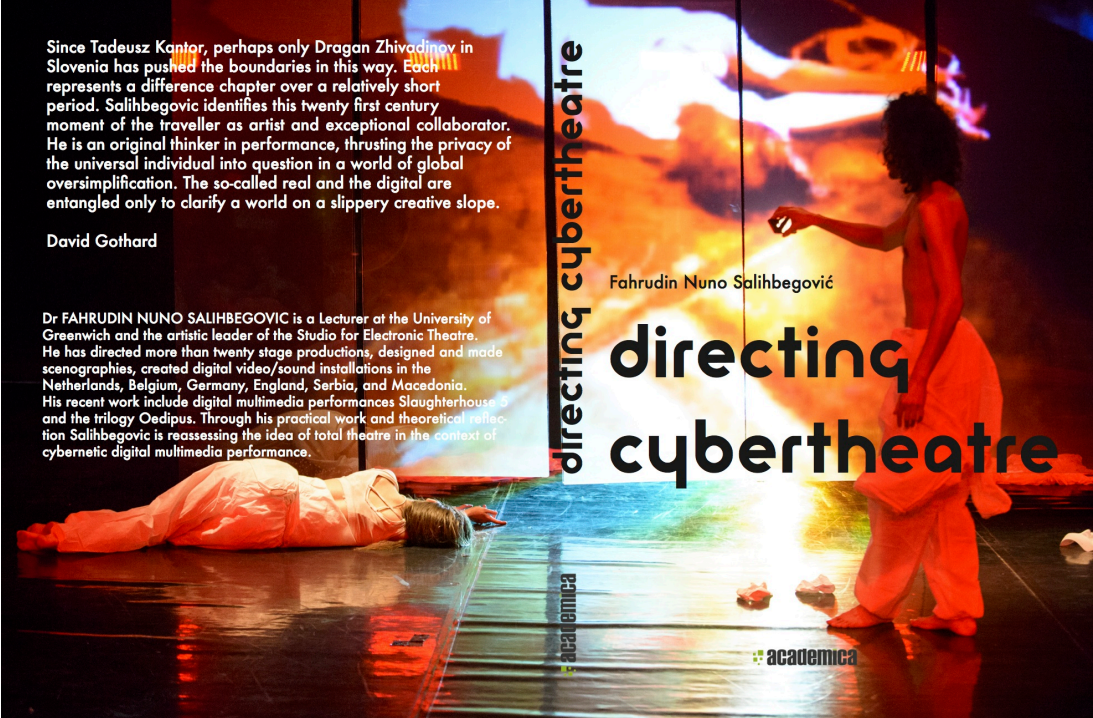




Since Tadeusz Kantor, perhaps only Dragan Zivadinov in Slovenia has pushed the boundaries in this way. Each represents a difference chapter over a relatively short period. Salihbegovic identifies this twenty first century moment of the traveller as artist and exceptional collaborator. He is an original thinker in performance, thrusting the privacy of the universal individual into question in a world of global oversimplification. The so-called real and the digital are entangled only to clarify a world on a slippery creative slope.

David Gothard

Dr FAHRUDIN NUNO SALIHBEGOVIC is a Lecturer at the University of Greenwich and the artistic leader of the Studio for Electronic Theatre. He has directed more than twenty stage productions, designed and made scenographies, created digital video/sound installations in the Netherlands, Belgium, Germany, England, Serbia, and Macedonia. His recent work include digital multimedia performances Slaughterhouse 5 and the trilogy Oedipus. Through his practical work and theoretical reflection Salihbegovic is reassessing the idea of total theatre in the context of cybernetic digital multimedia performance.

Fahrudin Nuno Salihbegović

directing cybertheatre

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Fahrudin Salihbegović

 **academica** Belgrade



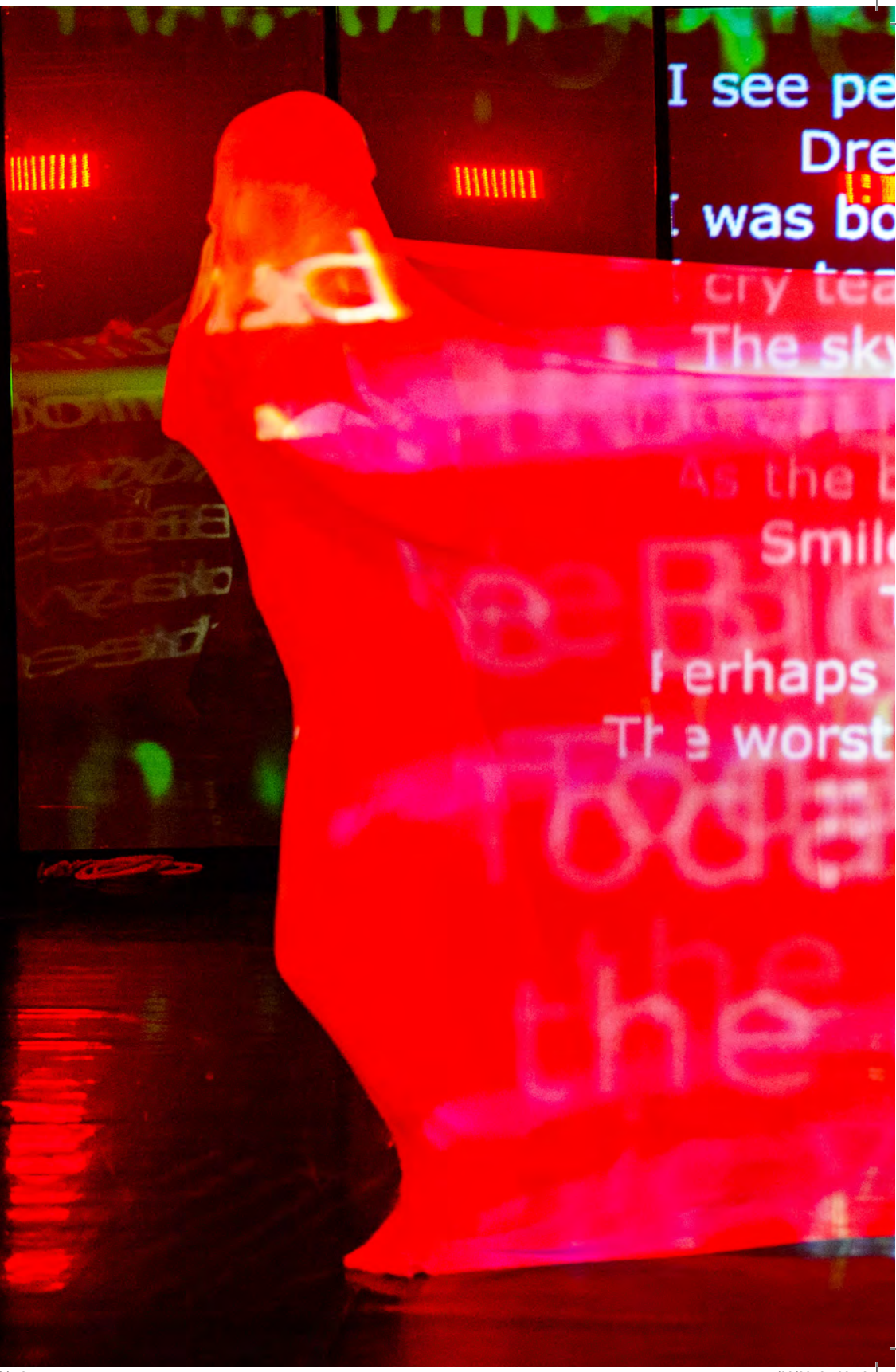
Organisation
des Nations Unies
pour l'éducation,
la science et la culture



