience reception.

The quantitative results gathered from audience surveys seemed to suggest that *The Magic Fruit* was highly accessible in that the vast majority of audience members found the show enjoyable, understood it, and recognized the character types. The qualitative data gathered from video recording of the audiences' response seemed to support these findings. At key moments in the piece audience members reacted with facial expressions, and/or phatic cries, and/or bodily movements evidencing they had experienced a physiological response to the piece. However the inherent limitations of quasi-experimental methodology mean that it is not possible to claim that these results were exclusively caused by the consideration of the innate neurology informing the devising process. Any number of uncontrolled factors might have had an effect on the audience's response (see limitations below). This thesis can only suggest that it is a strong possibility that the consideration of innate responses in human behaviour contributed to the accessibility of the performance.

This means that implications are somewhat limited at this point until further research has been conducted (see suggestions below).

However, this thesis has contributed to the body of knowledge through its examination of the relationship between the devising processes of a full-masked performance, neurobiology, human ethology and the accessibility of audience reception. It argued that important factors in accessibility might be familiarity and empathy, but that in order to avoid boredom, novel elements and elements of surprise would be simulating and should help sustain the attention of the audience. It pointed out that trying to stage 'the familiar' to an ethnically diverse audience had inherent political problems that could potentially affect accessibility negatively. Research surrounding the concept of the innate found that although there is evidence to support the existence of innate neurological structures common to all humans, expression is affected by the cultural environment of each individual and so universal commonality *per se* does not seem to exist.

Due to the heuristic nature of neurological systems, their ability to plan and predict, and in particular the workings of the mirror neurons, this thesis proposed that any behaviours with innate roots have the potential to be accessible to an audience despite cultural differences in their manifestation. This had implications for the staging of accessible characters. It argued the most accessible character types might be archetypal as defined by their behaviour and suggested global myths and legends would be a good starting point to find accessible archetypes and mobilised the theories of Carl Jung (1959) and Jerzy Grotowski (2002) to explain the term archetype. It also had implications for the accessibility of innate play behaviour, and similarly argued that this might be widely accessible if portrayed on the stage, particularly because children as well as adults would be able to recognize and understand playful behaviour.

Furthermore, research evidenced narrative as an inherent part of human life and thus argued simple narrative patterns presented on stage should be accessible to a wide audience. This study revealed that myth is to be found in human life around the globe as a way of making sense of the environment and the evidence for this is that pattern recognition systems not only recognized patterns and sequences (including narrative) but could create novel

patterns (new narratives). Consequently, it argued that mythical problems would most likely be widely accessible when portrayed on the stage. Similar arguments were made for the patterning and sequencing of music and dance.

Comedy was discussed in relation to neurology, and findings suggested that incongruent humour, elements of clowning (such as slapstick) and play were all likely to be accessible if portrayed on stage due to the innate systems involved in processing them. This study highlighted the concept of telic and paratelic states and explained that a paratelic state is needed to access comedy and proposed that important factors in achieving a paratelic state might include playful behaviour and masked acting.

This thesis also considered accessibility in relation to the design of theatrical masks in terms of facial feature and colour. It suggested that universal facial expressions as proposed by Paul Ekman (1982) were a good starting point for investigation for the facial features alongside considerations of how the autonomic nervous system reacts to colours in either an ergotropic or trophotropic manner. Innate behaviour, play, narrative and myth all seem important interlinking factors when considering elements of theatre that are important in relation to an explicit, wide accessibility.

In reaching these conclusions about the relationship between accessibility and innate responses in human behaviour this thesis does not wish to imply that all devised performance should make the same considerations, or indeed that all theatre should aspire for wide accessibility. However, there are some areas of theatre where this study's approach might usefully be applied.

1) The devising approach could be usefully applied by practitioners who are required to create theatre in areas of Britain where the community is made up of people from a range of ethnic backgrounds. A community-based audience would be able to share a theatrical experience which aimed to promote shared laughter, a phenomenon that has been demonstrated 'to reinforce social bonds and build community' (Schwekbe and Gryski, 2003: 55).

2) Performances using this devising approach are particularly suited (though not limited) to non-traditional venues such as community centres, the street, and parks where local people of all ages and social backgrounds who do not usually go to the theatre have the opportunity of experiencing a performance as an audience member. Susan Bennett notes that '[o]utside the larger urban centres, limited access to theatre will undoubtedly change an audience's sense of the theatrical event. In some instances, where there is generally no access to the theatre, potential audiences may have little conception of the theatrical event. This distance would inevitably create problems in reception […]' (1997: 102). It is possible that this devising approach might help reduce problems with reception encountered by more traditional forms of theatre performing to non-theatre going audiences.

3) Benefits could also be found in applying the research findings to community education projects to help create performance work which is accessible to a wide range of ethnic groups regardless of educational backgrounds. This would be particularly useful for education programs addressing communities experiencing a liminal or stressed state, for example in areas of high unemployment, areas of social deprivation or areas of religious tension. Research indicates that 'positive emotional states, in themselves, promote creative thinking and problem solving as well as fostering social responsibility and prosocial behaviours such as helpfulness and generosity' (Martin, 2007: 109). Performances of this type might have a beneficial effect on the community as a whole through release of endorphins as a result of stimulation of the innate pleasure reward system.

Limitations

The inherent difficulties in the research methodology employed inevitably led to some limitations. First, it is clear that there is far more to audience reception than just the performance itself, as Willmar Sauter points out: '[t]here is no theatre which does or did not take place as an event' (2004: 13). By 'event' he means everything that affects the performance both directly and indirectly. Jacqueline Martin describes three circles of context that help define the eventness of theatre. The first circle concerns 'the act of communication between the performance and audience' (in Cremona *et al.*, 2004: 2) and

this was the main concern of this project. However, given that there were improvised sections, the performance would not be exactly the same every time and this variability limits the transferability of findings in ways that would not be acceptable in a traditional, scientific experiment. The second circle of context concerns 'the experience the audience has of different theatre and other aesthetic worlds' (in Cremona *et al.*, 2004: 2), and the third 'the political and economic, judicial and ideological worlds that give rise to the theatrical event' (in Cremona *et al.*, 2004: 2). Neither of these circles could be controlled by the researcher and everyone who attended the performance brought their unidentified experiences to its reception. Any one of these might have affected the response and thus the extent to which that person found the piece accessible. The study's findings must therefore be interpreted with these additional factors in mind.

Another problematic element of the theatrical event is its location, for as Bennett argues a spectator's experience is shaped by location because 'the milieu which surrounds a theatre is always ideologically coded' (1997: 126). Richard Knowles agrees, suggesting that audience reception can be affected by the geographical location of the event, both because of the way it is 'read' and through the journey of the spectator in getting to the performance (2004: 80). This research project sought to mitigate the effect of the location on the event by taking the performance into a space that was familiar to each target audience but it was not possible, however, to do this in a completely consistent way. For example, in public spaces such as parks and the street the spectators were surprised by the event, had come to the location for another reason and had not made a premeditated choice to become a spectator but a spontaneous one. This is a significantly difference experience from someone who had travelled to a familiar venue knowing there would be a difference to the normal activity they undertook there and instead they would be watching a performance. This difference in experience before even viewing the performance itself has the potential to affect audience response. However there was no way of allowing for this difference in the gathering of the quantitative data, nor in the monitoring of the physiological response to the show.

Peter Eversmann argues that theatrical space itself also plays 'a significant role in facilitating the theatrical experience--especially as regards the need to focus the spectators'

attention, to optimize communication between performers and audience, and to enhance the unity of the event' (2004: 166). In the traverse staging adopted by this production, the audience were in full view of those audience members directly opposite. Bruce McConachie argues that this could have an effect on the empathetic response of the audience:

> Uniting a theatre audience through empathy is not as easy as it used to be, however, when Western audiences could see each other in a lighted auditorium, the facial expressions and bodily movements of others in their seats--in addition to their audible vocalizations--helped to evoke a more uniform response among spectators then today, when darkened houselights inhibit emotional contagion. (2008: 97)

The 'emotional contagion' he mentions is a phenomenon known to theatre practitioners throughout the ages where performances from Roman theatre and in particular late nineteenth century performances were influenced by 'a claque' or group of people who were deployed (and sometimes paid) to generate a noisy visible response either to the play or to particular performers. Laughter is an element which is particularly effective in the claque phenomenon, and this study's interest in the physiological basis of audience experience could be particularly useful in further explorations of this dimension of the success of the performance. James Russell and José Fernández-Dols describe the mirroring of physiology as 'the replication in the perceiver of the motor pattern that originally generated the vocalization in the sender' (1997: 166). Eversmann even suggests that feelings can be intensified by the reactions of others (2004: 171), and Manfred Pfister agrees suggesting that 'collective reception sparks off various socio-psychological group-dynamic processes in which the numerous individual reactions reinforce and harmonise with each other to produce a relatively homogenous group reaction' (1988: 38). This means that it cannot be argued that the performance alone was responsible for the nature of the audience reception and thus the apparent accessibility of the comedic elements. The nature of the event as a total experience including the enjoyment of others could have contributed to the high scores for enjoyment, and this could be explored in a later study through observation of physiological mirroring within the audience. However, it is still arguably the case that the pleasurable audience response found by this study was created in part through watching the performance.

It should be noted that there were also some limitations in the methodology which used questionnaires to generate quantitative data which was then plotted onto graphs. Christopher Balme is critical of such methodology which he agues is appropriate in relation to advertising products but is limited in gauging response to a theatre production because 'one or more group of spectators react to one performance or set of performances. Therefore the data collected are of little use outside one specific situation' (2008: 42). Although he is discussing semantic differentials specifically, his final comments are seen as relevant to this study, as they imply that the results of the data analysis can only be meaningfully made to each specific audience encountered rather than a general claim of accessibility no matter whom the performance is played to. This certainly suggests that caution should be used if seeking to generalise the results to the wider population unless or until similar research projects report their results.

Suggestions for Further Research

Anthony Jackson importantly writes that '[r]eception (or response) theory in placing the audience at the centre of the meaning-making process, requires enormously systematic and extensive (qualitative and quantitative) and often long-term research' (1996: 38). Investigations into the relationship between neurology and the performing arts are ongoing in the field as more discoveries are being made about how the brain works. The research findings in this study indicate that the concept of accessibility might be a fruitful area for further research but more importantly that further long-term research is a necessity.

The funding of this project limited the performance of the research outcome to one region in England which had a diverse community. Further research ideally needs to be conducted within the global community before any substantial evidence can be gathered. This might include touring the performance worldwide to a range of audiences in different cultures, for example, Africa, Asia and South America where the material could be performed to audience members who have a limited experience or knowledge of the researcher's cultural background. This would be a more comprehensive method of testing the extent to which findings from human ethology can affect the accessibility of devised performance.

239

Another potential area for more research might lie in experiments into the effect of body posture and facial expression on the creative output of the actor. Grotowski (2002) created practical exercises using this methodology to forge links with archetypal roots in his performers and Felicitas Goodman (1990) has conducted research with dancers to explore the relationship between posture and creativity. This study touched on a similar experiment in trying to stimulate behaviour suitable for archetypal characterizations. The research was necessarily provisional in its findings because it was only conducted with the actors working on this project. Further experiments could subject actors from all over the world to the same set of postures and facial expressions suggested by this research to see if any more evidence emerges to support the theory that archetypal behaviours can be stimulated through the presence of a specific set of somatic stimuli.

This project was inspired by the work of Peter Brook and fuelled by a personal belief that theatre should be accessible to everyone, that is, no one should feel that theatre is not for them because they would not be able to understand it or because they would not enjoy it or because it was too elitist for them. Despite winning a multicultural achievement award, the most rewarding moment in this project for the researcher was when some disaffected youths threatened to disrupt an outside performance of *The Magic Fruit* taking place on the basketball court where they would normally be playing. Not only did those youths refrain, some hung around on their bikes watching from outside the wire fencing and furthermore stayed until the end. This was evidence of active engagement with a piece of theatre they found accessible. It was probably the first time they had seen any theatre and hopefully it will not be their last.

Bibliography

Alexander, Victoria D. (2003) *Sociology of the Arts: Exploring Fine and Popular Forms*. Malden, MA: Blackwell Publishing.

Allain, Paul (2003) *The Art of Stillness: The Theatre Practice of Tadashi Suzuki*. New York: Palgrave Macmillan.

Allain, Paul and Harvey, Jen (2006) *The Routledge Companion to Theatre and Performance*. London: Routledge.

Alley, Thomas R. (ed.) (1988) *Social and Applied Aspects of Perceiving Faces*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Alsford, Mike (2006) *Heroes and Villains*. Waco, TX: Baylor University Press.

Andrew, Richard John and Huber, Ernst (1972) *Evolution of Facial Expression: Two Accounts*. New York: Arno Press.

Antes, Peter J. (ed.) (2004) *New Approaches to the Study of Religion.* Vol. 2: Textual, Comparative, Sociological, and Cognitive Approaches. Berlin: Walter de Gruyter.

Appel, Libby (1982) *Mask Characterization: An Acting Process*. Carbondale, IL: Southern Illinois University Press.

Apter, Micheal J. (1991) "A Structural-Phenomenology of Play" in John H. Kerr and Micheal J. Apter (eds.) *Adult Play: A Reversal Theory Approach*. Amsterdam: Swets & Zeitlinger. pp. 13-29.

Archer, John (1992) *Ethology and Human Development*. Hemel Hempstead: Harvester Wheatsheaf.

Arnold, Mary (2005) *Effective Communication Techniques for Childcare*. New York: Delmar Learning.

Artaud, Antonin (1958 [1938]) *The Theatre and its Double*. [trans.] Mary Caroline Richards. New York: Grove Press.

Artaud, Antonin. (1974) *Collected Works*. Vol. 4, [trans.] Victor Corti. London: Calder and Boyars.

Asante, Kariamu Welsh (2001) "Commonalities in African Dance: An Aesthetic Foundation" in Ann Dils and Ann Cooper Albright (eds.) *Moving History/Dancing Cultures: A Dance History Reader*. Middletown, CT: Wesleyan University Press. pp. 144-151.

Ashbrook, James B. (1993) *Brain, Culture & The Human Spirit: Essays From An Emergent Evolutionary Perspective*. Lanham, MD: University Press of America.

Ashley, Kathleen M. (1990) *Victor Turner and the Construction of Cultural Criticism: Between Literature and Anthroplogy*. Bloomington: Indiana University Press.

Ashperger, Cynthia (2008) *The Rhythm of Space and the Sound of Time: Michael Chekov's Acting Technique in the 21st Century*. New York; Amsterdam: Rodopi.

Aston, Elaine and Savona, George (1991) *Theatre as Sign System: A Semiotics of Text and Performance*. London; New York: Routledge.

Avery, John (2003) *Information Theory and Evolution*. River Edge, NJ: World Scientific.

Azar, Beth (2005) "How Mimicry Begat Culture" [online] *Monitor on Psychology*. Vol. 36, no. 9, p. 54. American Psychological Association. Available from: (http://www.apa.org/monitor/oct05/mimicry.html) [Accessed 27/01/06].

Baars, Bernard J. and Gage, Nicole M. (2010) *Cognition, Brain, and Consciousness: Introduction to Cognitive Neuroscience*. Burlington, MA: Academic Press.

Bachelard, Gaston (1988) "The Mask" in *The Right to Dream*. [trans.] J. A. Underwood. Dallas: The Dallas Institute Publications. pp. 157-166.

Bailey, Kent (1987) *Human Paleopsychology: Applications to Aggression and Pathology*. New York: Psychology Press.

Balkwill, Laura-Lee and Thompson, William Forde (1999) "A Cross-Cultural Investigation of the Perception of Emotion in Music: Psychophysical and Cultural Cues" in *Music Perception*. Vol. 17, no. 1, pp. 43-64.

Balme, Christopher B. (2008) *The Cambridge Introduction to Theatre Studies*. Cambridge; New York: Cambridge University Press.

Banu, George (1991) "The Language of Stories: An Interview with Peter Brook" in David Williams (ed.) *Peter Brook and The Mahabharata: Critical Perspectives*. London: Routledge. pp. 45-51.

Barash, David P. (1979) *The Whisperings Within*. Michigan: Harper & Row.

Barba, Eugenio (1991) "Dramaturgy: Actions at Work" in Eugenio Barba and Nicola Savarese (eds.) *A Dictionary of Theatre Anthropology*: *The Secret Art of the Performer*. London: Routledge. pp. 68-73.

Barba, Eugenio (1995) *The Paper Canoe: A Guide to Theatre Anthropology*. London; New York: Routledge.

Barba, Eugenio (1997) "Theatre Laboratory 13 Rzedow" in Richard Schechner and Lisa Wolford (eds.) *The Grotowski Sourcebook*. London; New York: Routledge. pp. 73-83.