Chaire UNESCO en
Management et politiques culturelles
(interculturelle et Médiation dans les Balkans)
Université des Arts de Belgrade



University of Arts in Belgrade



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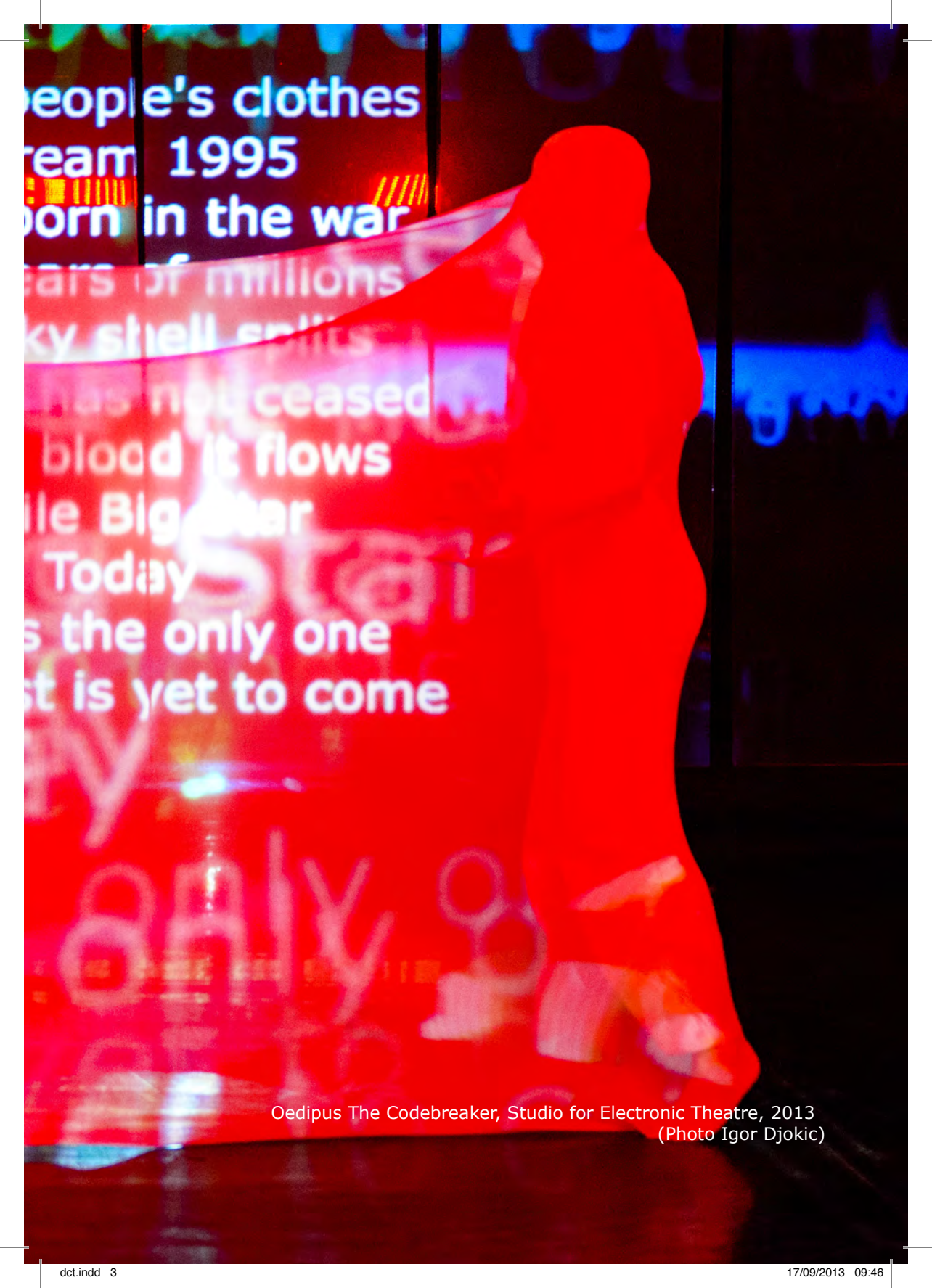
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A person wearing a long, flowing red dress stands in profile, facing a large digital screen. The screen displays a series of text fragments in white and blue, which appear to be parts of a larger message. The person's dress is a vibrant red, contrasting with the dark background and the screen's content. The overall scene is dimly lit, with the primary light source being the screen itself.

people's clothes
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Oedipus The Codebreaker, Studio for Electronic Theatre, 2013
(Photo Igor Djokic)

The second part of this book contains links to the video material which can be visible on your mobile device using the Aurasma app. Pointing your phone to the picture marked with the Aurasma logo you will be able to see the video clips associated to the images.



Aurasma works well on iOS (iPhone, iPod Touch or iPad). Aurasma also runs on some Android phones – we, however, cannot guaranty that it will work on your smart phone.

Please scan the QR code to download the app and to subscribe to the Directing Cyber Theatre channel:



Both the app and the subscription to our channel are free, however you will be downloading approximately 500MB of data (video files). Depending on your data plan your mobile phone provider might charge you for this.

Fahrudin Salihbegović
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Frontispiece

Oedipus The Codebreaker, Studio for Electronic Theatre, 2013
(Photo Igor Djokic)

To the memory of my mother

foreword

From a poignant and tragic time in modern European history, Fahrudin Nuno Salihbegovic has emerged as a much respected professor and performance director, based at the University of Greenwich, London, working with an international company. I caught his Oedipus at a special evening performance at the Tate Britain Gallery in 2012 after watching the work develop in its exploration of technology and the synthesis of art forms from earlier installations and site specific work. The Tate seemed a rightful home for this with its appropriately critical and alert audience recognising his achievement with excitement. The worlds of technology, performance and the visual arts coincide as the installation becomes actor territory and company work showing no strict boundary with an environment of superb digital imagery.

Since Tadeusz Kantor, perhaps only Dragan Zhivadinov in Slovenia has pushed the boundaries in this way. Each represents a difference chapter over a relatively short period. Salihbegovic identifies this twenty first century moment of the traveller as artist and exceptional collaborator. He invites exceptional individuals from Serbia, Belgium, Holland and the USA with Londoners to share inspiration, partly as a window on the London we know in 2013 and a world beyond where the achievements of exploration are often in technology itself. This is a world where London, Novi Sad and Amsterdam share the screen on a shared level with an exploratory audience alertly on the edge of experience by using high-tech to disentangle eternal moral dilemmas over and above a narrative. He is an original thinker in performance, thrusting the privacy of the universal individual into question in a world of global oversimplification. The so-called real and the digital are entangled only to clarify a world on a slippery creative slope.

David Gothard, London, 2013

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preface

This book is the result of a three-year long practice-led doctoral research project in the field of digital performance. In a series of essays assembled under the heading 'Directing CyberTheatre', I am offering my understanding about several technical and aesthetic aspects of this vast, versatile, and ever expanding artistic discipline. The roots of digital performance can be traced in the history of multimedia theatre, avant-garde visual performance art (live art), and interactive computer multimedia art. Even though digital performance, with its apparent multimedia character and extensive use of modern technology, remarkably resembles Richard Wagner's and Bauhaus concept of 'total theatre', this new art discipline is rarely examined in this historical context. The theatre works of the Italian Futurists and the German political theatre of Erwin Piscator, for example, have much in common with some of the latest multimedia digital performances of the Studio for Electronic Theatre. The sixties multimedia theatre of Josef Svoboda, furthermore, anticipates recent developments in contemporary digital performance, for example, the work of Kevin Cunningham.

What distinguishes digital performance from what went before in multimedia theatre is digital interactivity. Inherited from computer multimedia art, interactivity is the new and distinctive technological feature characteristic of digital performance today. Interactivity can be established between the performer and the multimedia content of the performance, or between the spectator and the work of art.

The latter practice has its historical roots in the last century, in the works of John Cage, Allan Kaprow, the Fluxus group, and other avant-garde visual artists.

The second part of this book is dedicated to the analysis of my practical research. Together with my group, Studio for Electronic Theatre, I made a platform for research in the field of cybernetic theatre. I will analyse the 'techniques and aesthetics' of the three performances produced during my doctoral research. These performances represent my attempt to migrate an old idea of immersive 'total theatre' into a new digital and technically highly sophisticated artistic environment.

The text of the book is accompanied by a video documentation of my practical work presented in a form of augmented reality using the Aurasma app.

Dr FAHRUDIN NUNO SALIHBEGOVIC is a Lecturer at the University of Greenwich and the artistic leader of the Studio for Electronic Theatre. He has directed more than twenty stage productions, designed and made scenographies, created digital video/sound installations in the Netherlands, Belgium, Germany, England, Serbia, and Macedonia. His recent work include digital multimedia performances Slaughterhouse 5 and the trilogy Oedipus. Through his practical work and theoretical reflection Salihbegovic is reassessing the idea of total theatre in the context of cybernetic digital multimedia performance.



Oedipus The Codebreaker, Studio for Electronic Theatre, 2013
(Photo Igor Djokic)

introduction

In the conclusion of his 1924 manifesto essay on Totaltheater – ‘Theater, Circus, Variety’ – László Moholy-Nagy prophesies: ‘There will arise an enhanced control over all formative media, unified in a harmonious effect and built into an organism of perfect equilibrium’ ([1924] 1971: 70). The person most responsible for the realisation of this grandiose task is, in his view, ‘the thousand-eyed NEW DIRECTOR’ (68, original emphasis). Almost a century later, when technology is once again making a profound impact on arts and culture, the Moholy-Nagy prophecy looks to me disappointingly unfulfilled. Moreover, it seems that idioms such as ‘harmonious effect’ and ‘perfect equilibrium’ have irretrievably disappeared from artistic language, pushed out by apparently more appealing, and seemingly more radical, contemporary artistic and theoretical vocabulary. In a similar fashion, the ideal of ‘total theatre’ has lost the magnetism that attracted so many theatre makers for several centuries. A new vision of theatre has emerged among the artists and thinkers of the digitalised society, who now search for a new medium capable of coping with their accelerated, mediatised, and telematic way of living. My work in digital performance, however, attempts to revive the ideal of ‘total theatre’ that Moholy-Nagy and many others before and after him found so profoundly inspiring. In the performance Klanica 5, an adaptation of Kurt Vonnegut’s novel Slaughterhouse 5 (my final practical work for my PhD dissertation), the part that paraphrases the writer’s envisioning of the peculiar nature of the medium of the novel on the fictitious

planet Tralfamadore serves as a self-ironic icon of the ultramodern interactive multimedia theatre that a contemporary total theatre enthusiast like myself is striving for:

There are no books on Tralfamadore. There is, though, something we call 'hyperelectric static dynamic theatre'. It is at once a book, cinema, theatre, and electrovision; and the actors are we – the audience. We, Tralfs, watch this theatre that happens in one moment. There isn't any particular relationship between the events shown, except that the author has chosen them carefully, so that, when seen all at once, they produce an image of life that is beautiful and surprising and deep. There is no beginning, no middle, no end, no plot, no moral, no story, no action. What we love in our theatre are the depths of many marvelous moments seen all at one time.

(Klanica 5, 2007/08)

Will such an instant dramaturgy ever be achievable outside the fictional context of the 'hyperelectric static dynamic theatre' on Tralfamadore? Can we abandon linear dramaturgy once and for all, and still be capable of telling the stories which are 'beautiful and surprising and deep'? What shall we get in return if the theatre director and dramaturge give up their privilege of navigating the audience through the fictional world of performance, in favour of a supposedly more active and creative role for the audience? What should this new responsive performance practice be called? It was these questions that motivated my research.

The book comprises practical and theoretical research in the field of the creative use of digital technology in contemporary theatre practice. Through my practical work as a director, and my subsequent theoretical reflection, I aim to reassess the idea

of total theatre in the context of cybernetic digital theatre – i.e. 'CyberTheatre' – and recent theories of new digital media. My aim is twofold: I wish to prove that CyberTheatre can in fact become the latest incarnation of total theatre, and secondly to explore how the role of the theatre director changes in this new artistic practice. The neologism 'CyberTheatre' is derived from the combination of two terms – cybernetics and theatre. According to the Penguin Dictionary of Literary Terms (1992), cybernetics 'derives from Greek *kybernetes* (a steersman) and denotes the comparative study of automatic communications and control in the functions of living bodies and mechanical electronic systems (such as computers)'. I use 'CyberTheatre' to describe theatre-making practice in which the performers and/or the audience connect, in one way or another, with the machines (computers) and in mutual interaction with them perform particular dramatic actions. In doing so, they produce and control a new dramatic (visual/aural) space. Another term frequently used in this book is 'digital performance', which although similar in meaning to 'CyberTheatre', is more inclusive and relates to a broader concept of performing arts, including dance, performance art (live art), and interactive digital installations (Dixon, 2007: x-xi, 3).