Barker, Clive (2000) "Joan Littlewood" in Alison Hodge (ed.) *Twentieth Century Actor Training*. London: Routledge. pp. 113-128.

Barker, Howard (1993) *Arguments for a Theatre*. 2nd ed. Manchester: Manchester University Press.

Barkow, Jerome H., Cosmides, Leda and Tooby, John (1992) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. Oxford; New York: Oxford University Press.

Barnett, Samuel A. (1988*) Biology and Freedom: An Essay on the Implications of Human Ethology*. Cambridge; New York: Cambridge University Press.

Baron, Robert A. and Richardson, Deborah R. (2004) *Human Aggression*. New York: Plenum Publishing Corp.

Barrett, Lisa F., Niedenthal, Paula M. and Winkielman, Piotr (eds.) (2005) *Emotion and Consciousness*. New York: Guilford Press.

Barthes, Roland (1975) *The Pleasure of the Text*. [trans.] Richard Miller. New York: Hill and Wang.

Barthes, Roland (1977) "The Death of the Author", in *Image Music Text*. [trans.] Stephen Heath. London: Fontana Press. pp. 42-48.

Barthes, Roland (2006) "Myth Today" in John Story (ed.) *Cultural Theory and Popular Culture*: *A Reader*. 3rd ed. Pearson Education Ltd. pp. 293-302.

Bartlett, D. L. (1996) "Physiological Responses to Music and Sound Stimuli" in D. A. Hodges, (ed.) *Handbook of Music Psychology*. San Antonio: IMR Press. pp. 343-380.

Bartlett, Steven James (2005) *The Pathology of Man*: *A Study of Human Evil*. Springfield, IL: Charles Thomas.

Bateson, Charles R. (2005) *Dance, Desire and Anxiety in Early Twentieth Century French Theatre: Playing Identities*. Aldershot; Burlington: Ashgate Publishing Ltd.

Bateson, Paul and Hinde, Robert A. (eds.) (1976) *Growing Points in Ethology*. Cambridge: Cambridge University Press.

Bateson, Paul (ed.) (1991) The *Development and Integration of Behaviour: Essays in the Honour of Robert Hinde*. Cambridge: Cambridge University Press.

Batson, C. D., Sager, K., Garst, E., Kang, M., Rubchinsky, K. and Dawson, K. (1997) "Is Empathy-Induced Helping Due to Self-Other Merging?" in *Journal of Personality and Social Psychology*. Vol. 73, pp. 495-509.

Bear, Mark F., Connors, Barry W. and Paradiso, Michael A. (2001) *Neuroscience: Exploring the Brain*. Philadelphia: Lippincott Williams & Wilkins.

Becker, J. (2001) "Anthropological Perspectives on Music and Emotion" in Patrik N. Juslin, and John A. Sloboda (eds.) *Music and Emotion: Theory and Research*. New York: Oxford University Press. pp. 135-160.

Beckerman, Bernard (1970) *Dynamics of Drama: Theory and Method of Analysis*. Michigan: Knopf.

Begbie, Jeremy S. (2000) *Theology, Music and Time*. Cambridge: Cambridge University Press.

Bell, Deborah (2010) *Mask Makers and their Craft: An Illustrated Worldwide Study*. Jefferson, NC: McFarland & Co.

Bell, John (ed.) (2001) *Puppets Masks and Performing Objects*. Cambridge, MA: MIT Press.

Benedict, Ruth (2005) *Patterns of Culture*. Boston, MA: Houghton Mifflin Co.

Beneli, Iris (1997) *Selective Attention and Arousal* [online] California State University. Available from: http://www.csun.edu/~vcpsy00h/students/arousal.htm [Accessed 26/3/07].

Bennett, Susan (1997) *Theatre Audiences: A Theory of Production and Reception*. London; New York: Routledge.

Bennett, Milton J. (2007) *Basic Concepts of Intercultural Communication: Selected Readings*. Boston, MA: Intercultural Press.

Berger, Peter L. (1997) *Redeeming Laughter: The Comic Dimension of Human Experience*. Berlin: Walter de Gruyter.

Bergson, Henri (2004 [1911]) *Laughter: An Essay on the Meaning of Comic*. Whitefish, MT: Kessinger Publishing.

Berry, Diane and Zebrowitz-McArthur, Leslie (1988) "Impact of Age-Related Craniofacial Changes on Social Perception" in Thomas R. Alley (ed.) *Social and Applied Aspects of Perceiving Faces*. Hillsdale, NJ: Lawrence Erlbaum Associates. pp. 63-88.

Berry, John W., Poortinga, Ype H., Segall, Mashall H. and Dasen, Pierre R. (2002) *Cross-Cultural Psychology: Research and Application*. Cambridge: Cambridge University Press.

Bharucha, Rustom (1990) *Theatre and the World: Performance and the Politics of Culture*. Abingdon; New York: Routledge.

Biederman, I. (1987) "Recognition-by-Components: A Theory of Human Image Understanding" in *Psychological Review*. Vol. 94, pp. 115-147.

Billig, Michael (2005) *Laughter and Ridicule: Towards a Social Critique of Laughter*. London: Sage.

Birdwhistell, Ray (1970) *Kinesics and Context*. Philadelphia: University of Pennsylvania Press.

Birenbaum, Harvey (1988) *Myth and Mind*. Lanham, MD: University Press of America.

Birkhäuser-Oeri, Sibylle and von Franz, Marie-Luise (1988) *The Mother: Archetypal Image in Fairy Tales*. Toronto: Inner City Books.

Blackadder, Neil Martin (2003) *Performing Opposition: Modern Theater and the Scandalized Audience*. Westport, CT: Greenwood Publishing Group.

Blackburn, Julian (2003) *The Framework of Human Behaviour*. London: Routledge.

Blair, Rhonda (2006) "Image and Action: Cognitive Neuroscience and Actor Training" in Bruce McConnachie and F. Elizabeth Hart (eds.) *Performance and Cognition*. Abingdon; New York: Routledge. pp. 167-186.

Blau, Herbert (1987) *The Eye of Prey: Subversions of the Postmodern*. Bloomington: Indiana University Press.

Blau, Herbert (1990) *The Audience*. Baltimore: Johns Hopkins University Press.

Blau, Herbert (1997) "Universals of Performance: Or Amortizing Play" in Richard Schechner, and Willa Appel (eds.) *By Means of Performance: Intercultural Studies of Theatre and Ritual*. Cambridge: Cambridge University Press. pp. 250-272.

Blau, Herbert (1999) *Nothing in Itself: Complexions of Fashion*. Bloomington: Indiana University Press.

Boas, Franz (1940) *Race, Language and Culture*. New York: Macmillan.

Bouissac, Paul (1997) "The Profanation of the Sacred in Circus Clown Performances" in Richard Schechner, and Willa Appel (eds.) *By Means of Performance: Intercultural Studies of Theatre and Ritual*. Cambridge: Cambridge University Press. pp. 194-208.

Bowden, Joseph (2009) "The Devil Inside: Boredom Proneness and Impulsive Behaviour" in Barbara Dalle and Carlo Salzani (eds.) *Essays on Boredom and Modernity*. Amsterdam; New York: Rodopi. pp. 203-226.

Bowlby, John (1969) *Attachment and Loss*. Vol. 1: Attachment. London: Hogarth Press.

Bowlby, John (1973) *Attachment and Loss*. Vol. 2: Separation, Anxiety, and Anger. London: Hogarth Press.

Bowlby, John (1979) *The Making and Breaking of Affectional Bonds*. London; New York: Routledge.

Bowlby, John (1998a) *A Secure Base: Clinical Applications of Attachment Theory*. London: Routledge.

Bowlby, John (1998b) "Point of View" in Gary L. Cooper and Lawrence A. Pervin (eds.) *Personality: Critical Concepts in Psychology*. London; New York: Routledge. pp. 89-102.

Boyd, Robert and Richerson, Peter J. (2006) "Culture, Adaptation, and Innateness" in Peter Carruthers, Stephen Lawrence and Stephen Stich (eds.) *The Innate Mind.* Vol. 2: Culture and Cognition. New York; Oxford: Oxford University Press. pp. 23-38.

Bradby, David and McCormick, John (1978) *People's Theatre*. London: Taylor & Francis.

Brandon, James R. (1990) *The Cambridge Guide to World Theatre*. Cambridge: Cambridge University Press.

Brandon, James R. (1993) *The Cambridge Guide to Asian Theatre*. Cambridge: Cambridge University Press.

Bratanić, Maja (2007) " Nonverbal Communication as a Factor in Linguistic and Cultural Communication" in Anna Esposito, Maja Bratanić, Eric Keller and Maria Marinaro (eds.) *Fundamentals of Verbal and Nonverbal Communication and the Biometric Issue.* Amsterdam: IOS Press. pp. 82-91.

Bråten, S. (2007) *On Being Moved: From Mirror Neurons to Empathy*. Amsterdam: John Benjamins Publishing Company.

Brecht, Stefan (1988) *Peter Schumanns Bread and Puppet Theatre*. Vol. 1. New York: Routledge.

Bregman, Albert S. (1990) *Auditory Scene Analysis: The Perceptual Organisation of Sound*. Cambridge, MA: MIT Press.

Broota, K. D. (1989) *Experimental Design in Behavioural Research*. New Delhi: New Age International.

Brown, Donald E. (1991) *Human Universals*. Santa Barbara: McGraw Hill.

Brunas-Wagstaff, Jo (1998) *Personality: A Cognitive Approach*. London; New York: Routledge.

Bruner, Jerome (1990) *Acts of Meaning*. London; Cambridge, MA: Harvard University Press.

Bruner, Jerome and Haste, Helen (1986) *Making Sense: The Child's Construction of the World*. London: Routledge.

Burgess, Robert L. (2005) "Evolutionary Theory and Human Development" in Robert L. Burgess and Kevin Macdonald (eds.) *Evolutionary Perspectives on Human Development*. Thousand Oaks, CA; London; New Delhi: Sage. pp. 1-20.

Burns, Robert and Burns, Richard (2008) *Business Research Methods and Statistics using SPSS*. London; Thousand Oaks, CA: Sage.

Butler, Judith (2004) *Undoing Gender*. New York: Routledge.

Byrne, Alex and Hilbert, David (eds.) (1997) *Readings on Color: The Science of Color.* Cambridge, MA: MIT Press.

Caillois, Roger (1964) *The Mask of Medusa*. New York: C. N. Potter.

Caillois, Roger (2001 [1958]) *Man, Play and Games*. [trans.] Meyer Barash. New York: Schocken Books.

Calder, Andy, Rhodes, Gillian, Johnson, Mark and Haxby, James (2011) *Oxford Handbook of Face Perception*. Oxford: Oxford University Press.

Callery, Dymphna (2001) *Through the Body: A Practical Guide to Physical Theatre*. London: Nick Hern Books.

Campbell, Jeremy (1986) *Winston Churchill's Afternoon Nap*: A *Wide-Awake Inquiry into the Human Nature of Time*. New York: Simon and Schuster.

Carlson, Marvin A. (1990) *Theatre Semiotics: Signs of Life*. Bloomington: Indiana University Press.

Carlson, Marvin A. (1993) *Theories of the Theatre: A Historical and Critical Survey from the Greeks to the Present*. New York: Cornell University Press.

Carlson, Marvin A. (1996) "Brook and Mnouchkine: Passages to India?" in Patrice Pavis (ed.) *The Intercultural Performance Reader*. London: Routledge. pp. 79-92.

Carlson, Marvin A. (2008) *The Haunted Stage: The Theatre as Memory Machine*. Ann Arbor: University of Michigan Press.

Carlyle, Thomas (1840) *On Heroes and Hero-Worship and the Heroic in History*. London; New York: Ward Lock & Co.

Carpenter, Gail A. and Grossberg, Stephen (eds.) (1991) *Pattern Recognition by Self Organising Neural Networks*. Cambridge, MA: MIT Press.

Carpenter, Gail A. and Grossberg, Stephen (1992) *Neural Networks for Vision and Image Processing*. Cambridge, MA: MIT Press.

Carruthers, Peter, Laurence, Stephen and Stich, Stephen (eds.) (2006) *The Innate Mind*. Vol. 2: Culture and Cognition. New York; Oxford: Oxford University Press.

Carruthers, Peter, Laurence, Stephen and Stich, Stephen (2007) *The Innate Mind*. Vol. 3: Foundations and the Future. New York; Oxford: Oxford University Press.

Carter, Alexandra and O'Shea, Janet (2010) *The Routledge Dance Studies Reader*. 2nd ed. Abingdon; New York: Routledge.

Carter, Rita (1998) *Mapping the Mind*. Berkeley: University of California Press.

Chamberlain, Franc and Yarrow, Ralph (2002) *Jacques Lecoq and the British Theatre*. London; New York: Routledge.

Chamberlain, Franc (2004) *Michael Chekhov*. London; New York: Routledge.

Chambers, Colin (2002) *Continuum Companion to Twentieth Century Theatre*. London: Continuum International Publishing Group.

Chandler, Daniel (2002) *Semiotics: The Basics*. London; New York: Routledge.

Chapman, Anthony J. and Foot, Hugh C. (1996) *Humor and Laughter: Theory, Research, and Application*. New Brunswick, NJ: Transaction Publishers.

Charney, Maurice (2005) *Comedy: A Geographic and Historical Guide*. Vol. 2. Westport, CT: Praeger.

Chekhov, Michael (1985) *Lessons for the Professional Actor*. New York: PAJ Books.

Chekhov, Michael (2002) *To the Actor*. London; New York: Routledge.

Cheng, Meiling (2002) "Haiku in the Flesh" in Rebecca Schneider and Gabrielle Cody (eds.) *Re:direction: A Theoretical and Practical Guide*. London: Routledge. pp. 206-217.

Chomsky, Noam (1957) *Syntactic Structures*. Berlin: Walter de Gruyter.

Chomsky, Noam (1965) *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.

Chomsky, Noam (1975) *Reflections on Language*. London: Pantheon Books.

Chomsky, Noam (1988) *Language and Problems of Knowledge: The Managua Lectures*. Cambridge, MA: MIT Press.

Clarke, David D. and Crossland, Jill (1985) *Action Systems: An Introduction to the Analysis of Complex Behaviour*. London; New York: Methuen.

Clynes, Manfred (1977) *Sentics: The Touch of Emotions*. New York: Anchor Books.

Coch, Donna, Dawson, Geraldine and Fischer, Kurt W. (2010) *Human Behaviour, Learning and the Developing Brain: Atypical Development*. New York; London: Guilford Press.

Cocuzza, Ginnine (1979) "Mime Scene, New York City" in *Mime News*. (May/June), p. 4.

Cody, Gabrielle (2002) "Introduction to Part III" in Rebecca Schneider and Gabrielle Cody (eds.) *Re:direction: A Theoretical and Practical Guide*. London: Routledge. pp. 217-221.

Coldiron, Margaret (2004) *Trance and Transformation of the Actor in Japanese Noh and Balinese Dance-Drama*. Lewiston; New York: The Edwin Mellen Press.

Colebrook, Claire (2004) *Irony: The New Critical Idiom*. London: Routledge.

Colin, Virginia L. (1996) *Human Attachment*. Philadelphia: Temple University Press.

Connerton, Paul (1989) *How Societies Remember: Themes in the Social Sciences*. Cambridge: Cambridge University Press.

Connor, Lisa Tabor and Obler, Loraine K. (2000) *Neurobehavior of Language and Cognition: Studies of Normal Aging and Brain Damage*. Norwell, MA: Kluwer Academic.

Cooke, Philip (2007) "What Makes Us Laugh? The Globalisation of Humor" in *SHOOT*. Vol. 48, no. 2, pp. 1-2.

Coon, Dennis and Mitterer, John O. (2008) *Introduction to Psychology: Gateways to Mind and Behavior*. Belmont, CA: Wadsworth.

Cooper, Gary L. and Pervin, Lawrence A. (eds.) (1998) *Personality: Critical Concepts in Psychology*. London; New York: Routledge.

Corey, Irene (1975) "To Mask is to Unmask" in *Mime Journal*. No. 2, pp. 2-17.

Counsell, Colin (1996) *Signs of Performance: An Introduction to Twentieth Century Theatre*. London; New York: Routledge.

Counsell, Colin and Wolf, Laurie (eds.) (2001) *Performance Analysis: An Introductory Coursebook*. London; New York: Routledge.

Coupe, Lawrence (2009) *Myth: The New Critical Idiom*. Oxford; New York: Routledge.

Cramer, Duncan (1994) *Introducing Statistics for Social Research*. London; New York: Routledge.

Cranach, M. von, Foppa, K., Lepenies, W. and Ploog, D. (eds.) (1979*) Human Ethology: Claims and Limits of a New Discipline*. Cambridge; New York: Cambridge University Press.

Cremona, Vicki Ann, Eversmann, Peter, Maanen, Hans van, Sauter, Willmar and Tulloch, John (eds.) (2004) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. Preface by Jaqueline Martin.