The book is divided into two parts. In the first part headed 'From Totaltheater to CyberTheatre', my goal is to delineate the historical and theoretical framework of my analysis. I will explore the development of multimedia theatre throughout the history of theatre, linking it to the emergence of digital performance in the last few decades of the twentieth century. In the first chapter, 'Totalising Art', I aim to trace the roots of multimedia theatre. I argue that the

most important and vital feature of theatre is its ability to absorb all other media, in other words, its totality and multimediality. In this chapter I will explore the role of the projected moving image used in theatre projects from the invention of cinema to the film-theatre of Josef Svoboda, which served as the most valuable source of inspiration for my practical work. I will also provide a short historical overview of the development of the concept of 'total theatre' and in particular, analyse the role of the projected image in this context. I will first address the concept of Gesamtkunstwerk – 'total Artwork' (Wagner [1852] 1995: 295) and Wagner's understanding of theatre (opera) as total art. Subsequently, I will analyse what influence the invention of film had on the theatre, discussing various approaches to the application of the moving image to the theatre from the first part of the twentieth century, which seems to have been 'reinvented' in contemporary multimedia theatre. My examples are drawn from the work of the film pioneer Georges Méliès; the German theatre maker Erwin Piscator; Bauhaus artists Oskar Schlemmer, Walter Gropius, László Moholy-Nagy, and Frederic Kiesler; and the Czech film-theatre of Josef Svoboda.

The second chapter in the first part of the book, 'Theatre Art in the Age of Digital Remediation', will follow the development of computer technology and its ever-increasing role in performing arts and theatre. How does computer multimedia change society, and the theatre as its artistic mirror? A part of this chapter will be dedicated to Jay David Bolter and Richard Grusin's theory of remediation (2000). My intention is to apply their theory of new media to the art of theatre. One segment of this theory, on the interrelation between 'hypermediacy' and 'immediacy', can help

provide, in my view, a new and better understanding of the idea of total theatre.

The second half of the twentieth century brought about a new notion of multimediality, reinvented in the framework of digital new media. The concept of total theatre has been replaced by the concept of virtual reality. The idea of a totally immersive, hyper-realistic, fictional space has moved from theatre stages to the interactive multimedia CAVEs and laboratories, from the imagination of the theatre director to the ultimate technical task for the computer engineer. Art galleries have also begun to host interactive digital installations/performances, where the audience has been granted the opportunity to actively participate in the art-making process more than ever before. For example, in *Bewogen Verhalen* ('Moving Stories', 2004), an interactive documentary film/installation about the history of the city of Amsterdam, the rhythm and the content of the projected images changed in accordance with the behaviour of the audience. Slow movements from the spectator triggered the parts of the movie showing nostalgic images of old Amsterdam, while more vigorous movements were followed by images of the hypermodern and busy commercial parts of the city, mimicking the lifestyle of the young urban professionals. Digital interactivity is the key element which makes these 'responsive' artworks possible, shaping the ethics and aesthetics of new media, from computer games to sophisticated, sensor-based virtual reality exhibitions.

The latest technological revolution has produced fertile soil for the appearance of countless new genres and hybrids in the field of theatre and performing arts. However, this technological input renders an unexpected output in theatre art. Technology enthusiasts

and their critics alike use technology to express their dreams and nightmares regarding the political and social present and future. And while the former exalt the liberating power of machines, envisioning the final reconciliation and equalisation of the 'binary oppositions' in almost any area of human existence, the latter see the very same machines as a source of dehumanisation, alienation and slavery of another, more insidious kind. While the topic stirs up debate on the ideological importance of artistic practice, much less seems to be said about the aesthetic potential which undoubtedly resides in this new union of technical science and theatre art. Considering the rapid technical development in the field, the appearance of new technological tools, and the affordability of sophisticated digital audio-visual technology, it is surprising that the idea of total theatre in contemporary digital performance practice and theory only rarely attracts attention.

In my study, however, I will suggest that the ultimate fantasy of the Futurist and Bauhaus theatre makers, the creation of a totally synthetic art form, did not irreversibly escape to the realm of the computer space. Moreover, I will argue that CyberTheatre actually represents the merging of theatre and sophisticated computer art and technology. It is a cutting edge, updated version of total theatre – a Gesamtkunstwerk par excellence.

The second part of the book is entitled 'Studio for Electronic Theatre: An e-Born Dream of Total Theatre'. This part will be entirely dedicated to my practical research. In the chapter 'CyberTheatre – Hardware, Software, and Techniques', I will give a brief overview of the digital tools commonly used in contemporary cybernetic theatre. In the last two decades, there emerged a wave of new

digital technologies for application in visual and performing arts. In an attempt to categorise and evaluate the developments in this vast and versatile field (with their practical application in mind), I have made a short survey of the tools that are most commonly used by digital performing artists. The survey is by no means comprehensive, but it does offer introductory information and practical evaluation that provides a basis for further research.

The concluding chapter, entitled 'Directing CyberTheatre', comprises the case studies of my practical work as director with my theatre group Studio for Electronic Theatre. Established in 2005, this theatre company was a platform for my practical artistic research. I will analyse my work on three productions made between 2005 and 2007/08: *Waar is daar?* ('Where is There?', 2005), *Сокођало Project* ('Gadget Project', 2006), and *Klanica 5* ('Slaughterhouse Five', 2007/08). In all of these projects, I had a triple role as director, multimedia digital artist, and set designer. The experience of these three productions helped me understand several aspects of the new role of the theatre director in the context of cybernetic multimedia theatre, aspects which this book will seek to illustrate. The experience also raised a broad spectrum of questions, problems, and dilemmas, all triggered by my shift from 'analog' to 'digital' theatre making.

For the majority of CyberTheatre practitioners, an immense problem is the lack of adequate space for practice. Another is the lack of time dedicated to serious and thorough technical research. Work in CyberTheatre requires continuous practical research. It also demands a constant exploration of the seemingly endless possibilities offered by ever-expanding developments in the field

of digital technology. Unfortunately, this is not always possible, and often, in order to overcome less than ideal working conditions, improvisation, both professional and personal, has to come into play.

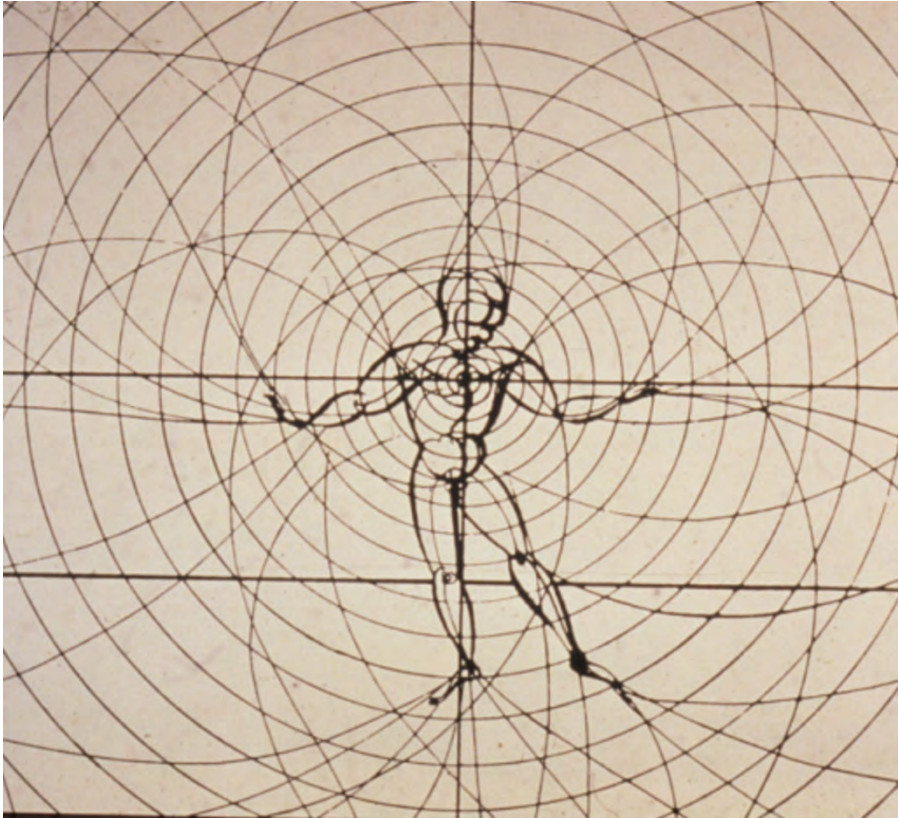
One of the main problems encountered during my practical research related to my ambition to combine practical research in technology with creative artistic work. I wanted to undertake the production and the technical research at the same time. Any production made in this period always involved an exasperating amount of technical research in the field of electronics and sensor engineering. Most of the time, the equipment that we used did not behave in the desired fashion, requiring much more time for testing and problem solving than expected. Time constraints, and the pressure to give public performances, did not allow for greater methodical involvement with the technical issues.

However, my research was not exclusively reserved for research into technological issues. My aim was to explore how new technologies were changing theatre art from within, and to see what was different in this new practice, and what has stayed the same, in relation to the traditional theatre as we know it. In this respect my approach proved to be very fruitful. As is usually the case in our performances, technical problems forced us to be more creative with the limited means at our disposal. The less equipment we worked with, the more surprising results we achieved. Sometimes by using a single digital gadget, we were able to create surprisingly effective theatrical images. Often the least expensive software proved to be much more useful than the most expensive. Research in technology became research in creativity.

part one

from totaltheater to cybertheatre

**a short historical overview of the relationship
between multimedia and theatre**



Oskar Schlemmer, drawing of Man as Dancer
© 2013 Estate Oskar Schlemmer, Munich

chapter I

totalising art

From its ritual beginnings to the modern day, theatre absorbed many art forms but still maintained its integrity as an independent art. Moreover, theatre, as no other media in history, happens to have an ambition to be 'total' art, *the* art, which, while embracing all other media, will be able to produce an unseen, unique and 'total' aesthetic experience. The neologism 'Totaltheater' or 'Theatre of Totality' was coined by Bauhaus pioneer László Moholy-Nagy and it was used to describe both the theatrical practice and the form of theatre characterised by the use of the 'multifarious complexities' of different art forms and the state-of-the-art technology for the purpose of creating a unique art experience which will appeal to all the spectators' senses (Moholy-Nagy [1924] 1971: 60). Thus, in this Modernist context, 'total theatre' referred to a twofold union: the union of different arts, and the union of art and technology. The union of art and technology gained new impetus in the second half of the twentieth century, with the invention of the computer and the dawn of the digital era. In performing arts, it was introduced as the union/interaction between artist and computer, human and machine – hence the name 'CyberTheatre'. It was not long before the focus on this type of 'union with the machine' was shifted from the makers and performers onto the interaction with the audience (however, it has to be noted that active, though non-digital interaction between the work and the audience had already been introduced in the

performing arts in the early sixties – for example in such events as ‘Happenings’). Thus, CyberTheatre finds its roots in the concept of total theatre on the one hand and the development of computer technology on the other (table 1).

The role of computer technology in the development of CyberTheatre will be analysed in the second chapter. In this chapter I will examine the historical development of theatre as a multimedia and ‘totalising’ art.

	Totaltheater	Computer Multimedia	CyberTheatre
Union of all arts	Gesamtkunstwerk	Multimediality	Multimedia theatre
Art and science	Stage engineering	Digital technology	Digitalised theatre
Immersion	Captivation of all senses	Virtual reality	Immersive digital scenography
Interactivity	Audience participation (e.g. happenings)	Human - computer interaction	Performer/audience – computer Interaction

Table 1:
The relationship between Totaltheater, Computer Multimedia, and
CyberTheatre

artwork of the past

Even in its poorest form, theatre is never a single-dimensional, undivided medium. On the contrary, it seems that the distinctive feature of theatre is its capacity to absorb and integrate different art forms into a unique event which we recognise as a theatre performance. This seems to be characteristic of theatre from its earliest, ritual beginnings. In their book *Multimedia: From Wagner to Virtual Reality* (2002), Randall Packer and Ken Jordan, in an attempt to discover the roots of the idea of virtual reality, use the example of the ancient paintings from the caves in South France:

There is an evocative echo in virtual environments of the earliest known form of human expression – the prehistoric cave paintings found at such sites as the caves of Lascaux in the South France. These immersive environments, dating from 15 000 BC, are thought by scholars to have been theatres for the performance of rituals that integrated all forms of media and engaged all the senses.

(2002: xx)

The art historian and archaeologist Nigel Spivey recently came to a similar conclusion in his book *How Art Made the World* (2005), while exploring the cave paintings of the local Aboriginal population in Australia, who still practice a kind of 'multimedia' religious ritual. The cave paintings perceived outside the context of the ritual did not seem to represent anything meaningful. Spivey encountered difficulty in interpreting the paintings, and after he interviewed the local artists who still made cave paintings, he was even more confused. Only after he was granted permission to participate in

one of the rituals, did the whole image become clear. The paintings appeared to be a part of a complex, multidisciplinary theatrical event and their function was visible only in relation to all the other elements of the ritual (119-120).