Critchley, Simon (2002) *On Humour: Thinking in Action*. Oxford; New York: Routledge.

Crosby, Richard A., DiClemente, Ralph J., Salazar, Laura Francisca (eds.) (2006) *Research Methods in Health Promotion.* San Francisco, CA: John Wiley & Sons Inc.

Croyden, Margaret (1997) "I Said Yes to the Past*:* Interview with Grotowski" in Richard Schechner and Lisa Wolford (eds.) *The Grotowski Sourcebook*. London; New York: Routledge. pp. 83-88.

Csapo, Eric (2005*) Theories of Mythology*. Oxford: Blackwell Publishing.

Csikszentmihalyi, Mihaly (1975) *Beyond Boredom and Anxiety*. San Francisco: Jossey-Bass.

Csikszentmihalyi, Mihaly and Robinson, Rick Emery (1990) *The Art of Seeing: An Interpretation of the Aesthetic Encounter*. Malibu, CA: Getty Centre for Education in the Arts.

Damasio, Antonio R. (1994) *Descartes Error: Emotion, Reason and the Human Brain*. New York: Harper Collins.

Damasio, Antonio (2000) *The Feeling of What Happens: Body, Emotion and the Making of Consciousness*. London: Heinemann.

Dane, Joseph A. (2011) *The Critical Mythology of Irony*. Athens: University of Georgia Press.

D'Aquili, Eugene G. and Laughlin, Charles D. (1979) "The Neurobiology of Myth and Ritual" in Eugene G. D'Aquili, Charles D. Laughlin and John McManus (eds.) *The Spectrum of Ritual: A Biogenetic Structural Analysis*. New York: Columbia University Press. pp. 152-182.

D'Aquili, Eugene G. (1993) "The Myth-Ritual Complex: A Biogenetic Structural Analysis" in James B. Ashcroft (ed.) *Brain, Culture and the Human Spirit: Essays from an Emergent Evolutionary Perspective*. Lanham, MD; London: University Press of America. pp. 45-76.

Darwin, Charles (1999 [1872]) *The Expression of the Emotions in Man and Animals*. 3rd ed. London: Fontana Press.

Das, Jagannath Prasad, Kar, Binod C. and Parrila, Rauno K. (1996) *Cognitive Planning: The Psychological Basis of Intelligent Behaviour*. Thousand Oaks, CA: Sage.

Davies, Douglas (2010) *Child Development: A Practitioner's Guide*. New York: Guilford Press.

Davis, Helen (2004) *Understanding Stuart Hall*. London: Sage.

Davis, Michael (1984) "The Mammalian Startle Response" in Robert C. Eaton (ed.) *Neural Mechanisms of Startle Behaviour*. New York: Plenum Press. pp. 287-351.

Dawson, Catherine (2002) *Practical Research Methods: A User-Friendly Guide to Mastering Research Techniques and Projects*. Oxford: How To Books Ltd.

Decety, J. and Jackson, P. (2006) "A Social-Neuroscience Perspective on Empathy" in *Current Directions in Psychological Science*. Vol. 15, no. 2, pp. 54-58.

Decroux, Etienne (1975) "Etienne Decroux on Masks" in *Mime Journal.* No. 2, pp. 54-62.

Delgado, Maria M. and Svich, Caridad (2002) *Theatre in Crisis?: Performance Manifestos for a New Century*. Manchester; New York: Manchester University Press.

De Marinis, Marco (1982) "Toward a Cognitive Semiotic of Theatrical Emotion" [trans.] Benjamin Thorn. in *Versus*. Vol. 41, pp. 5-20.

De Marinis, Marco (1987) "Dramaturgy of the Spectator" in *TDR.* Vol. 31, no. 2, pp. 100-114.

Denham, Susanne A. (1998) *Emotional Development in Young Children*. New York: Guilford Press.

Diamond, Catherine (2001) "Prague Summer: Encounters with a Third Kind of Theatre" in *New Theatre Quarterly*. Vol. 17, pp. 219-238.

Di Benedetto, Stephen (2010) *The Provocation of the Senses in Contemporary Theatre*. Abingdon; New York: Routledge.

Dils, Ann and Cooper Albright, Ann (eds.) (2001) *Moving History/Dancing Cultures: A Dance History Reader*. Middletown, CT: Wesleyan University Press.

Dissanayake, Ellen (1995) *Homo Aestheticus: Where Art Comes From and Why*. Seattle; London: University of Washington Press.

Dissanayake, Ellen (1999) "Antecedents of Musical Meaning in the Mother-Infant Dyad" in Brett Cooke and Frederick Turner, (eds.) *Biopoetics*: *Evolutionary Explorations in the Arts*. Lexington: Icus Books. pp. 367-399.

Dissanayake, Ellen (2000) "Antecedents of the Temporal Arts in Early Mother-Infant Interaction" in Nils L. Wallin, Bjorn Merker and Steven Brown (eds.) (2000) *The Origins of Music*. Cambridge, MA: MIT Press. pp. 389-410.

Dodwell, Peter C. (1970) *Visual Pattern Recognition*. New York: Holt, Reinhart & Winston.

Doty, William G. (2004) *Myth: A Handbook*. Westport, CT: Greenwood Publishing Group.

Drewal, John Henry (1975) "African Masked Theatre" in *Mime Journal*. No. 2, pp. 15-24.

Driver, Jon and Frackowiak, Richard (2001) *Imaging Selective Attention in the Human Brain*. Amsterdam: Elsevier Academic Press.

Dudai, Yadin (2002) *Memory from A-Z: Keywords, Concepts and Beyond*. New York: Oxford University Press.

Easton, Alexander (2005) "Behavioural Flexibility, Social Learning and the Frontal Cortex" in Alexander Easton and Nathan Emery (eds.) *The Cognitive Neuroscience of Social Behaviour*. New York: Psychology Press. pp. 59-80.

Eco, Umberto (1979) *The Role of the Reader: Explorations in the Semiotics of Texts*. Bloomington: Indiana University Press.

Eddershaw, Margaret (1996) *Performing Brecht*. New York: Routledge.

Ede, Siân (2005) *Art and Science*. London: I. B. Tauris

Edelman, Gerald, M. and Changeux, Jean-Pierre (2001) *The Brain*. New Brunswick, NJ: Transaction Publishers.

Edmunds, June and Turner, Bryan (2002) *Generational Consciousness, Narrative, and Politics*. Lanham, MD: Rowman & Littlefield.

Eibl-Eibesfeldt, Irenäus (1979) *"Ritual and Ritualisation from a Biological Perspective"* in M. von Cranach, K. Foppa, W. Lepenies and D. Ploog (eds.) *Human Ethology: Claims and Limits of a New Discipline*. Cambridge; New York: Cambridge University Press. pp. 3-55**.**

Eibl-Eibesfeldt, Irenäus (1997) "Human Ethology: Origins and Prospects of a New Discipline" in Alain Schmitt, Klaus Atzwanger, Karl Grammer and Katrin Schäfer (eds.) *New Aspects of Human Ethology*. New York; London: Plenum Press. pp. 1-24.

Eibl-Eibesfeldt, Irenäus (2007) *Human Ethology*. New Brunswick, NJ: Transaction Publishers.

Eisenberg, N. and Strayer, J. (1987) *Empathy and Its Development*. Cambridge: Cambridge University Press.

Ekman, Paul (1975) "The Universal Smile: Face Muscles Talk Everyday Language" in *Psychology Today*. Vol. 9, no. 4, pp. 35-39.

Ekman, Paul (1982) *Emotion in the Human Face*. Cambridge: Cambridge University Press.

Ekman, Paul (1994) "All Emotions are Basic" in Paul Ekman and R. J. Davidson (eds.) *The Nature of Emotions: Fundamental Questions*. New York: Oxford University Press. pp. 15-19.

Ekman, Paul (1979) *"About Brows: Emotional and Conversational Signals"* in M. von Cranach, K. Foppa, W. Lepenies and D. Ploog (eds.) *Human Ethology: Claims and Limits of a New Discipline*. Cambridge; New York: Cambridge University Press. pp. 169-294.

Ekman, Paul (2003) *Emotions Revealed: Understanding Faces and Feelings*. London: Phoenix.

Ekman, Paul and Rosenburg, Erika L. (eds.) (2005) *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding Systems (FACS)*. New York; Oxford: Oxford University Press.

Eldredge, Sears. A. (1996) *Mask Improvisation for Actor Training and Performance*. Evanston, IL: Northwestern University Press.

Elmer, Duane (2002) *Cross Cultural Connections: Stepping Out and Fitting In Around the World*. Downers Grove, IL: Intervarsity Press.

Emigh, John (1996) *Masked Performance: The Play of Self and Other in Ritual and Theatre*. Phildelphia: University of Pennsylvania Press.

Enekwe, Onuora Ossie (1987) *Igbo Masks: The Oneness of Ritual and Theatre*. Lagos: Nigeria Magazine Publication.

Engel, Carl (1967) *Discords Mingled: Essays on Music*. New York: Books for Libraries Press.

Erven, Charles (2007) "The Street Theatre of Warner-en-Consorten" in *Theatre Design & Technology*. Vol. 43, no. 1, pp. 23-30.

Erven, Eugène van (1988) *Radical People's Theatre*. Bloomington: Indiana University Press.

Esslin, Martin (1987) *The Field of Drama: How the Signs of Drama Create Meaning on Stage and Screen*. London; NewYork: Methuen.

Etchells, Tim (1999) *Certain Fragments: Contemporary Performance and Forced Entertainment*. London: Routledge.

Etchells, Tim (2007) "Some People Do Something. The Others Watch, Listen, Try to be There" in Daniel Brine and Lois Keidan (eds*.) Programme Notes - Case Studies for Locating Experimental Theatre.* London: Live Art Development Agency.

Evans, Mark (2009) *Movement Training for the Modern Actor*. Abingdon; New York: Routledge.

Eversmann, Peter (2004) "Introduction to Part Two" in Vicki Ann Cremona, Peter Eversmann, Hans van Maanen, Willmar Sauter and John Tulloch (eds.) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. pp. 133-174.

Farley, Edward (1990) *Good and Evil: Interpreting a Human Condition*. Minneapolis: Fortress Press.

Feinstein, Sheryl (2006) *The Praeger Handbook of Learning and the Brain*. Vol. 2*.* Westport, CT: Greenwood Publishing Group.

Feldman, Robert S. and Rimé, Bernard (1991) *Fundamentals of Nonverbal Behaviour*. Cambridge: Cambridge University Press.

Fenwick, Peter (2000) "Current Methods of Investigation in Neuroscience" in Max Velmans (ed.) *Investigating Phenomenal Consciousness*. Amsterdam; Philadelphia: John Benjamins Publishing Company. pp. 19-33.

Ferre, Manuel (2008) *Haptics: Perception, Devices and Scenarios*. New York: Springer.

Fischer-Lichte, Erica (1996) "Interculturalism in Contemporary Theatre" in Patrice Pavis, (ed.) *The Intercultural Performance Reader*. London; New York: Routledge. pp. 27-41.

Fischer-Lichte, Erica (1997) *The Show and the Gaze of Theatre: A European Perspective*. Iowa City: University of Iowa Press.

Fischer-Lichte, Erica (2003) "Quo Vadis?: Theatre Studies at the Crossroads" in Richard Paul Knowles, William B. Worthen and Joanne Tomkins (eds.) *Modern Drama: Defining the Field*. Toronto; Buffalo; London: University of Toronto Press. pp. 48-66.

Flick, Uwe (2011) *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project*. London; Thousand Oaks, CA: Sage.

Florentine, Mary (2011) *Loudness*. New York: Springer.

Foreman, Jennifer (1999) *Maskwork*. Cambridge: Lutterworth Press.

Fortier, Mark (2002) *Theory/Theatre: An Introduction*. London; New York: Routledge.

Foster, Mary LeCron (1988) "Cultural Triggering of Psychological Reversals" in Michael J. Apter, John H. Kerr and Michael P. Cowles (eds.) *Progress in Reversal Theory*. Amsterdam; New York: Elsevier Academic Press. pp. 63-77.

Foster, Susan Leigh (1988) *Reading Dancing: Bodies and Subjects in Contemporary American Dance*. Berkeley: University of California Press.

Fox, C. W. (1948) "Modern Counterpoint: A Phenomenological Approach" in *Music Library Associated Notes*. Vol. 6, pp. 46-57.

Fox, Robin (1975) *Encounter with Anthropology*. Harmondsworth: Penguin.

Frackowiak, Richard S. J. (ed.) (2004) *Human Brain Function*. Amsterdam; Boston, MA: Elsevier Academic Press.

Franklin, Eric N. (1996) *Dance Imagery for Technique and Performance*. Champaign, IL: Human Kinetics.

Freedberg, David and Gallese, Vittorio (2007) "Motion, Emotion and Empathy in Esthetic Experience" in *Trends in Cognitive Sciences*. Vol. 11, no. 5, pp. 197-203.

Freeman, Anthony (2003) *Consciousness: A Guide to the Debates*. Santa Barbara, CA: ABC-CLIO.

Freeman, Norman (2004) "Aesthetic Judgment and Reasoning" in Elliot W. Eisner, and Michael D. Day (eds.) *Handbook of Research and Policy in Art Education*. Mahwah, NJ: Lawrence Erlbaum Associates. pp. 359-377.

Freeman, Walter (2000) "A Neurobiological Role of Music in Social Bonding" in Nils L. Wallin, Bjorn Meker and Steven Brown (eds.) *Origins of Music*. Cambridge, MA; London: MIT Press. pp. 441-425.

Freeman, Walter and Skarda, Christine (1990) "Representations: Who Needs Them?" in James L. McGaugh and Norman M. Weinburger (eds.) *Brain Organization and Memory: Cells Systems and Circuits*. New York; Oxford: Oxford University Press. pp. 375-380.

Freshwater, Helen (2009) *Theatre & Audience*. Basingstoke; New York: Palgrave Macmillan.

Freud, Sigmund (1997 [1950]) *The Interpretation of Dreams*. [trans.] A.A. Brill. Ware: Wordsworth Editions Ltd.

Freud, Sigmund (1999 [1922]) *Wit and its Relation to the Unconscious*. [trans.] A.A. Brill. London: Routledge.

Freud, Sigmund (2005 [1929]) *Civilization and its Discontents*. [trans.] James Strachey. New York: Norton Books.

Friedmann, Anthony (2010) *Writing for Visual Media*. Burlington, MA: Focal Press.

Friedman, Sarah L., Scholnick, Ellin K. and Cocking, Rodney R. (eds.) (1987) *Blueprints for Thinking: The Role of Planning in Cognitive Development*. Cambridge; New York: Cambridge University Press.

Frost, Joe L., Clark-Wortham, Sue and Reifel, Robert Stuart (2005) *Play and Child Development*. Upper Saddle River, NJ: Prentice-Hall.

Fulmer, Terry T., Foreman, Marquis D. and Walker, Mark K. (1992) *Critical Care Nursing of the Elderly*. New York: Springer.

Gallese,Vittorio, Fadiga, Luciano, Fogassi, Leonardo and Rizzolatti, Giacomo (1996) "Action Recognition in the Premotor Cortex", in *Brain*. Vol. 119, pp. 593-609.

Gallese, Vittorio (2001) "The 'Shared Manifold' Hypothesis: From Mirror Neurons to Empathy" in *The Journal of Consciousness Studies*. Vol. 8, no. 5-7, pp. 33-50.

Gallese, Vittorio, Keysers, Christian and Rizolatti, Giacomo (2004) "A Unifying View of the Basis of Social Cognition" in *Trends in Cognitive Sciences*. Vol. 8, no. 9, pp. 396-403.

Gander, Eric (2003) *On Our Minds: How Evolutionary Psychology is Reshaping the Nature-versus-Nurture Debate*. Baltimore: Johns Hopkins University Press.

Geertz, Clifford (1973) *The Interpretation of Cultures*. New York: Basic Books.

George, Kathleen (1994) *Playwriting: The First Workshop*. Boston, MA: Focal Press.

Ghazoul, Ferial (ed.) (2007) *Edward Said and Critical Decolonization*. Cairo; New York: American University in Cairo Press.

Giannachi, Gabriella and Luckhurst, Mary (eds.) (1999) *On Directing: Interviews with Directors*. London: Faber and Faber.

Gibbs, Raymond W. and Colston, Herbert L. (2007) *Irony in Language and Thought: A Cognitive Science Reader*. Oxford; New York: Routledge.

Gibson, Michael and Brook, Peter (1973) "Brook's Africa" in *The Drama Review*. Vol. 17, no. 3, pp. 37-51.

Gilbert, Paul (1989) *Human Nature and Suffering*. Hove: Lawrence Erlbaum Associates.