In both cases the caves represent sacred places which, through participants' faith and imagination, are transformed into a remote, timeless, mysterious, otherworldly dimension: a totally immersive fictional space. Or to put it in a more theatrical context – the caves represent the darkened stage, where, owing to a fusion of the special lighting effects, dance, songs, acting, and visual art, 'the spectator transplants himself upon the stage, by means of all his visual and aural faculties'. And that is exactly how Richard Wagner described his ideal of 'total art' in his manifesto-essay 'The Artwork of the Future' (Wagner [1849] 1993: 185).

Here is introduced an essential aspect of the concept of total theatre: the potential of the theatre stage to host a unification of all the arts. It appears, however, that theatre was already the union of all existing arts long before the idea of *Gesamtkunstwerk* was presented as a practical and theoretical concept, which would resonate so loudly and eventually influence a whole generation of artists and art scholars. In fact, the idea of united arts had already bloomed in the sixteenth and seventeenth centuries, in the period of European Baroque. Gottfried Hattinger describes the scale and the nature of the theatre of the time:

It is the baroque age, the synaesthetic age. In the 16th and 17th centuries a form of theatrical spectacle comprising all the arts developed from the court banquets of late Gothic and Renaissance days: music and dance,

theatre and lighting, fireworks and opera. *Theatrum mundi*, the world is a stage – this is the age of theatricalization. At that time, words play a less significant role on stage, the elements appealing to the senses are more important, the joint performances of engineers, directors, musicians, painters and actors who make the theatre a symbol of the world. Lully and Le Brun, Racine and Molière, Rubens and Bernini, Velazquez and Calderon: first-class artists worked for the great spectacles.

(1988: 2)

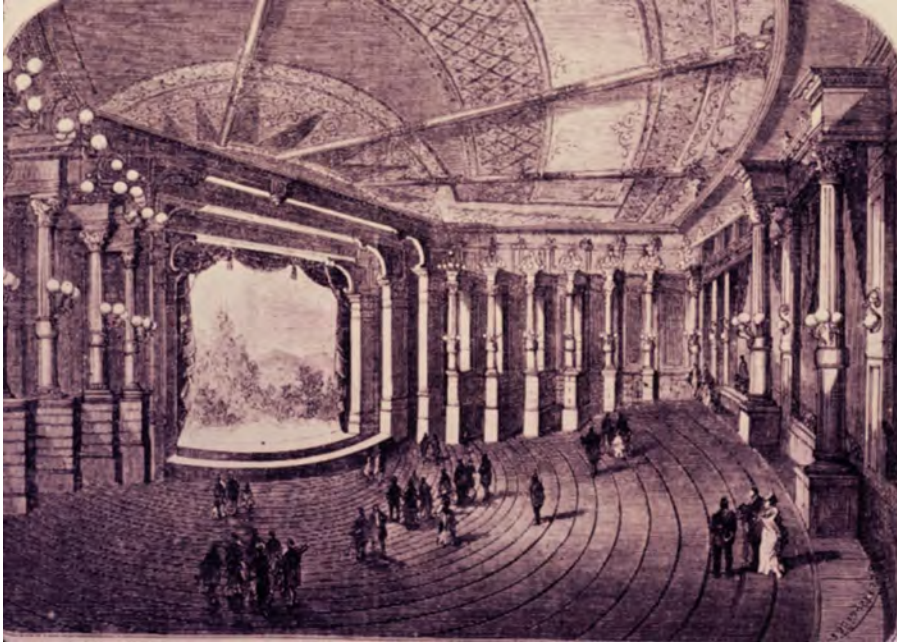
Even when Wagner was dreaming about an idealised, unified work of the future – a ‘totalising [...] vehicle capable of affecting German Culture’ (Packer and Jordan 2002: xviii), he himself referred to the genius of the past – the genius of classic Greeks and their tragedies. To recall Hattinger’s words again:

The theatre of Antiquity was a mass spectacle. During the great festivals, the Dionysia, up to 17 000 spectators flocked into the theatre below the Acropolis to see performances for eight hours daily over several days. Unfortunately, we know little about the music and choreography which must have determined the theatrical appeal of the plays. It is up to us to imagine choirs comprising more than 1 000 singers whose dances, masks, props and paintings blend into an overwhelming image. Theatrical machinery (*ekkyklema*) which made action behind the scene visible on stage, was used as early as in the days of Aischylos.

(1988: 2)

Equally important to Wagner’s prophetic calls for the unification of all artistic disciplines into the great work of art of the future, is another practical but visionary act – his reform of the very architecture

of the theatre stage. This not only inspired the Modernist 'total theatre' enthusiasts, but has become a common trait of all theatres built in the twentieth century.



Richard Wagner, 'Festspielhaus Bayreuth', interior view

artwork for the future

*An audience will shake off its inertia
when it experiences the surprise effect of space transformed.*

Walter Gropius

In an attempt to attain his ideal and to 'transplant the spectator upon the stage', Wagner reformed the stage itself. For the occasion of the first complete production of *The Ring Cycle* in 1876, he designed, together with the architect Otto Bruckwald and theatre technician Karl Brandt, the Festpielhaus Theater in Bayreuth as a

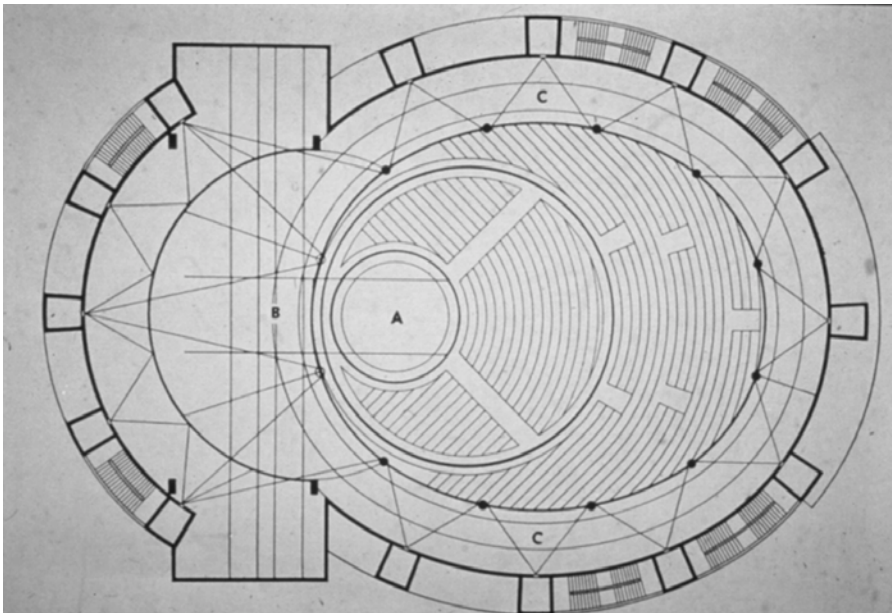
completely new type of theatre building. The space was arranged to serve the idea of immersion and to maximise the suspension of disbelief, the main impediment to achieving the experience of total art. Everything, from the (re)employment of amphitheatrical seating to the position of the musicians, served to direct the audience's attention on the dramatic action. In the words of Arnold Aronson:

The first person to consciously and systematically attempt to alter the consciousness of the audience through architecture was, of course, Richard Wagner in his theatre at Bayreuth. [...] The amphitheatrical seating, essentially a return to ancient Greek architecture, was also an attempt to control the focus of the audience. The theatre at Bayreuth is often acknowledged as the forerunner of modern theatre architecture, but its significance lies in Wagner's deliberate attempt to control the spectator's perceptions through architecture.