Gillham, Bill (2000) *Developing a Questionnaire*. London; New York: Continuum International Publishing Group.

Glenn, Philip J. (2003) *Laughter in Interaction*. Cambridge: Cambridge University Press.

Goffman, Erving (1974) *Frame Analysis: An Essay on the Organization of Experience*. Michigan: Harper & Row.

Goldin-Meadow, Susan (2003) *Hearing Gesture: How Our Hands Help Us Think*. Cambridge, MA: Harvard University Press.

Goldstein, Bruce E. (2001) *Sensation and Perception*. Belmont, CA: Thomson Wadsworth.

Goleman, Daniel (1996) *Emotional Intelligence*. London: Bloomsbury.

Goodman, Felicitas D. (1990) "A Trance Dance with Masks: Research and Performance at the Cuyamungue Institute," in *The Drama Review*. Vol. 34, no. 1, pp. 102-14.

Goodridge, Janet (1999) *Rhythm and Timing of Movement in Performance: Drama, Dance and Ceremony*. London: Jessica Kingsley Publishers.

Govan, Emma, Nicholson, Helen and Normington, Katie (2007) *Making a Performance: Devising Histories and Contemporary Practices*. London; New York: Routledge.

Grammer, Karl, Filova, Valentina and Fieder, Martin (1997) "The Communication Paradox and Possible Solutions: Towards a Radical Empiricism" in Alain Schmitt, Klaus Atzwanger, Karl Grammer and Katrin Schäfer (eds.) *New Aspects of Human Ethology*. New York; London: Plenum Press. pp. 91-120.

Grammer, Karl (1998) "Sex and Gender in Advertisements: Indoctrination & Exploitation" in Irenäus Eibl-Eibesfeldt and Frank K. Salter, (eds.) *Ethnic Conflict and Indoctrination: Altruism and Identity in Evolutionary Perspectives*. New York: Berghahn Books. pp. 219-241.

Gray, David E. (2009) *Doing Research in the Real World*. London; Thousand Oaks, CA: Sage.

Gray, Richard M. (1996) *Archetypal Explorations: An Integrative Approach to Human Behaviour*. London; New York: Routledge.

Graybiel, Ann M. (1998) "Building Action Repertoires: Memory and Learning Functions of the Basal Ganglia" in Larry R. Squire and Steven Michael Kosslyn (eds.) *Findings and Current Opinions in Neurobiology*. Cambridge, MA: MIT Press. pp. 289-299.

Green, David (1996) *Cognitive Science: An Introduction*. Oxford; Malden, MA: Blackwell Publishing.

Green, Thomas A. (1997) *Folklore: An Encyclopedia of Beliefs, Customs, Tales, Music and Art*. Vol.1. Santa Barbara, CA: ABC-CLIO.

Greenberg, Joseph H. (1975) "Research on Language Universals" in *Annual Review of Anthropology*. Vol. 4, pp. 75-94.

Gregory, Richard L. (1998) *Eye and Brain: The Psychology of Seeing*. Oxford: Oxford University Press.

Grenz, Stanley J. (1996) *A Primer on Postmodernism*. Grand Rapids: William B. Eerdmans Publishing Company.

Gross, Richard (1996) *Psychology: The Science of Mind and Behaviour*. London: Hodder and Stoughton.

Grotowski, Jerzy (1997) "Performer" in Richard Schechner and Lisa Wolford, (eds.) *The Grotowski Sourcebook*. London; New York: Routledge. pp. 374-378.

Grotowski, Jerzy (2002) *Towards a Poor Theatre*. Eugenio Barba (ed.) New York: Routledge.

Gruner, Charles R. (1997) *The Game of Humor: A Comprehensive Theory of Why We Laugh*. New Brunswick, NJ: Transaction Publishers.

Gudykunst, William B. (ed.) (2003) *Cross Cultural and Intercultural Communication*. Thousand Oaks, CA: Sage.

Gudykunst, William B. (2004) *Bridging Differences: Effective Intergroup Communication*. Thousand Oaks, CA: Sage.

Haan, Michelle D. and Johnson, Mark Henry (2003) *The Cognitive Neuroscience of Development*. New York: Psychology Press.

Hall, Edward T. (1981) *The Silent Language*. New York: Doubleday.

Hall, Stuart (ed.) (1997) *Representation: Cultural Representations and Signifying Practices*. London; Thousand Oaks, CA: Sage.

Hall, Stuart (1995) "New Ethnicities" in Bill Ashcroft, Gareth Griffith and Helen Tiffin (eds.) *The Post-Colonial Studies Reader*. Abingdon; New York: Routledge. pp. 199-202

Hampson, Peter J. and Morris, Peter (1999) *Understanding Cognition*. Oxford; Malden, MA: Blackwell Publishing.

Hanna, Judith Lynne (1979) *To Dance is Human: A Theory of Nonverbal Communication*. Chicago: University of Chicago Press.

Hardcastle, Valerie Gray (2000) "Dissolving Differences: How to Understand the Competing Approaches to Human Emotion" in Ralph D. Ellis and Natika Newton (eds.) *The Caldron of Consciousness: Motivation, Affect and Self-organisation--An Anthology*. Amsterdam; Philadelphia: John Benjamins Publishing Company. pp. 119-133.

Hardin, C. L. (2000) "Red and Yellow, Green and Blue, Warm and Cool: Explaining Colour Appearance" in *Journal of Consciousness Studies*. Vol. 7, no. 8-9, pp. 113-122.

Harrington, Anne (1997) *The Placebo Effect: An Interdisciplinary Exploration*. Cambridge, MA: Harvard University Press.

Harris, Jay (1998) *How the Brain Talks to Itself: A Clinical Primer of Psychotherapeutic Neuroscience*. New York: Routledge.

Harrop, John (1992) *Acting*. London; New York: Routledge.

Hartley, Lucy (2001) *Physiognomy and the Meaning of Expression in Nineteenth-Century Culture*. Cambridge: Cambridge University Press.

Harwood, Robin L., Miller, Joan G. and Irizarry, Nadia L. (1995) *Culture and Attachment: Perceptions of the Child in Context*. New York: Guilford Press.

Hatch, J. Amos (2002) *Doing Qualitative Research in Education Settings*. Albany, NY: State University of New York Press.

Haviland, John (2000) "Gesture in Action" in David McNeil (ed.) *Language and Gesture*. Cambridge: Cambridge University Press. pp. 11-46.

Haviland, William A., Prins, Harald, E. L., Walrath, Dana and McBride, Bunny (2005) *Cultural Anthropology: The Human Challenge*. 11th ed. London: Wadsworth.

Hayes-Roth, Barbara and Hayes-Roth, Frederick (1979) "A Cognitive Model of Planning" in *Cognitive Science*. Vol. 3, pp. 275-310.

Heider, Fritz (1958) *The Psychology of Interpersonal Relations*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Heilman, Robert Bechtold (1978) *The Ways of the World: Comedy and Society*. Seattle: University of Washington Press.

Heilpern, John (1999) *Conference of the Birds*: *The Story of Peter Brook in Africa*. London; New York: Routledge.

Helfer, Richard and Loney, Glenn (eds.) (1998) *Peter Brook: Oxford to Orghast*. Amsterdam: Harwood Academics.

Hénaff, Marcel (1998) *Claude Lévi-Strauss and the Making of Structural Anthropology*. [trans.] Mary Baker. Minneapolis: University of Minnesota Press.

Hepper, Peter G. (1991) *Kin Recognition*. Cambridge; New York: Cambridge University Press.

Heppner, Paul P., Wampold, Bruce E. and Kivlighan, Dennis M. (2008) *Research Design in Counselling*. Belmont, CA: Thomson Brooks/Cole.

Hillman, James (1983) *Archetypal Psychology*. Dallas, TX: Spring Publications Inc.

Hinde, Robert A. (1987) *Individuals, Relationships and Culture*. Cambridge; New York: Cambridge University Press.

Hitchcock, Katherine and Bates, Brian (1991) "Actor and Mask as Metaphors for Psychological Experience" in Glenn Daniel (ed.) *Psychology and Performing Arts*. Amsterdam: Swets & Zeitlinger. pp. 19-24.

Hodges, Donald A. (1996a) "Human Musicality" in Donald A. Hodges (ed.) *Handbook of Music Psychology*. San Antonio: IMR Press. pp. 29-68.

Hodges, Donald A. (1996b) "Neuromusical Research: A Review of Literature" in Donald A. Hodges (ed.) *Handbook of Music Psychology*. San Antonio: IMR Press. pp. 197-284.

Hoffman, Martin L. (2001) *Empathy and Moral Development: Implications for Caring and Justice*. Cambridge: Cambridge University Press.

Hokenson, Jan (2006) *The Idea of Comedy: History, Theory, Critique*. Cranbury, NJ: Fairleigh Dickinson University Press.

Holopainen, Jussi (2008) "Play, Games, and Fun" in Olli Leino, Hanna Wirman and Amyris Fernandez (eds.) *Extended Experiences: Structure, Analysis and Design of Computer Player Experience*. Roveniemi: Lapland University Press. pp. 44-57.

Hughes, Larry W. (2005) "Developing Transparent Relationships through Humor in the Authentic Leader-Follower Relationship" in William L. Gardner, Bruce J. Avolio and Fred O. Walumbwa (eds.) *Authentic Leadership Theory and Practice: Origins, Effects, Developments*. Amsterdam; San Diego, CA; London: Elsevier Academic Press. pp. 83-106.

Huizinga, Johan (1949) *Homo Ludens: A Study of the Play Element in Culture*. London: Routledge & Kegan Paul.

Hûnggyu, Kim (2003) "Folk Drama" in Peter H. Lee (ed.) *A History of Korean Literature*. Cambridge: Cambridge University Press. pp. 303-315.

Husserl, Edmund (1970 [1955]) *Crisis of European Sciences and Transcendental Phenomenology*. Evanston, IL: Northwestern University Press.

Hutcheon, Linda (1994) *Irony's Edge: The Theory and Politics of Irony*. London; New York: Routledge.

Iacoboni, Marco (2003) "Understanding Intentions through Imitation" in Scott H. Johnson-Frey (ed.) *Taking Action: Cognitive Neuroscience Perspectives on Intentional Acts*. Cambridge, MA: MIT Press. pp. 107-139.

Innes, Christopher (1993) *Holy Theatre: Ritual and the Avant Garde*. Cambridge: Cambridge University Press.

Irvin, Polly (2003) *Directing for the Stage*. Hove: RotoVision.

Isaacowitz, Derek M., Charles, Susan Turk and Carstensen, Laura L. (2000) "Emotion and Cognition" in Fergus I. M Craik and Timothy Salthouse (eds.) *The Handbook of Aging and Cognition.* Mahwah, NJ: Lawrence Erlbaum Associates. pp. 593-632.

Iwasaki, Kyōun (1984) "Kyōgen Masks" in *Mime Journal.* No. 10: Nō/Kyōgen Masks and Performance. pp. 183-193.

Jackson, Anthony (1996) "Researching Drama and Theatre in Education: Notes and Queries" in John Somers (ed.) *Drama and Theatre in Education: Contemporary Research*. North York, ON: Captus University Publications. pp. 33-42.

Jackson, Anthony and Lev-Aladgem (2004) "Rethinking Audience Participation: Audiences in Alternative and Educational Theatre" in Vicki Ann Cremona, Peter Eversmann, Hans van Maanen, Willmar Sauter and John Tulloch (eds.) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. pp. 207-236.

Jackson, Sherri (2009) *Research Methods and Statistics: A Critical Thinking Approach*. 3rd ed. Belmont, CA: Wadsworth.

Jacoby, Mario (1990) *Individuation and Narcissism*: *The Psychology of Self in Jung and Kohut*. London; New York: Routledge.

Jellicoe, Ann (1967) *Some Unconscious Influences in the Theatre*. Cambridge: Cambridge University Press.

Johnson, Mark (2007) *The Meaning of the Body: Aesthetics of Human Understanding*. Chicago: University of Chicago Press.

Johnstone, Keith (1989*) Impro: Improvisation and the Theatre*. London: Methuen.

Jung, Carl Gustav (1959) *Collected Works of C .G. Jung.* Vol. 9, Part 1: The Archetypes and the Collective Unconscious. London: Routledge & Kegan Paul.

Jung, Carl Gustav (1972) *Four Archetypes*: *Mother, Rebirth, Spirit, Trickster*. London: Routledge & Kegan Paul.

Jung, Carl Gustav (1990) *Man and his Symbols*. London: Arkana.

Jung, Carl Gustav and Kerènyi, Carl (2002) *The Science of Mythology: Essays on the Myth of the Divine Child and the Mysteries of Eleusi*. London; New York: Routledge.

Jurmain, Robert, Kilgore, Lynn and Trerathan, Wenda (2005) *Introduction to Physical Anthropology*. Toronto: Wadsworth.

Juslin, Patrik N. (2001) "Communicating Emotion in Music Performance: A Review and Theoretical Framework" in Patrik N. Juslin and John A. Sloboda *Music and Emotion: Theory and Research*. New York; Oxford: Oxford University Press. pp. 309-341.

Kagan, Jerome (1984) *The Nature of the Child*. New York: Basic Books.

Kapadia, Ramesh and Borovcnik, Manfred (1991) *Chance Encounters: Probability in Education*. Dordrecht: Kluwer Academic.

Kaye, Nick (1994) *Postmodernism and Performance*. London: Macmillan Press.

Kealiinohomoku, Joann (1997) "Dance, Myth and Ritual in Time and Space" in *Dance Research Journal.* Vol. 29, no. 1, pp. 65-72.

Kealiinohomoku, Joann (2001) "An Anthropologist looks at Ballet as a Form of Ethnic Dance" in Ann Dils and Ann Cooper Albright (eds.) *Moving History/Dancing Cultures: A Dance History Reader*. Middletown, CT: Wesleyan University Press. pp. 33-43.

Keesing, Roger M. (1981) *Cultural Anthropology: A Contemporary Perspective*. Fort Worth: Holt, Rinehart and Winston.

Kendon, Adam (2004) *Gesture: Visible Action as Utterance*. Cambridge: Cambridge University Press.

Kennedy, Valerie (2000) *Edward Said: A Critical Introduction*. Cambridge: Polity Press.

Keith, Kenneth D. (ed.) (2011) *Cross Cultural Psychology: Contemporary Themes and Perspectives*. Chichester; Malden, MA: Wiley Blackwell.

Kerènyi, Carl (1960) "Man and Mask" in Joseph Campbell (ed.) *Spiritual Disciplines: Papers from the Eranos Yearbooks*. Vol. 4. New York: Pantheon Books. pp. 151-167.

Kerr, J. H., Stevens, Murgatroyd and Apter, Michael J. (1993) *Advances in Reversal Theory*. Amsterdam: Swets & Zeitlinger.

Kershaw, Baz (1992) *The Politics of Performance: Radical Theatre as Cultural Intervention*. London: Routledge.

Kessler, Suzanne and McKenna, Wendy (1978) *Gender: An Ethnomethodological Approach*. Chicago: University of Chicago Press.

Kimmel, Allen J. (1988) *Ethics and Values in Applied Social Research*. Newbury Park, CA: Sage.

Kindy, Julia (1999) "Of Time and Beauty" in *Journal of Consciousness Studies*. Vol. 6, no. 6-7, pp. 61-63.

King, Nigel and Horrocks, Christine (2010) *Interviews in Qualitative Research*. London; Thousand Oaks, CA: Sage.

Kirk, Geoffry S. (1970) *Myth: Its Meaning and Functions in Ancient and Other Cultures*. Cambridge: Cambride University Press.

Kirton, Michael J. (2003) *Adaptation-Innovation: In the Context of Diversity and Change*. London: Routledge.

Kivy, Peter (1980) *The Corded Shell: Reflections on Musical Expression*. Princeton, NJ: Princeton University Press.

Klinger, Eric (1998) "The Search for Meaning in Evolutionary Perspective and its Clinical Implications" in Paul T. P. Wong and Prem S. Fry (eds.) *The Human Quest for Meaning: A Handbook of Psychological Research and Clinical Applications*. Mahwah, NJ: Lawrence Erlbaum Associates. pp. 27-50.

Knowles, Richard Paul (2004) *Reading the Material Theatre*. Cambridge: Cambridge University Press.

Koch, Christof and Davis, Joel L. (1994) *Large Scale Neuronal Theories of the Brain*. Cambridge, MA: MIT Press.

Koch, Christof (2004) *The Quest for Consciousness: A Neurobiological Approach*. Reading, PA: Roberts & Company.

Kopacz, Jeanne (2004) *Colour in Three-Dimensional Design*. New York: McGraw-Hill

Kowzan, Tadeusz, (1968) "The Sign in the Theatre", in *Diogenes*. Vol. 61, pp. 51-80.

Kozintsev, Alexander (2010) *The Mirror of Laughter*. New Brunswick, NJ: Transaction Publishers.

Kubovy, Michael and Valkenburg, David van (2001) "Auditory and Visual Objects" in *Cognition*. Vol. 80, no. 1-2, pp. 97-126.

Kubovy, Michael (2003) *Auditory Perceptual Organisation* [online] University of Virginia. Available from: http://oscar.virginia.edu/asp/PublicAward.asp?AwardNumber=GC11063&AwardId=55834 [Accessed 27/03/07].

Kuei, Chi An (1994) *The Secret Language of Your Face: The Ancient Chinese Art of Siang Mien*. London: Souvenir Press.

Kumar, Ranjit (2005) *Research Methodology: A Step-By-Step Guide For Beginners*. London: Sage.

Lachenicht, Lance (1988) "A Critical Introduction to Reversal Theory" in Micheal J. Apter, John H. Kerr and Michael P. Cowles, (eds.) *Progress in Reversal Theory*. Amsterdam; New York: Elsevier Academic Press. pp. 1-43.

Lachman, Roy, Lachman, Janet and Butterfield, Earl C. (1979) *Cognitive Psychology and Information Processing: An Introduction*. Hillsdale, NJ: Lawrence Erlbaum Associates.

LaFrance, Marianne and Mayo, Clara (1978) "Cultural Aspects of Nonverbal Behaviour" in *International Journal of Intercultural Relations*. Vol. 2, pp. 71-89.

Lakoff, George and Johnson, Mark (1999) *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.

Laliberté, Norman and Mogelon, Alex (1973) *Masks, Face Coverings and Headgear*. New York: Van Nostrand Reinhold Co.

Lamont, Rosette (1987) "Mahabharata: Conversation with Peter Brook" in *Stages*. (May), pp. 31-35.

Landau, Terry (1989) *About Faces: The Evolution of the Human Face*. New York: Anchor Books.

Landis, Carney, Hunt, William A. and Strauss, Hans (1939) *The Startle Pattern*. New York: Farrar & Rinehart.

Lange, Roderyk (1976) *The Nature of Dance: An Anthropological Perspective*. New York: International Publications Service.

Latta, Robert L. (1999) *The Basic Humor Process: A Cognitive-Shift Theory and Case Against Incongruity*. Berlin; New York: Mouton de Gruyter.

Lea, Stephen E.G. (1984) *Instinct, Environment and Behaviour*. London; New York: Methuen.

Leach, Robert (2004) *Makers of Modern Theatre: An Introduction*. Abingdon; New York: Routledge.

LeBaron, Curtis and Streeck, Jürgen (2000) "Gestures, Knowledge and the World" in David McNeil (ed.) *Language and Gesture*. Cambridge: Cambridge University Press. pp. 118-138.

Lecoq, Jacques (2000) *The Moving Body*. London: Methuen.

Leeland, Katherine B. (2008) *Face Recognition: New Research*. New York: Nova Publishers.

Lefas, Jean (1975) *Physiognomy: The Art of Reading Faces*. [trans.] David Macrae. Barcelona: Ariane Books.

Lehrer, Jonah (2007) *Proust was a Neuroscientist*. Boston, MA: Houghton Mifflin Co.

Leigh, James (2000) "Implications of Universal and Parochial Behaviour for Intercultural Communication" in *Journal of Intercultural Communication.* Vol. 4, pp. 1-17.

Lendra, I Wayan (1997) "Bali and Grotowski: Some Parallels in the Training Programme" in Richard Schechner and Lisa Wolford (eds.) *The Grotowski Sourcebook*. London; NewYork: Routledge. pp. 312-327.

Leppert, Richard (1995) *The Sight of Sound: Music, Representation, and the History of the Body*. Berkeley: University of California Press.

Lerner, Richard, M. (2002) *Concepts and Theories of Human Development*. 3rd ed. Mahwah, NJ: Lawrence Erlbaum Associates.

Levenson, Robert W. (1999) "The Intrapersonal Functions of Emotion" in *Cognition and Emotion*. Vol. 13, no. 5, pp. 481-504.

Levine, Jacob (1970) "Humor and Mental Health" in Albert Deutsch and Helen Fishman (eds.) *Encyclopedia of Mental Health*. Metuchen, NJ: Mini-Print Corporation. pp. 786-799.

Levinson, Jerrold (2003) *The Oxford Handbook of Aesthetics*. Oxford: Oxford University Press.

Lévi-Strauss, Claude (1961) "The Many Faces of Man" in *World Theatre*. Vol. 10, no. 1, pp. 11-20.

Lévi-Strauss, Claude (1963) *Structural Anthropology*. Vol. 1. New York: Basic Books.

Lévi-Strauss, Claude (1969a) *The Elementary Structures of Kinship*. [trans.] J. H. Bell, J. von Sturmer and R. Needham. Boston, MA: Beacon Press.

Lévi-Strauss, Claude (1969b) *The Raw and the Cooked: Introduction to a Science of Mythology*. Vol. 1. [trans.] John Wightman and Doreen Weightman. New York: Harper and Row.

Lévi-Strauss, Claude (1978) *Myth and Meaning*. London: Routledge & Kegan Paul.

Lewis, Michael, Haviland-Jones, Jeanette M. and Feldman Barratt, Lisa (2010) *Handbook of Emotions*. New York: Guilford Press.

Lewis, Richard R. (2003) *The Cultural Imperative: Global Trends in the 21st Century*. London: Intercultural Press.

Lipscomb, Scott D. (1996) "The Cognitive Organisation of Musical Sound" in Donald A. Hodges, (ed.) *Handbook of Music Psychology*. San Antonio: IMR Press. pp. 133-167.

Little, Kenneth (2003) "Pitu's Doubt: Entrée Clown Self-Fashioning in the Circus Tradition" in Joel Schechter (ed.) *Popular Theatre: A Sourcebook*. London; New York: Routledge. pp. 138-148.

Lommel, Andreas (1972) *Masks: Their Meaning and Function*. London: Paul Elek Books.

London, Justin (2006) *Musical Expression and Musical Meaning in Context* [online] Carleton College. Available from: http://www.people.carleton.edu/~jlondon/ musical_expression_and_mus.htm [Accessed 17/03/2006].

Loney, Glenn (1998) "Myth and Music: Resonances Across Continents and Centuries as Explored by Peter Brook and his Ensemble" in Richard Helfer, and Glenn Loney (eds.) *Peter Brook: Oxford to Orghast*. Singapore: Harwood Academics. pp. 163-176.

Lorenz, Konrad (1966) *On Aggression*. London: Routledge.

Luce, Gay Gaer (1971) *Biological Rhythms in Human and Animal Physiology*. New York: Dover.

Luckiesh, Matthew (1965) *Visual Illusions: Their Causes, Characteristics & Applications*. New York: Dover Publications.

Lutterbie, John (2006) "Neuroscience and Creativity in the Rehearsal Process" in Bruce McConachie and Elizabeth F. Hart *Performance and Cognition*: *Theatre Studies and the Cognitive Turn*. Abingdon; New York: Routledge. pp. 149-166.

Lyotard, Jean François (1984) *The Postmodern Condition: A Report on Knowledge*. Minneapolis: University of Minnesota Press.

Maanen, Hans van "How Contexts Frame Theatrical Events" in Vicki Ann Cremona, Peter Eversmann, Hans van Maanen, Willmar Sauter, and John Tulloch (eds.) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. pp. 243-277.

MacDonald, Kevin (2005) "Personality, Evolution, and Development" in Robert L. Burgess and Kevin MacDonald (eds.) *Evolutionary Perspectives on Human Development*. London; New Delhi; Thousand Oaks, CA: Sage. pp. 207-243.

MacLean, Paul D. (1989) *The Triune Brain in Evolution: Role in Paleocerebral Functions*. New York; London: Plenum Press.

Mahnke, Frank H. (1996) *Colour, Environment and Human Response: An Interdisciplinary Understanding*. New York: John Wiley and Sons Inc.

Malinowski, Bronislaw (1998) "Myth in Primitive Psychology" in Robert Alan Segal (ed.) *The Myth and Ritual Theory*: *An Anthology*. Oxford: Blackwell Publishing. pp. 172-179.

Mandler, George (1984) *Mind and Body: Psychology of Emotion and Stress*. New York: Norton.

Manusov, Valerie Lynn (2005) *The Sourcebook of Nonverbal Measures: Going Beyond Words*. Mahwah, NJ: Lawrence Erlbaum Associates.

Marchand, Trevor (ed.) (2011) *Making Knowledge: Explorations of the Indissoluble Relation Between Mind, Body and Environment*. Malden, MA: Wiley Blackwell.

Markman, Roberta H. and Markman, Peter T. (1989) *Masks of the Spirit: Image and Metaphor in Mesoamerica*. Berkeley: University of California Press.

Markum, Leo (2003) *How to Develop Your Sense of Humor*. Whitefish, MT: Kessinger Publishing.

Marr, David (1982) *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information*. San Francisco: W. H. Freeman.

Martin, John (2004) *The Intercultural Performance Handbook*. London: Routledge.

Martin, John Joseph (1963) *John Martin's Book of the Dance*. New York: Tudor Publishing.

Martin, Rod A. (2007) *The Psychology of Humor: An Integrative Approach*. Burlington: Elsevir Academic Press.

Mason, Bim (1996) "Popular Theatre--A Contradiction in Terms?" in Ros Merkin (ed.) *Popular Theatre?: Papers from the Popular Theatre Conference Liverpool*. Liverpool: John Moores University Press. pp. 1-5.

Matsumoto, David, Wallbott, Harald and Scherer, Klaus (1989) "Emotions in Intercultural Communication" in Molefi Kete Asante and William B. Grudykunst (eds.) *Handbook of International and Intercultural Communication*. Newbury Park, CA; London: Sage. pp. 225-246.

Matsumoto, David, Keltner, Dacher, Shiota, Michelle N., O'Sullivan, Maureen and Frank, Mark (2010) "Facial Expressions of Emotions" in Michael Lewis, Jeanette M. Haviland-Jones, Lisa Feldman Barrett (eds.) *Handbook of Emotions*. New York: Guilford Press. pp. 211-235.

Maxwell, Ian (2008) "The Ritualization of Performance Studies" in Graham St. John (ed.) *Victor Turner and Contemporary Cultural Performance*. New York: Berghahn Books. pp. 59-75.

Mayer, David (1997) "Towards a Definition of Popular Theatre" in David Mayer and Kenneth Richards (eds.) *Western Popular Theatre*. London: Methuen. pp. 257-277.

McConachie, Bruce (2008) *Engaging Audiences: A Cognitive Approach to Spectating in the Theatre*. New York: Palgrave Macmillan.

McConachie, Bruce and Hart, F. Elizabeth (eds.) (2006) *Performance and Cognition: Theatre Studies and the Cognitive Turn*. Abingdon; New York: Routledge.

McCutcheon, Jade (2008) *Awakening the Performing Body*. New York: Rodopi.

McDaniel, Carl and Gates, Roger H. (1998) *Marketing Research Essentials*. 2nd ed. Cincinnati, OH: South-Western College Publishing.

McDougall, William (2003) *An Introduction to Social Psychology*. Mineola, NY: Dover Publications.

McDowd, Joan M. and Shaw, Raymond J. (2000) "Attention in Aging", in Fergus I. M. Craik, and Timothy Salthouse (eds.) *The Handbook of Aging and Cognition*. Mahwah, NJ: Lawrence Erlbaum Associates. pp. 221-292.

McGhee, Paul (1989) *Humor: Its Origin and Development*. San Francisco: W. H. Freeman.

McGrath, John (1981) *A Good Night Out: Popular Theatre: Audience, Class, and Form*. London: Nick Hern Books.

McGrath, John and Holdsworth, Nadine (2002) *Naked Thoughts That Roam About: Reflections on Theatre*. London: Nick Hern Books.

McManus, Donald Cameron (2003) *No Kidding!: Clown as Protagonist in Twentieth Century Theatre*. London: Associated University Press.

McNeil, David (ed.) (2000) *Language and Gesture*. Cambridge: Cambridge University Press.

McPharlin, Paul (1925) "To Make A Mask" in *Theatre Arts Monthly*. Vol. 9, pp. 593-596.

Meadows, Sarah (1993) *The Child as Thinker: The Development and Acquisition of Cognition in Childhood*. London; New York: Routledge.

Merleau-Ponty, Maurice (1964) *The Primacy of Perception.* Evanston, IL: Northwestern University Press.

Merlin, Bella (2003) *Konstantin Stanislavsky*. London; New York: Routledge.

Merrill, Michael S. (2004) "Masks, Metaphor and Transformation: The Communication of Belief in Ritual Performance" in *Journal of Ritual Studies*. Vol. 18, no. 1, pp. 16-33.

Metzinger, Thomas (2010) *The Ego Tunnel: The Science of the Mind and the Myth of the Self*. New York: Basic Books.

Meyer-Dinkgräfe, Daniel (2001) *Approaches to Acting: Past and Present*. London: Continuum International Publishing Group.

Michael-Titus, Adina, Revest, Patricia and Shortland, Peter (2007) *The Nervous System: Basic Science and Clinical Conditions*. Edinburgh; New York: Churchill Livingstone.

Michel, George F. and Moore, Celia L. (1999) *Developmental Psychobiology: An Interdisciplinary Science*. Cambridge, MA: MIT Press.

Middlemiss, Charlette (2004) "A Strategic Approach to Clinical Governance" in Michael Rawlins and Peter Littlejohns (eds.) *Delivering Quality in the NHS 2004*. Oxford: Radcliffe Medical Press. pp. 85-92.

Miell, Dorothy, Macdonald, Raymond and Hargreaves, David J. (2005) *Musical Communication*. Oxford: Oxford University Press.

Miller, George A., Galanter, Eugene and Pribaum, Karl H. (1965) *Plans and the Structure of Behavior*. New York: Holt, Rinehart and Winston.

Miller, Judith G. (2007) *Ariane Mnouchkine*. London: Routledge.

Milner, A. David and Goodale, Melvyn A. (1995) *The Visual Brain in Action*. 2nd ed. Oxford: Oxford University Press.

Mira, José and Sandoval, Francisco (eds.) (1995) *From Natural to Artificial Neural Computation*. Berlin; Heidelberg; New York: Springer-Verlag.

Mishra, Braj Kumar (2008) *Psychology: A Study of Human Behaviours*. New Delhi: PHI Private Learning Ltd.

Mitter, Partha (1999) "A Short Commentary on the Science of Art" in *Journal of Consciousness Studies*. Vol. 6, no. 6-7, pp. 64-65.

Morreall, John (1983) *Taking Laughter Seriously*. Albany, NY: State University of New York Press.

Morris, Desmond (1977) *Manwatching: A Field Guide to Human Behaviour*. New York: H. N. Abrams.

Morris, Robin and Ward, Geoff (eds.) (2005) *The Cognitive Psychology of Planning*. New York: Psychology Press.

Morrison, India (2002) "Mirror Neurons and Cultural Transmission" in Maksim Stamenov and Vittorio Gallese (eds.) *Mirror Neurons and the Evolution of Brain and Language*. Amsterdam; Philadelphia, PA: John Benjamins Publishing Co. pp. 333-339.

Moss, Linda and Jensen, Sharon (2002) "Disability" in Colin Chambers (ed.) *Continuum Companion to Twentieth Century Theatre*. London; New York: Continuum International Publishing Group. pp. 211-214.

Motter, Brad C. (1998) "Neurophysiology of Visual Attention" in Raja Parasuraman (ed.) *The Attentive Brain*. Cambridge, MA: MIT Press. pp. 51-70.

Mukundan, C. R. (2007) *Brain Experience: Neuroexperiential Perspectives of Brain-Mind*. New Delhi: Altantic Publishers.

Müller, Heiner (2001) "Hamletmachine" in Margaret Herzfeld-Sander (ed.) *Contemporary German Plays 1*. [trans.] Carl Weber. New York: Continuum International Publishing Group. pp. 299-323.

Murray, Simon (2003) *Jacques Lecoq*. London; New York: Routledge.

Murray, Simon and Keefe, John (2007) *Physical Theatres: A Critical Introduction*. London: Routledge.

Myers, Diane (1994) *Disaster Response and Recovery: A Handbook for Mental Health Professionals*. Rockville, MD: U.S. Department of Health and Human Services.

Nairne, James S. (2009) *Psychology*. 5th ed. Belmont, CA: Thomson Wadworth.

Napier, David A. (1986) *Masks, Transformation, and Paradox*. Berkeley: University of California Press.

Nascimento, Clàudia Tatinge (2009) *Crossing Cultural Borders Through the Actor's Work: Foreign Bodies of Knowledge*. Abingdon; New York: Routledge.

Naverson, Rod (2004) "Learning to Carve Masks in Bali" in *Theatre Design and Technology*. Vol. 40, no. 1, pp. 38-44.