(1981: 492)

Wagner inspired a whole generation of artists, theatre directors, scenographers, and architects, to reconsider the functionality and architecture of theatre building and to design the theatre of the future which would fully serve the idea of 'total art'.¹ Wagner's idea was followed by a revolution in stage design. At the end of the nineteenth century, in a revolt against traditional (theatre) aesthetics, many reformers contributed to the designing of a new, more truthful, democratic theatre. In his article 'Theatres of the Future' (1981), Arnold Aronson gives us a long list of architects, designers, and other theatre visionaries who were determined to build theatre buildings that would most efficiently serve the idea of synthesised art. Here, I will provide a selection of examples. In

1915, the Austrian designer Oskar Strand presented his plans for a wide rotating annular stage (*Bühnenwagen*) to Max Reinhardt (Aronson 1981: 492). He wanted to surround the audience with the stage action, and placing them in the centre he wanted to produce an effect of total immersion in the play. Similar proposals for an annular stage were made by Filippo Marinetti and the Polish theatre critic Zygmunt Tonecky. The common trait of all these ideas was the necessity to overcome the psychological division between the stage and auditorium, between performers and spectators. Most of these ideas were not realised during the lifetimes of their inventors. Only in the last part of the twentieth century did some of the ideas get incorporated into the design of a few theatre buildings (for example, The Maison de la Culture at Grenoble).



Gropius's plan for Piscator's *Synthetic Total Theatre*

Nevertheless, when one looks at Gropius's plan for Piscator's Synthetic Total Theatre, which, unfortunately, has never been built (probably the most famous 'never-existing' theatre building ever), the idea still looks very futuristic, even from a contemporary perspective, and almost a century later it still remains a powerful source of inspiration for the future.



The Maison de la Culture at Grenoble (Photo Milky)

However, in order to provide a chronological description of the development of multimedia performance, I will shift the focus to another technological invention, which also loudly claimed its totalising power in creating 'polyexpressive symphonies' and 'total art'. In the 1916 manifesto 'The Futurist Cinema', Filippo Tommaso Marinetti expressed a similar idea of the 'union of all arts':



Filippo Marinetti

The most varied elements will enter into the Futurist film as expressive means: from the slice of life to the streak of color, from the conventional line to words-in-freedom, from chromatic and plastic music to the music of objects. In other words it will be painting, architecture, sculpture, words-in-freedom, music of colors, lines, and forms, a jumble of objects and reality thrown together at random. We shall offer new inspirations for the researches of painters, which will tend to break out of the limits of the frame. We shall set in motion the words-in-freedom that smash the

boundaries of literature as they march towards painting, music, noise-art, and throw a marvellous bridge between the word and the real object.

(Marinetti, in Parcker and Jordan 2002: 12-13)

Here, the invention of film has replaced theatre as the sole unifying media capable of achieving the effect of the perfect synthesis. Almost in the same way as theatre, film demonstrated the ability to integrate different artistic disciplines into a single, united art form. Moreover, cinema brought about a previously unseen illusion of reality, which made film an even more attractive medium for achieving the ideal of 'total art'. It is beyond the scope of this paper to detail all the writings which either praised or criticised film's transparency and immediacy, and its capability to 'satisfy, once and for all and in its very essence, our obsession with realism' (Jean Bazin, quoted in Bolter and Grusin 2000: 25). Instead, I will try to highlight some comparative features of theatre and film, dating back to the earliest days of the latter.

It is a well known historical fact that it was predominantly theatre practitioners (producers, directors, and actors) who gave birth to the first fiction film narratives. In her essay about this early interplay between theatre and film, Gwendolyn Waltz argues that: '[m]ultimedia experiments substantially demonstrate the permeability of the juncture between film and theatre in their early years of coexistence. The join between these media was porous, a membrane rather than a shared wall; the relationship was one of confluences and bi-directional influences' (2006: 548). Early cinema is described by many film critics as being no more than 'filmed theatre' and it is apparent from the archive material how

early fiction movies emulated the theatre style of the time. Theatre stages were used as the first film studios and many techniques and procedures used in film production today have their roots in theatre production. More important for my discussion here, however, is the opposite process – the procedure whereby the projected moving image was used in theatre as a new tool in achieving an old idea of totality. In her essay 'Filmed Scenery on the Live Stage', Waltz reveals that:

For much of the first decades after their invention, motion pictures shared the theatrical stage with living performers in a continuous (albeit erratic) multimedia relationship. [...] By 1930, in the United States alone at least a hundred productions had incorporated individual acts or special scenes of this kind; worldwide there were several hundred.

(2006: 548)

This relationship will be of great importance for my later analysis, when I start discussing the relationship between theatre and new computer multimedia (another media with characteristic 'totalising' traits). We will see how in both cases – first with film then with digital media – theatre very swiftly adapted itself to 'absorb' these 'new' media, using them in order to enhance its own expressiveness.

early remediators – georges méliès

As soon as film was born, those in the theatre started to speculate about the possibilities of its application in stage art. Immediately after Thomas Alva Edison presented his *Vitascope*, a motion-picture projector, in 1896, an article appeared in *The North American*

Review, stating:

The point that interests us most at present, however, is whether the vitascope can be utilized to replace, in the future, [...] ordinary stage machinery [...]. [C]an the vitascope be so used as to make painted scenery unnecessary in plays performed by flesh and blood actors; or is it likely, at any rate, to replace that to some extent and to become a valuable adjunct in certain particulars of scenic effect upon the stage? [...] [A]s its chief attractiveness is in its representing motion, it alone would hardly be called upon to supply the various parts of a stage-setting that are without motion. There seems to be little doubt, however, that the vitascope may soon take an important position in heightening theatrical verisimilitude.