Nettl, Bruno (2000) "An Ethnomusicologist Contemplates Universals in Musical Sound and Musical Cultures" in Nils L.Wallin, Bjorn Merker and Steven Brown (eds.) *Origins of Music*. Cambridge, MA: MIT Press. pp. 463-472.

Newman, Barbara M. and Newman, Philip R. (2007) *Theories of Human Development*. Mahwah, NJ: Lawrence Erlbaum Associates.

Newman, Isadore and Benz, Carolyn (2006) *Qualitative-Quantitative Research Methodology: Exploring the Interactive Continuum*. Carbondale, IL: Southern Illinois University Press.

Nicholas, Dean A. (2009) *The Trickster Revisited*. New York: Peter Lang.

Nicolau, Josep Miró (1995) "Neural Micro-Structures: Three Simple Models" in José Mira, and Francisco Sandoval (eds.) *From Natural to Artificial Neural Computation*. Berlin; Heidelberg; New York: Springer-Verlag.

Niebur, Ernst and Koch, Christof (1998) "Computational Architectures for Attention" in Raja Parasuraman (ed.) *The Attentive Brain*. Cambridge, MA: MIT Press. pp. 163-187.

Niedenthal, Paula M., Barsalou, Lawrence W., Ric, François and Krauth-Gruber, Silvia (2005) "Embodiment in the Acquisition and use of Emotion Knowledge" in Lisa Feldman Barrett, Paula M. Niedenthal and Piotr Winkleman (eds.) *Emotion and Consciousness*. New York: Guilford Press. pp. 21-66.

Norman, Donald A. (2004) *Emotional Design: Why We Love (Or Hate) Everyday Things*. New York: Basic Books.

Novinger, Tracy (2001) *Intercultural Communication: A Practical Guide*. Austin, TX: University of Texas Press.

Nunley, John W. and McCarty, Cara (1999) *Masks: Faces of Culture*. New York: H. N. Abrams.

Nuttin, Joseph (1984) *Motivation, Planning and Action: A Relational Theory of Behaviour Dynamics*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Oddey, Alison (1994) *Devising Theatre: A Practical and Theoretical Handbook*. London; New York: Routledge.

Office for National Statistics (2004) *Ethnic Group (UV09)* [online] Available: www.neighbourhood.statistics.gov.uk/dissemination/ [Accessed 12/07/2007].

Okagbue, Osita (2002) "Sierra Leone" in Colin Chambers (ed.) *Continuum Companion to Twentieth Century Theatre*. London; New York: Continuum International Publishing Group. pp. 690 -691.

Olpim, Michael and Hesson, Margie (2009) *Stress Management for Life*. Belmont, CA: Wadsworth.

O'Neill, Eugene (1998) "Memoranda on Masks" in George W. Brandt (ed.) *Modern Theories of Drama: A Selection of Writings on Drama and Theatre 1850 -1990*. Oxford: Clarendon Press. pp. 153-155.

Opdahl, Keith M. (2002) *Emotion as Meaning: The Literary Case for How We Imagine*. Lewisburg: Bucknell University Press.

Ou, L-C. and Luo, M. R. (2004) "Colour Preference and Emotion Colour" in Deanna McDonagh, Paul Hekkert, Jeroen von Erp and Diane Gyi (eds.) *Design and Emotion: The Experience of Everyday Things*. London: Taylor & Francis. pp. 185-190.

Palmer, Jerry (1994) *Taking Humour Seriously*. Oxford; NewYork: Routledge.

Parasuraman, Raja, Warm, Joel S. and See, Judi E. (1998) "Brain Systems of Vigilance" in Raja Parasuraman (ed.) *The Attentive Brain*. Cambridge, MA: MIT Press. pp. 221-257.

Parsons, Lee Allen, Carlson, John B., Joralemon, David Peter and Kerr, Justin (1988) *The Face of Ancient America: The Wally and Brenda Zollman Collection of Pre-Columbian Art*. Bloomington: Indiana University Press.

Patzer, Gordon (1996) *Experiment-Research and Methodology in Marketing: Types and Applications*. Westport, CT: Greenwood Publishing Group.

Pavel, Thomas (1990) "Narratives of Ritual and Desire" in Kathleen M. Ashley (ed.) *Victor Turner and the Construction of Cultural Criticism: Between Literature and Anthropology*. Bloomington: Indiana University Press. pp. 64-69.

Pavis, Patrice (1982) *Languages of the Stage: Essays in the Semiology of Theatre*. New York: PAJ Publications.

Pavis, Patrice (1988) "From Text to Performance" in Michael Issacharoff and Robin E. Jones (eds.) *Performing Texts*. Philadelphia: University of Pennsylvania Press. pp. 86-100.

Pavis, Patrice (ed.) (1996) *The Intercultural Performance Reader*. London; New York: Routledge.

Pavis, Patrice (1998) *Dictionary of the Theatre: Terms, Concepts, and Analysis*. [trans.] Christine Shantz. Toronto: University of Toronto Press.

Peacock, Louise (2009) *Serious Play: Modern Clown Performance*. Oxford; Portland, OR: Intellect Books.

Pearson, Carol S. (1998) *The Hero Within: Six Archetypes We Live By*. San Francisco: Harper Collins.

Pemble, John (2005) *Shakespeare Goes To Paris: How The Bard Conquered France*. London: Continuum International Publishing Group.

Peretz, Isabelle (2001) "Listen to the Brain: A Biological Perspective on Musical Emotions" in Patrik N. Juslin and John A. Slobada (eds.) *Music and Emotion: Theory and Research*. New York; Oxford: Oxford University Press. pp. 104-134.

Petit, Lenard (2010) *The Michael Chekov Handbook: For The Actor*. Abingdon; New York: Routledge

Pfister, Manfred (1988) *The Theory and Analysis of Drama*. Cambridge; NewYork: Cambridge University Press.

Piaget, Jean (1951) *Play, Dreams and Imitation in Childhood*. London: Routledge & Kegan Paul.

Piaget, Jean and Inhelder, Bärbel (1997) *Mental Imagery in the Child: A Study of the Development of Imaginal Representation*. London: Routledge & Kegan Paul.

Pitts-Walker, Ethel (1994) "The Dilemma of Multiculturalism in the Theatre" in *The Drama Review*. Vol. 38, no.3, pp. 7-10.

Plotnik, Rod and Kouyoumdjian, Haig (2010) *Introduction to Psychology*. 9th ed. Belmont, CA: Wadsworth.

Popper, Karl Raimund (1999) *All Life is Problem Solving*. London: Routledge.

Porter Abbott, Horace (ed.) (2002) *The Cambridge Introduction to Narrative*. Cambridge: Cambridge University Press.

Potocky, Miriam and Murgatroyd, Stephen (1993) "What is Reversal Theory?" in John H. Kerr, Stephen Murgatroyd, and Michael J. Apter (eds.) *Advances in Reversal Theory*. Amsterdam: Swets & Zeitlinger. pp. 13-26.

Prentki, Tim and Selman, Jan (2003) *Popular Theatre in Political Culture: Britain and Canada in Focus*. Oxford; Portland, OR: Intellect Books.

Procter, James (2004) *Stuart Hall*. London: Routledge.

Propp, Vladimir (1968) *Morphology of the Folktale*. Austin, TX: University of Texas Press.

Provine, Robert R. (2000) *Laughter: A Scientific Investigation*. London: Penguin Putman Inc.

Pugh, George E. (1978) *The Biological Origin of Human Values*. London: Routledge.

Rakover, Sam S. and Cahlon, Baruch (2001) *Face Recognition: Cognitive and Computational Processes*. Amsterdam; Philadelphia: John Benjamins Publishing Company.

Ramachandran, Vilayanur S. and Hirstein, William (1999) "The Science of Art: A Neurological Theory of Aesthetic Experience" in *Journal of Consciousness Studies*. Vol. 6, no. 6-7, pp. 15-51.

Ramachandran, Vilayanur S. (2000) "Mirror Neurons and Imitation Learning as the Driving Force behind 'The Great Leap Forward' in Human Evolution" [online], *Edge*. Vol. 69. pp. 1-6. Available from: http://www.edge.org/3rd_culture/ramachandran/ramachandran _p1.html [Accessed 14/09/2004].

Ramachandran, Vilayanur S. (2003) *The Emerging Mind*. London: Profile Books.

Ramachandran, Vilayanur S. (2011) *The Tell-Tale Brain: Unlocking the Mystery of Human Nature.* London: William Heinemann.

Randall, Robert A. (1987) "Planning in Cross-Cultural Settings" in Sarah L. Friedman, Ellin Kofsky Scholnick and Rodney R. Cocking (eds.) *Blueprints for Thinking: The Role of Planning in Cognitive Development*. Cambridge: Cambridge University Press. pp. 39-79.

Ranganathan, Namita (2000) *The Primary School Child*. New Delhi: Orient Longman.

Rapp, Albert (1951) *The Origin of Wit and Humor*. New York: E. P. Hutton.

Rapport, Nigel and Overing, Joanna (2000) *Social and Cultural Anthropology: The Key Concepts*. London; New York: Routledge.

Raz, Naftali (2000) "Aging of the Brain and its Impact on Cognitive Performance: Integration of Structural and Functional Findings" in Fergus I. M. Craik and Timothy Salthouse (eds.) *The Handbook of Aging and Cognition*. Mahwah, NJ: Lawrence Erlbaum Associates. pp. 1-90.

Read, Leslie Du S. (2001) "Beginnings of Theatre in Africa and America" in John Russell Brown (ed.) *The Oxford Illustrated History of Theatre*. New York: Oxford University Press. pp. 93-107.

Reason, Matthew (2006) "Young Audience and Live Theatre, Part 1: Methods, Participation and Memory in Audience Research", in *Studies in Theatre and Performance*. Vol. 26, no. 2, pp. 129-145.

Reichardt, Charles (2009) "Quasi-Experimental Design" in Roger Ellis Millsap, Albert Maydeu-Olivares (eds.) *The SAGE Handbook of Quantitative Methods in Psychology*. London; Thousand Oaks, CA: Sage. pp. 46-71.

Reynolds, Larry T. (1993) *Interactionism: Exposition and Critique*. Dix Hills, NY: General Hall.

Reynolds, Peter C. (1981) *On the Evolution of Human Behaviour: The Argument from Animals to Man*. Berkeley; Los Angeles: University of California Press.

Rhodes, Gillian and Mclean, Ian G. (1990) "Distinctiveness and Expertise Effects with Homogenous Stimuli: Towards a Model of Configural Coding" in *Perception*. Vol. 19. pp. 773-794.

Ricoeur, Paul (1981) *Hermeneutics and the Human Sciences*. [trans.] J. B. Thomson. Cambridge: Cambridge University Press.

Rifkin, Jeremy (2009) *The Empathic Civilization: The Race to Global Consciousness in a World in Crisis*. Cambridge: Polity Press.

Rinn, William (1991) "Neuropsychology of Facial Expression" in Robert Stephen Feldman and Bernard Rime (eds.) *Fundamentals of Nonverbal Behaviour*. Cambridge: Cambridge University Press. pp. 3-30.

Rizzolatti, Giacomo and Sinigaglia, Corrado (2006) *Mirrors in the Brain: How Our Minds Share Actions and Emotions.* [trans.] Frances Anderson. Oxford: Oxford University Press.

Robb, David (2007) *Clowns, Fools and Picaros: Popular Forms in Theatre, Fiction and Film*. Amsterdam: Rodopi.

Rokotnitz, Naomi (2006) "It is Required/You Do Awake Your Faith: Learning to Trust the Body through Performing *The Winter's Tale*" in Bruce McConachie and F. Elizabeth Hart (eds.) *Performance and Cognition: Theatre Studies and the Cognitive Turn*. Abingdon; New York: Routledge. pp. 142-146.

Rolfe, Bari (1974) "Masks, Mime and Mummenschanz" in *Mime Journal*. No.2, pp. 1-6.

Rolfe, Bari (1981) *Mimes on Miming: Writings on the Art of Mime*. London: Millington.

Romaine, Suzanne (1999) *Communicating Gender*. Mahwah, NJ: Lawrence Erlbaum Associates.

Ross, Alison (1998) *On the Language of Humour*. London; New York: Routledge.

Rothfield, Philipa (2010) "Differentiating Phenomenology and Dance" in Alexandra Carter and Janet O'Shea *The Routledge Dance Studies Reader*. 2nd ed. Abingdon; New York: Routledge. pp. 303-318.

Rowe, Sharon (2008) "Modern Sports: Liminal Ritual or Liminoid Leisure" in Graham St. John (ed.) *Victor Turner and Contemporary Cultural Performance*. New York: Berghahn Books. pp. 127-148.

Royce, Anya Peterson (1977) *The Anthropology of Dance*. Bloomington: Indiana University Press.

Rozik, Eli (2002) *The Roots of Theatre: Rethinking Ritual and Other Theories of Origin*. Iowa City: University of Iowa Press.

Rudlin, John (2000) *Commedia dell'Arte: An Actor's Handbook*. London; New York: Routledge.

Rugg, Gordon and Petre, Marian (2007) *A Gentle Guide to Research Methods*. Maidenhead: Open University Press.

Russell, James A. and Fernández-Dols, José Miguel (1997) *The Psychology of Facial Expression*. Cambridge: Cambridge University Press.

Russo, Joseph (2008) "A Jungian Analysis of Homer's Odysseus" in Polly Young-Eisendrath and Terence Dawson (eds.) *The Cambridge Companion to Jung*. Cambridge; New York: Cambridge University Press. pp. 253-268.

Sadri, Houman A. and Flammia, Madelyn (2011) *Intercultural Communication: A New Approach to International Relations and Global Challenges*. New York: Continuum International Publishing Group.

Said, Edward W. (2003) *Orientalism*. London: Penguin Books.

Salih, Sara (2002) *Judith Butler*. London; New York: Routledge.

Salkind, Neil J. (2004) *An Introduction to Theories of Human Development*. London; Thousand Oaks, CA: Sage.

Salmons, Janet (2010) *Online Interviews in Real Time*. London; Thousand Oaks, CA: Sage.

Salter, Frank K. (1995) *Emotions in Command: Biology, Bureaucracy, and Cultural Evolution*. New Brunswick, NJ: Transactions Publishers.

Samuels, Andrew (1985) *Jung and Post Jungians*. London; Boston, MA: Routledge & Kegan Paul.

Sant, Toni (2003) "Tadashi Suzuki and the Shizuka Theatre Company in New York: An Interview" in *The Drama Review*. Vol. 47, no. 3-4, pp. 147-152.

Sarbin, Theodore R. (ed.) (1986) *Narrative Psychology: The Storied Nature of Human Conduct*. New York: Praeger.

Saussure, Ferdinand de (2004) "Course in General Linguistics" in Michael Ryan and Julia Rivkin (eds.) *Literary Theory: An Anthology*. Cambridge: Blackwell Publishing. pp. 59-71.

Sauter, Willmar (2000) *The Theatrical Event: Dynamics of Performance and Perception*. Iowa City: University of Iowa Press.

Sauter, Willmar (2004) "Introducing the Theatrical Event" in Vicki Ann Cremona, Peter Eversmann, Hans van Maanen, Willmar Sauter and John Tulloch (eds.) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. pp. 3-14.

Schacter, Daniel L. and Scarry, Elaine (eds.) (2001) *Memory, Brain, and Belief*. Cambridge, MA: Harvard University Press.

Schechner, Richard (1985) *Between Theatre and Anthropology*. Philadelphia: University of Pennsylvania Press.

Schechner, Richard (1986) "Magnitudes of Performance" in Victor Witter Turner, Edward M. Bruner and Clifford Geertz (eds.) *The Anthropology of Experience*. Urbana, IL: University of Illinois Press, pp. 344-373.

Schechner, Richard (1988) *Performance Theory*. London; New York: Routledge.

Schechner, Richard (1993) *The Future of Ritual: Writings on Culture and Performance*. London; New York: Routledge.

Schechner, Richard (2002) *Performance Studies: An Introduction*. Abington; New York: Routledge.

Schechner, Richard and Appel, Willa (eds.) (1990) *By Means of Performance: Intercultural Studies of Theatre and Ritual*. Cambridge: Cambridge University Press.

Schechner, Richard and Wolford, Lisa (eds.) (1997) *The Grotowski Sourcebook*. London; NewYork: Routledge.

Schechter, Joel (1986) *Durov's Pig*. New York: Theatre Communications Group.

Schechter, Joel (ed.) (2003) *Popular Theatre: A Sourcebook*. London; New York: Routledge.

Schensul, Stephen L., Schensul, Jean J. and LeCompte, Margaret D. (eds.) (1999) *Essential Ethnographic Methods: Observations, Interviews and Questionnaires*. Walnut Creek, CA: AltaMira Press.

Schiffer, Randolph B., Rao, Stephen M. and Fogel, Barry S. (eds.) (2003) *Neuropsychiatry*. Philadelphia, PA: Lippincott Willliams & Wilkins.

Schmitt, Alain, Atzwanger, Klaus, Grammer, Karl and Schäfer, Katrin (eds.) (1997) *New Aspects of Human Ethology*. New York; London: Plenum Press.

Schoenmakers, Henri and Tulloch, John (2004) "From Audience Research to the Study of Theatrical Events: A Shift in Focus" in Vicki Ann Cremona, Peter Eversmann, Hans van Maanen, Willmar Sauter and John Tulloch (eds.) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. pp. 15-28.

Schopenhauer, Arthur (1987) "The World as Will and Idea: Extracts from Book 1" in J. Morreall (ed.) *The Philosophy of Laughter and Humour*. Albany, NY: State University of New York Press. pp. 59-64.

Schwekbe, Shobhana and Gryski, Camilla (2003) "Gravity and Levity--Pain and Play: The Child and the Clown in the Paediatric Health Care Setting" in Amelia J. Klein, (ed.) *Humor in Children's Lives: A Guidebook for Practitioners*. Westport, CT; London: Praeger. pp. 49-68.

Scitovsky, Tibor (1992) *The Joyless Economy: The Psychology of Human Satisfaction*. Oxford; New York: Oxford University Press.

Scott, Derek B. (2002) M*usic, Culture and Society*. Oxford: Oxford University Press.

Scully, James (2006 [1892]) *The Human Mind: A Textbook of Psychology*. Vol. 1. Whitefish, MT: Kessinger Publishing.

Seaward, Brian Luke (2006) *Managing Stress: Principles and Strategies for Health and Well-Being*. Sudbury, MA: Jones and Bartlett.

Segal, Robert A. (1996) *Philosophy, Religious Studies, and Myth*. New York: Garland Publishing.

Segal, Robert A. (ed.) (2000) *Hero Myths: A Reader*. Oxford: Blackwell Publishing.

Segy, Ladislas (1976) *Masks of Black Africa*. New York: Dover Publications.

Shank, Theodore (2002) "Collective Creation" in Rebecca Schneider and Gabrielle Cody (eds.) *Re:direction: A Theoretical and Practical Guide*. London: Routledge. pp. 221-236.

Shapiro, Bruce G. (1999) *Reinventing Drama: Acting, Iconicity, Performance*. Westport, CT: Greenwood Publishing Group.

Sheldon, Brian (1995) *Cognitive Behavioural Therapy*. London; New York: Routledge.

Sheppard, Richard (2000) *Modernism-Dada-Postmodernism*. Evanston, IL: Northwestern University Press.

Shepherd, Simon and Wallis, Mick (2004) *Drama/Theatre/Performance*. Abingdon; New York: Routledge.

Shepherd, Simon (2006) *Theatre, Body and Pleasure*. Abingdon; New York: Routledge.

Sherwood, Lauralee (2008) *Human Physiology: From Cells to Systems*. Belmont, CA: Thomson Brooks Cole.

Shettleworth, Sara J. (2010) *Cognition, Evolution and Behaviour*. Oxford; New York: Oxford University Press.

Shevtsova, Marie (1997) "Interculturalism, Aestheticism, Orientalism: Starting from Peter Brook's Mahabharata" in *Theatre Research International*. Vol. 22, no. 2, pp. 98-104.

Siddiqi, Yumna (2005) "Edward Said, Humanism, and Secular Criticism" in Ferial Ghazoul (ed.) *Edward Said and Critical Decolonization*. Cairo; New York: American University in Cairo Press. pp. 65-88.

Siegel, Marcia B. (2010) "Bridging the Critical Distance" in Alexandra Carter and Janet O'Shea (eds.) *The Routledge Dance Studies Reader*. 2nd ed. Abingdon; New York: Routledge. pp. 188-197.

Simon, Eli (2003) *Masking Unmasked: Four Approaches to Basic Acting*. New York: Palgrave Macmillan.

Simons, Helen (2000) "Damned if You Do and Damned if You Don't: Ethical and Political Dilemmas in Evaluation" in Helen Simons and Robin Usher (eds.) *Situated Ethics in Educational Research*. London; New York: Routledge. pp. 39-55.

Simpson, Jeffrey A. (2007) *Adult Attachment: Theory, Research and Clinical Implications*. New York; London: Guilford Press.

Sireteanu, Ruxandra (2001) "Development of the Visual System in the Human Infant" in Alex F. Kalrerboer and Albertus Gramsbergen (eds.) *Handbook on Brain and Behaviour in Human Development*. Dordrecht: Kluwer Academic. pp. 629-652.

Slattum, Judy and Schraub, Paul (2003) *Balinese Masks: Spirits of an Ancient Drama*. Hong Kong: Periplus Editions.

Slowiak, James and Cuesta, Jairo (2007) *Jerzy Grotowski*. Abingdon; New York: Routledge.

Smith, Peter K. (1997) "Playfighting and Real Fighting: Perspectives on their Relationship" in Alain Schmitt, Klaus Atzwanger, Karl Grammer and Katrin Schäfer (eds.) *New Aspects of Human Ethology*. New York; London: Plenum Press. pp. 47-64.

Smith, Peter K. and Gosso, Yumi (2010) *Children and Play*. Chichester; Malden, MA: Wiley Blackwell.

Smith, Peter K., Cowie, Helen and Blades, Mark (2003) *Understanding Children's Development*. Oxford: Blackwell Publishing.

Smith, Susan V. H. (1984) *Masks in Modern Drama*. Berkeley; Los Angeles; London: University of California Press.

Sogan, Shunya and Masutani, Makoto (1989) "Identification of Emotion from Body Movement" in *Psychology Reports*. Vol. 65, pp. 35-46.

Solso, Robert L. (2000) "The Cognitive Neuroscience of Art: A Preliminary fMRI Observation" in *Journal of Consciousness Studies*. Vol. 7, no. 8-9, pp. 75-85.

Somers, John (ed.) (1996) *Drama and Theatre in Education: Contemporary Research*. North York, ON: Captus University Publications.

Sørensen, Jesper (2007) *A Cognitive Theory of Magic*. Lanham, MD: AltaMira Press.

Speech and Hearing Research Group (2007) *Auditory Scene Analysis: Listening to Several Things at Once* [online] The University of Sheffield. Available from: http://spandh.dcs. shef.ac.uk/research/asa.html [Accessed 04/01/2007].

Spencer, Herbert (2004 [1868]) "On the Physiology of Laughter" in *Essays on Education: The Philosophy of Style, and Kindred Spirits*. Teddington: The Echo Library. pp. 229-237.

Sroufe, L. Alan and Waters, Everett (1976) "The Ontogenesis of Smiling and Laughter: A Perspective on the Organisation of Development in Infancy" in *Psychological Review*. Vol. 83, pp. 173-189.

Stamenov, Maksim and Gallese, Vittorio (2002) *Mirror Neurons and the Evolution of the Brain and Language*. Amsterdam; Philadelphia: John Benjamins Publishing Company.

Stevens, Anthony (2002 [1990]) *Archetype Revisited: An Updated Natural History of the Self*. London: Brunner Routledge.

St John, Graham (2008) *Victor Turner and Contemporary Cultural Performance*. New York: Berghahn Books.

Stookey, Lorena Laura (2004) *Thematic Guide to World Mythology*. Westport, CT: Greenwood Publishing Group.

Storey, John (2006) *Cultural Theory and Popular Culture: A Reader*. New York: Pearson Education Ltd.

Storms, Godfrid (1974) *Anglo-Saxon Magic*. New York: Gordon Press.

Storr, Anthony (1973) *Jung*. London: Fontana Press.

Stott, Andrew (2005) *Comedy*. Oxford; New York: Routledge.

Streit, Linda (2004) "Crossing the Divide: Defamiliarization as a Means for Rupturing Borders" in Vicki Ann Cremona, Peter Eversmann, Hans van Maanen, Willmar Sauter and John Tulloch (eds.) *Theatrical Events: Borders, Dynamics, Frames*. Amsterdam; New York: Rodopi. pp. 373-390.

Strinati, Dominic (1995) *An Introduction to Theories of Popular Culture*. Abingdon; New York: Routledge.

Styan J. L. (1981) *Modern Drama in Theory and Practice* 2: Symbolism, Surrealism and the Absurd. Cambridge: Cambridge University Press.

Sutton-Smith, Brian (2001) *The Ambiguity of Play*. London: Harvard University Press.

Suzuki, Tadashi (1995) "Culture is the Body" in Phillip B. Zarrilli (ed.) *Acting (Re)Considered: Theories and Practices*. London; New York: Routledge. pp. 155-160.

Svendsen, Lars (2005) *A Philosophy of Boredom*. London: Reaktion Books.

Taft, Charles and Sivik, Lars (1992) *Cross-National Comparisons of Color Meaning*. Göteborg: Göteborg University Press.

Tan, Ed (1982) "Cognitive Processes in Reception" in Ernest W.B. Hess-Lüttich (ed.) *Multimedial Communication*. Vol. 2: Theatre Semiotics. Tübingen: Gunter Narr Verlag. pp. 156-203.

Taylor, Philip (1996) *Researching Drama and Arts Education: Paradigms and Possibilities*. Oxford: Routledge.

Teele, Rebecca (1984) "Interview with Udaka Michishige" in *Mime Journal*. No. 10: Nō/Kyōgen Masks and Performance. pp. 130-139.

Teuten, Timothy (1996) *The Collector's Guide to Masks*. London: Bracken Books.

Thaut, Michael (2005) *Rhythm, Music, and the Brain: Scientific Foundations and Clinical Applications*. New York: Routledge.

Thompson, Evan T. (1995) *Colour Vision: A Study in Cognitive Science and the Philosophy of Perception*. London: Routledge.

Thorpe, William Homan (1974) *Animal Nature and Human Nature*. London: Methuen.

Tian, Min (2008) *The Poetics of Difference and Displacement: Twentieth-Century Chinese-Western Intercultural Theatre*. Hong Kong: Hong Kong University Press.

Tillis, Steve (1999) *Rethinking Folk Drama*: *Contributions in Drama and Theatre Studies*. Westport, CT: Greenwood Publishing Group.

Tolstoy, Leo (1962 [1897]) *What is Art? And Essays on Art*. New York: Oxford University Press.

Tooby, John and Cosmides, Leda (1992) "The Psychological Foundations of Culture" in Jerome Barkow, Leda Cosmides and John Tooby (eds.) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York: Oxford University Press. pp. 19-136.

Tooby, John and Cosmides, Leda (1995) "The Language of the Eyes as an Evolved Language of Mind" Forward to: Simon Baron-Cohen *Mindblindness: An Essay on Autism and Theory of Mind*. Cambridge, MA: MIT Press. pp. xi-xviii.

Tovee, Martin J. (1996) *An Introduction to the Visual System*. Cambridge: Cambridge University Press.

Towsen, John H. (1976) *Clowns*. New York: Hawthorn Books.

Tulloch, John (2005) *Shakespeare and Chekhov in Production and Reception: Theatrical Events and their Audiences*. Iowa City: University of Iowa Press.

Turner, Bryan (2008) *The Body & Society: Explorations in Social Theory*. Michigan: Sage.

Turner, Victor (1982) *From Ritual to Theatre: The Human Seriousness of Play*. New York: PAJ publications.

Turner, Victor (1987) *The Anthropology of Performance*. New York: PAJ Publications. Preface by Richard Schechner.

Turner, Victor (1990) "Are there Universals of Performance in Myth, Ritual and Drama?" in Richard Schechner and Willa Appel (eds.) *By Means of Performance*. Cambridge: Cambridge University Press. pp. 8-18.

Tylor, Edward B. (1871) *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art, and Custom*. London: John Murray.

Ubersfeld, Anne (1982) "The Pleasure of the Spectator" in *Modern Drama*. Vol. 25, no. 1, pp. 126-139.

Umiltà, Carlo (2000) "Visuospatial Attention" in *Handbook of Neuropsychology*. Vol. 1, no. 2, pp. 393-426.

Underwood, Leon (1964) *Masks of West Africa*. London: Alec Tiranti.

Uys, Helletje and Basson, A. A. (1991) *Research Methodology in Nursing*. 2nd ed. Pretoria: Haum.

Verstegen, Ian (2005) *Arnheim, Gestalt, and Art: A Psychological Theory*. New York: Springer Verlag.

Vidrovitch, Nina (1975) "Introduction to the Mask" in *Mime Journal*. No. 2, pp. 18-23.

Vignoli, Tito (2007) *Myth and Science: An Essay*. Teddington: Echo Library.

Wade, Nicholas and Swanston, Michael (2001) *Visual Perception: An Introduction*. Hove; Philadelphia: Psychology Press.

Walker, Steven F. (2002) *Jung and the Jungians on Myth: An Introduction*. New York: Routledge.

Wallaschek, Richard (1970 [1893]) *Primitive Music: An Inquiry into the Origin and Development of Music, Songs, Instruments, Dances, and Pantomimes of Savage Races*. Bloomington: Indiana University Press.

Wallenstein, Gene (2009) *The Pleasure Instinct: Why We Crave Adventure, Chocolate. Pheromones and Music*. Hoboken, NJ: John Wiley and Sons Inc.

Wallin, Nils L., Merker, Björn and Brown, Steven (eds.) (2000) *The Origins of Music*. Cambridge, MA: MIT Press.

Wardle, Irving (1958) "Review of *The Birthday Party*, by Harold Pinter", in *The Times* (20 May) p. 3.

Watson, Ian (1993*) Towards a Third Theatre: Eugenio Barba and the Odin Teatret*. London; New York: Routledge.

Wehr, Demaris S. (1988) *Jung and Feminism: Liberating Archetypes*. London: Routledge.

Weiner, Irving B. (ed.) (2003) *Handbook of Psychology*. Hoboken, NJ: John Wiley & Sons Inc.

Weisfeld, Glenn (1997) "Research on Emotions and Future Development in Human Ethology" in Alain Schmitt, Klaus Atzwanger, Karl Grammer and Katrin Schäfer (eds.) *New Aspects of Human Ethology*. New York; London: Plenum Press. pp. 25-46.

Weiss, Albert P. (1994) *A Theoretical Basis of Human Behaviour*. London; Tokyo: Routledge/Thoemmes Press.

Welsford, Enid (1935) *The Fool*. London: Faber and Faber.

Wely, Walter van (1992) *Dogtroep: The Art of Wild Theatre*. Amsterdam: Uitgeuerij International Theatre & Film Books.

Wertsch, James V. (2002) *Voices of Collective Remembering*. Cambridge; New York: Cambridge University Press.

Wheeler, Forrest (2005) *Using the Power of Humor to Improve Your Life*. Oxford; Victoria, VC: Trafford Publishing.

Williams, David (ed.) (1991) *Peter Brook and the Mahabharata: Critical Perspectives*. London: Routledge.

Williams, David (ed.) (1999) *Collaborative Theatre: The Théâtre du Soleil Sourcebook*. London: Routledge.

Williams, Drid (2004) *Anthropology and the Dance: Ten Lectures*. Urbana, IL: University of Illinois Press.

Williams, Raymond (1958) *Culture and Society*. New York: Columbia University Press.

Williams, Raymond (2001) *The Raymond Williams Reader*. John Higgins (ed.) Oxford; Malden, MA: Blackwell Publishing.

Williams, Raymond (2006) "The Analysis of Culture" in John Storey (ed.) *Critical Theory, Popular Culture: A Reader*. 3rd edn. London: Pearson Education.

Williams, Raymond and Orrom, Michael (1954) *Preface to Film.* London: Film Drama Ltd.

Williams, Rick and Newton, Julianne (2007) *Visual Communication: Integrating Media, Art, and Science*. London: Taylor & Francis.

Wilsher, Toby (2007) *The Mask Handbook: A Practical Guide*. London; New York: Routledge.

Wilson, Elizabeth A. (1998) *Neural Geographies: Feminism and the Microstructure of Cognition*. New York: Routledge.

Wilson, Glen Daniel (ed.) (1991) *Psychology and Performing Arts*. Amsterdam: Garland Science.

Wilson, James Q. (1995) *On Character: Essays*. Washington DC: AEI Press.

Winner, Ellen (1997) *The Point of Words: Children's Understanding of Metaphor and Irony*. Cambridge, MA: Harvard University Press.

Winnicott, Donald Woods (2005 [1971]) *Playing and Reality*. London; New York: Routledge.

Wintle, Justin (2009) *The Concise New Makers of Modern Culture*. London: Routledge.

Wissler, Clark (1923) *Man and Culture*. New York: Crowell.

Wolford, Lisa (1997) "Ariadne's Thread: Grotowski's Journey Through the Theatre" in Richard Schechner and Lisa Wolford (eds.) *The Grotowski Sourcebook*. London; New York: Routledge. pp. 1-22.

Woodruff, Paul (2008) *The Necessity of Theater: The Art of Watching and Being Watched*. Oxford: Oxford University Press.

Wright, John (2002) "The Masks of Jacques Lecoq" in Franc Chamberlain and Ralph Yarrow (eds.) *Jacques Lecoq and the British Theatre*. London; New York: Routledge. pp. 71-84.

Wright, John (2006) *Why Is That So Funny?: A Practical Exploration of Physical Comedy*. London: Nick Hern Books.

Yarrow, Ralph and Chamberlain, Franc (eds.) (2002) *Jacques Lecoq and the British Theatre*. London; New York: Routledge.

Young, Kay and Saver, Jeffrey L. (2001) "The Neurology of Narrative" in *Substance Madison*. Vol. 30, no. 94-95, pp. 72-84.

Zarilli, Phillip B. (1984) *The Kathakali Complex: Actor, Performance and Structure*. New Delhi: Abhinav.

Zarrilli, Phillip B. (ed.) (1994) *Acting (Re)Considered: Theories and Practices*. London; New York: Routledge.

Zarilli, Phillip B. (2000) *Kathakali Dance-Drama: Where Gods and Demons Come to Play*. London: Routledge.

Zeki, Semir (1999a) *Inner Vision: An Exploration of Art and the Brain*. Oxford: Oxford University Press.

Zeki, Semir (1999b) ''Art and the Brain'' in *Journal of Consciousness Studies*. Vol. 6, no. 6-7, pp. 76-96.

Unpublished Interviews

Carlyle-Palmer, Thomasina and Davis, Tony (29/03/2004)

Kinnier-Wilson, Ninian (10/03/2004)

Wilsher, Toby (12/04/2004)

Wright, John (02/03/2004)

Appendices

Appendix A - Hero Mask

Appendix B – Hero Mask Kinemic Elements

	Universal facial expressions (Ekman)	Siang Mien (Chi An Kuei)	Physiognomy (Dr. Jean Lefas)
Eyebrow			'When straight and horizontal, they belong more properly to a vigorous male personality' (1975: 89).
Eyes			'Eyes which are neither protruding nor sunken, but somewhere in between, are evidence of sound morality and well balanced intelligence' (1975: 84).
Nose		Nose is long with a downwards slanting tip, 'it symbolises courage, including the courage to attack' (1994: 94).	
Mouth			'Based on picture *d* page 59 – 'Here we have a good mouth belonging to a faithful, capable person, one of complete integrity'(1975: 56). 'A firmly closed mouth (as long as it is not affected or pointed) is a sign of courage; it is interesting to note that, when a display of courage is required of them, even people who normally keep their mouth open, have a habit of closing it' (1975: 60).
Chin		Cleft chin. – 'The chin that is divided in the middle is noteworthy for its thirst for adventure and appears to be constantly hunting down new challenges' (1994:144).	
Shape		'King face or Sun face is angular in structure: forehead, cheeks and jaw line are strongly defined' (1994:34).	
Other		Broad forehead – 'The mental and spiritual values of broad forehead people are quite striking. Such people stand up unflinchingly for their own and other people's rights' (1994: 48).	

Appendix C – Hero Mask and Costume

Appendix D -Evil Ruler

Appendix E – The Evil Ruler Mask Kinemic Elements

	Universal facial expressions (Ekman)	Siang mien (Chi An Kuei)	Physiognomy (Dr. Jean Lefas)
Eyebrow	Brow line from anger. 'Eyebrows down and together with the inner corners towards the nose' (2003: 135).		'Oblique eyebrows, which slant down towards the root of the nose and up towards the temples are a sign of a tough character with a quick temper and a sharp tongue. They can also be evidence of madness, and a low depraved type of mind' (1975: 90).
Eyes	Angry eyes - Eyes open wide with the upper eyelid pushing against the lowered eyebrows, staring hard (2003: 135).		
Nose		Nose is long with a downwards slanting tip, 'it symbolises courage, including the courage to attack' (1994: 94) – cool calculating, self confident' (1994: 95).	
Mouth	Angry mouth – 'Lips pressed together tightly and tensed' (2003: 135).	'People with straight lips are said to have a great deal of power, a thirst for knowledge and intelligence. But they are also thought to be tenacious fighters, who will stop at nothing to get their point of view accepted' (1994: 113).	
Chin		Jutting chin – 'great self confidence, but also excessive self importance and aggression' (1994:141).	
Shape		'Male fire faces are of quick intelligence, and sometimes unscrupulous in their striving for power' (1994: 31). Picture – (1994: 33)	
Other		.	'Angular contours indicate hardness, selfishness, malice, or at least a lack of sensitivity: rigidity, tyranny and ruthlessness' […] (1975: 16).

'The lips narrow in anger, so people with thin lips are often thought to be unfriendly, cruel or hostile' (Darwin 1999 [1872]: xxviii)
When angry 'The heart rate increases, as does respiration; blood pressure rises, and the face may redden'. (Ekman 2003: 1

Appendix F–Evil Ruler Mask and Costume

Appendix G – Child Mask

Appendix H – Child Mask Kinemic Elements

	Universal facial expressions (Ekman)	Siang Mien (Chi An Kuei)	Physiognomy (Dr. Jean Lefas)
Eyebrow			'Gently arched eyebrows are well suited to the modesty and simplicity of a young girl' (1975: 89).
Eyes			'Wide open eyes, in which the white of the eye is clearly visible all round […] belong to highly excitable types' (1975: 82).
Nose		People with a snub nose 'radiate naïve charm' (1994: 98).	
Mouth	Smile of happiness (2003: 207-208).		
Chin		Pointed chin. 'These restless characters require constant stimulation and an audience to satisfy their great need for communication' (1994: 137).	
Shape		Female fire face. 'They constantly bubble over with ideas-which they can also from time to time transform into action' (1994: 31).	
Other			'A sweet look bears witness to a soft personality' (1975: 86).

Appendix I – Child Mask and Costume

Appendix J- Mother Mask

Appendix K – Mother Mask Kinemic Elements

	Universal facial expressions (Ekman)	**Siang Mien (Chi An Kuei)**	**Physiognomy (Dr. Jean Lefas)**
Eyebrow	Real enjoyment –'the eyebrows move down slightly due to the outer part of the muscle that orbits the eye' (2003: 208).	New moon eyebrows – 'reflect balance and harmony' (1994: 67).	
Eyes	A broad smile – 'narrows the eye aperture' (2003: 208).	Large eyes. 'They are considered to represent intelligence, strength, a person teeming with ideas and a sincere character' (1994: 77).	Eyes which are shaped like almonds are a pledge of gentleness and sensitivity (1975: 82).
Nose		'Fleshy nose generous emotional and sensitive. Being happy is far more important than financial wealth' (1994: 98-99).	
Mouth	Smile of happiness. 'A broad smile pushes up the cheeks' (2003: 208).		Lips which are somewhat strong, well proportioned and quite pronounced, with the middle line evenly curved on both sides, are incompatible with baseness of character; they are also alien to falsehood and malice (1975: 56).
Chin		A round chin means we are dealing with someone who has a strong sense of family and a balanced, placid temperament (1994: 136).	
Shape		Large round head –'harmony and happiness' (1994: 17).	
Other			Round, supple contours are a sign of jovial disposition, gentleness, frankness (1975: 16).

Appendix **L**--Mother Mask and Costume

Appendix M-Devil Dog

Appendix N-The Old Fool

Appendix O - Kinemic Elements of the Old Fool Mask

	Universal Facial Expressions (Ekman)	Siang Mien (Chi An Kuei)	Physiognomy (Dr. Jean Lefas)
Eyebrow		Downward sloping eyebrow – 'this shape […] indicates a lack of both ambition and determination to get the most out of life' (1994: 73).	
Eyes		Sleepy look – 'Little self-confidence, low expectations, often resigned to disappointment, dreamy, phlegmatic' (1994: 90).	'When a man, without any valid physical reasons has a tired and sleepy expression, one can conclude that this is due to intellectual laziness and to the lack of reflection' (1975: 86).
Nose			'A fat, fleshy nose, flared at the top, is a sure sign of a dull, and rather dense individual; lazy, spineless, easily led' (1975: 43).
Mouth			'A stupid face has slack muscles, a half open mouth, one eyebrow often higher than the other, and a vague, uncertain gaze, focussed on nothing in particular' (1975: 9).
Chin			'Receding chins inevitably suggest weakness of some sort or another' (1975: 71).
Shape			'Any face in which the solid lower part is appreciably longer than one of the two upper parts is the face of a stupid person' (1975: 9).
Other			'A narrow triangular forehead […] is characteristic of an individual who is quite bereft of intelligence' (1975:31).

'A half open mouth can denote […] a man deep in concentration […], a simpleton who gapes admiringly at everything' (Lefas 1975: 60).
' People open their mouths mechanically when admiring a masterpiece or listening, enthralled, to some exquisite aria' (Lefas 1975: 61).

Appendix **P**–The Old Fool Mask and Costume

'The Magic Fruit' Audience Questionnaire

1) **How old are you? Please tick.**

Over 65 ☐   50 – 65 ☐   35 – 49 ☐   20 – 34 ☐   13 – 19 ☐   under 13 ☐

2) **What is your Ethnic origin?**

3) **On a scale of one to ten, how enjoyable was the show? Please ring the box.**
    (1 = not very enjoyable, 10 = very enjoyable)

1	2	3	4	5	6	7	8	9	10

4) **How much of the show did you understand? Please tick.**

All of it	Most of it	Half of it	Less than half	Not very much
☐	☐	☐	☐	☐

5) **On a scale of one to ten, how clear was each of the characters in the play?**
    1=not very clear 10 = very clear. Please ring a number.

Mother	1	2	3	4	5	6	7	8	9	10

Hero	1	2	3	4	5	6	7	8	9	10

Evil ruler	1	2	3	4	5	6	7	8	9	10

Child	1	2	3	4	5	6	7	8	9	10

Old man	1	2	3	4	5	6	7	8	9	10

Devil dog	1	2	3	4	5	6	7	8	9	10

Ethnic origin monitoring questionnaire

The Department for Children, Schools and Families is committed to ensure that equality is embedded into the Advanced Skills Teachers (AST). We may process the information collected on this form only for the purpose of administering and monitoring the AST. It will not be used for selection purposes. Please follow the instructions and return the completed form to the address below.

Name:

Please tick only one box in Column *A,* and one box in Column B. Which groups do you most identify with?

Column A
(a) ☐ British or Mixed British
(b) ☐ English
(c) ☐ Irish
(d) ☐ Scottish
(e) ☐ Welsh   .
(f)   ☐ Other (specify if you wish)

Column B
Asian
(a) ☐ Bangladeshi
(b) ☐ Indian
(c) ☐ Pakistani
(d) ☐ Other Asian background
         (specify if you wish)

Black
e) ☐   African
(f) ☐   Caribbean
(g) ☐ Other Black background
         (specify if you wish)

Chinese
(h) ☐ Chinese background
         (specify if you wish)

Please return to:
National assessment Agency for
ASTs, ETs, VT Education, Skills OPUS 1
Bay Tree Avenue
Kingston Rd
Leatherhead
Surrey KT22 7UE

Department for
Children, schools and families

Mixed ethnic background
(i) ☐   Asian and White
(j) ☐   Black African and White
(k) ☐   Black Caribbean and White
(I) ☐   Other mixed ethnic background
         (specify if you wish)

White
(m) ☐ White background

         (specify if you wish)

A 't' test was conducted on the mean ratings of British audience members and non-British audience members for their levels of enjoyment, and understanding of the Theatrical performance of *The Magic Fruit* to ascertain whether statistically the difference was significant. A null hypothesis was constructed that there was no significant difference in the response by different ethnic groups to their understanding of either the characters or their enjoyment of the piece. If the calculations gave a value of 't' that was sufficiently different from zero, the results would be considered significantly different and the null hypothesis would be rejected. The level of significance was set at a standard rate of 0.05. Using the table of critical values for 't' at 0.05 for 338 degrees of separation (see appendix T) then any result where the figure was greater than 1.97 was considered significant and the null hypothesis was rejected. Any result where the figure was less than 1.97 and the null hypothesis was accepted.

Null Hypothesis being tested	't' value	Outcome
There is no significant difference in the response by different ethnic groups to their understanding of the child character.	0.35	Accept
There is no significant difference in the response by different ethnic groups to their understanding of the understanding of the mother character.	0.33	Accept
There is no significant difference in the response by different ethnic groups to their understanding of the understanding of the evil ruler character.	0.10	Accept
There is no significant difference in the response by	1.06	Accept

different ethnic groups to their understanding of the hero character.		
There is no significant difference in the response by different ethnic groups to their understanding of the understanding of the old man character.	0.90	Accept
There is no significant difference in the response by different ethnic groups to their understanding of the understanding of the devil dog character	1.85	Accept
There is no significant difference in the response by different ethnic groups to their overall enjoyment of the performance.	0.21	Accept
There is no significant difference in the response by different ethnic groups to their overall understanding of the performance.	1.42	Accept

Table of Critical Values for T

	0.2	0.1	0.05	0.01	0.005	0.001
2	1.89	2.92		9.92	14.09	31.60
3	1.64	2.35	4.30	5.84	7.45	12.92
			3.18			
4	1.53	2.13	2.78	4.60	5.60	8.61
5	1.48	2.02	2.57	4.03	4.77	6.87
6	1.44	1.94	2.45	3.71	4.32	5.96
7	1.41	1.89	2.36	3.50	4.03	5.41
8	1.40	1.86	2.31	3.36	3.83	5.04
9	1.38	1.83	2.26	3.25	3.69	4.78
10	1.37	1.81	2.23	3.17	3.58	4.59
11	1.36	1.80	2.20	3.11	3.50	4.44
12	1.36	1.78	2.18	3.05	3.43	4.32
13	1.35	1.77	2.16	3.01	3.37	4.22
14	1.35	1.76	2.14	2.98	3.33	4.14
15	1.34	1.75	2.13	2.95	3.29	4.07
16	1.34	1.75	2.12	2.92	3.25	4.01
17	1.33	1.74	2.11	2.90	3.22	3.97
18	1.33	1.73	2.10	2.88	3.20	3.92
19	1.33	1.73	2.09	2.86	3.17	3.88
20	1.33	1.72	2.09	2.85	3.15	3.85
21	1.32	1.72	2.08	2.83	3.14	3.82
22	1.32	1.72	2.07	2.82	3.12	3.79
23	1.32	1.71	2.07	2.81	3.10	3.77
24	1.32	1.71	2.06	2.80	3.09	3.75
25	1.32	1.71	2.06	2.79	3.08	3.73

26	1.31	1.71	2.06	2.78	3.07	3.71
27	1.31	1.70	2.05	2.77	3.06	3.69
28	1.31	1.70	2.05	2.76	3.05	3.67
29	1.31	1.70	2.05	2.76	3.04	3.66
30	1.31	1.70	2.04	2.75	3.03	3.65
35	1.31	1.69	2.03	2.72	3.00	3.59
40	1.30	1.68	2.02	2.70	2.97	3.55
45	1.30	1.68	2.01	2.69	2.95	3.52
50	1.30	1.68	2.01	2.68	2.94	3.50
55	1.30	1.67	2.00	2.67	2.92	3.48
60	1.30	1.67	2.00	2.66	2.91	3.46
65	1.29	1.67	2.00	2.65	2.91	3.45
70	1.29	1.67	1.99	2.65	2.90	3.43
75	1.29	1.67	1.99	2.64	2.89	3.42
80	1.29	1.66	1.99	2.64	2.89	3.42
85	1.29	1.66	1.99	2.63	2.88	3.41
90	1.29	1.66	1.99	2.63	2.88	3.40
95	1.29	1.66	1.99	2.63	2.87	3.40
100	1.29	1.66	1.98	2.63	2.87	3.39
200	1.29	1.65	1.97	2.60	2.84	3.34
500	1.28	1.65	1.96	2.59	2.82	3.31
1000	1.28	1.65	1.96	2.58	2.81	3.30
Infinity	1.28	1.64	1.96	2.58	2.81	3.29

puppet head can turn
when actor
turns his head

face can be
supplied (back of head
needs
constructing)

mask/
puppet

Joints at
shoulder
elbow
+
wrist

whip

puppet hand
connecting stick
actor hand able
to move puppet

Actor

stick able
to hit
floor

• lightweight structure
• quick change
(like taking off
a ruck sack!)
• Actor can see but
audience can't see
actor

Evil Ruler Design

Head moves from side to side as if looking around

join between Mask + costume
possibly hidden
by a Mane ?

Actor can see here, but not
be seen by the audience.

face must be asymmetrical
and genuinely scary
(not pantomime scary)

Weight of the head attached to
the actor like a front baby
carrier, so hands are free to
move eyes, open + close mouth
and to go into the arms +
claws of the costume

Devil Dog

Devil Dog Design