(Quoted in Waltz 2006: 552)

In his comprehensive study of the use of film and video in theatre, *Staging the Screen* (2006), Greg Gieskam informs us that the first time film was used in a theatrical production was in Paris, and that it happened as early as 1904. Waltz, however, reveals that this technique had been in use as early as 1897: 'In January 1897, perhaps the earliest instance of a motion picture's incorporation in a stage play in the United States, a film replaced the usual panorama and treadmills of the race scene in a production of Charles Barnard's *The County Fair*. Another 1904 production of the play repeated this substitution' (2006: 552). The first 'film staging' in Europe was done by the same man who is usually associated with the incriminating term 'filmed theatre' – Georges Méliès. This extraordinary theatre director and illusionist developed his interest in film while running his theatre of illusions and spectacle, the Théâtre Robert Houdin. And while Méliès is well known for his inventions of film tricks and special

effects in the first cinema 'science fiction' adventures, much less is known about his attempts to insert film projections in his theatre productions. We have records of two productions where film was used to 'enlarge' spectators' views and enhance the expressiveness of the theatre performance – *The Adventurous Automobile Trip* (*Le Raid Paris – Monte Carlo en Deux Heures*) and *The Pills of the Devil* (*Les Pillules du Diable*), both from 1905. Whilst in the first play, film was used to overcome the physical limitation of the stage and extend the space of the action (showing the events during the trip of the Belgian King Leopold II, and his hilarious car adventure from Paris to Monte Carlo), in the second play Méliès used film to produce more 'magical' and artistically more sophisticated effects, merging the 'virtual' cinematic and the 'real' physical space of the stage.



The Adventurous Automobile Trip, 1905

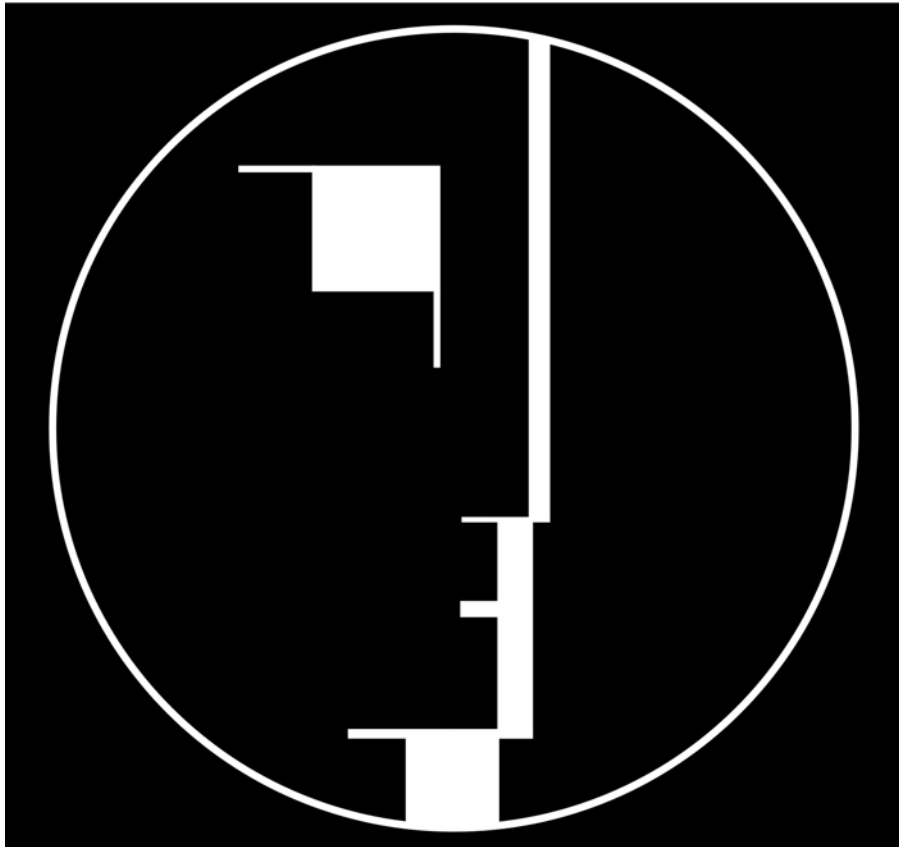
Méliès's experiments had followers in the other countries. In Japan similar technique was used in *Rensa-geki* (chain-theatre), mixed media performances practiced from 1904 till 1922, where interior scenes were shown live on stage, and exterior in the form of film projections (Waltz 2006: 551). Gieskam, relying on Franz Kranich's voluminous book *Bühnentechnik der Gegenwart* ('Contemporary Theatre Technology') from 1929, provides information about the use of these mixed media techniques in other European theatres:

By 1928, 15 German theatres were already equipped with film projection facilities. He [Franz Kranich] makes considerable reference to productions throughout Germany that made use of film in some way. Kranich writes with apostolic zeal about the potential of this new technology, with his vision of future possibilities often anticipating approaches seen as exciting and innovative when they were adopted by practitioners of the 1980s and 1990s.

(Gieskam 2006: 9)

Kranich described in detail several theatre and opera productions and gave his lucid remarks about the direction in which multimedia theatre should go. His discerning analysis about the questions of how different authors (unsuccessfully) dealt with the disruptive 'filmness' of the film image in theatre, problems with the 'rectangularity' of the projections and other difficulties in integrating the film image into overall theatre design – points toward his apparent preferences for total theatre.

bauhaus and the 'art of totality'



In order to illuminate an extra layer of the complex and ambiguous notion of totality I will re-examine this term within the context of the Bauhaus school of art. Up until now I have focused on the theatre stage and the different technical and artistic concepts that sought ways of transforming the stage into a suitable arena for hosting the total art work. With the Bauhaus, however, the notion of totality took on strong ideological connotations. The idea of totality was no longer seen as an exclusively aesthetic concept, but rather it became a very important part of the socio-ideological debate

which in the period just after the Great War was getting more and more actual.

At the time when the Bauhaus was established at Weimar in 1919, the idea of totality was by no means a new or unusual concept. Especially after the war, it dominated the thinking of contemporary artists, who in totality and synthesis recognised the inevitable departure point from previous artistic traditions which had for a long time shown their insufficiency and inadequacy.

The vision of the new synthesis coincided with an already widespread idea of the time, that theatre was *the chosen* medium to form the new society. The revolutionary movement of the time sought the 'regeneration of society' through 'the union of all artistic media and forces' (Hugo Ball, quoted in Goldberg 2001: 54). Various designs were made for extra-large scale theatre buildings, designed to accommodate vast numbers of people who would be provided with a comprehensive image of class struggle throughout the history of humankind.

For the left-wing artists of the time, the ultimate question was not how to show the *real* by all available artistic and technological means; rather, the question was how to use art to *create* the *new real*. In this new vision, totality is seen as a universal social remedy, a place for total social transformation, and the theatre stage is designed to be the icon of that new, cured society where the spectator will be able to experience the *wholeness (totality) of life* for the first time in history.

The idea of synthesis and functionality, designed to serve the New Man, dominated the activities of the Bauhaus School of Design Building and Crafts. One of the most important segments of the

complex and of the almost all-inclusive curriculum of the school was dedicated to theatre. Arguably the most important characteristic of their philosophy could best be traced in the Bauhaus stage work. Led mostly by Oskar Schlemmer, the Bauhaus Stage Workshop became famous for its research methods, which integrated the scientific study of human perception with the latest technology and artistic design practice.

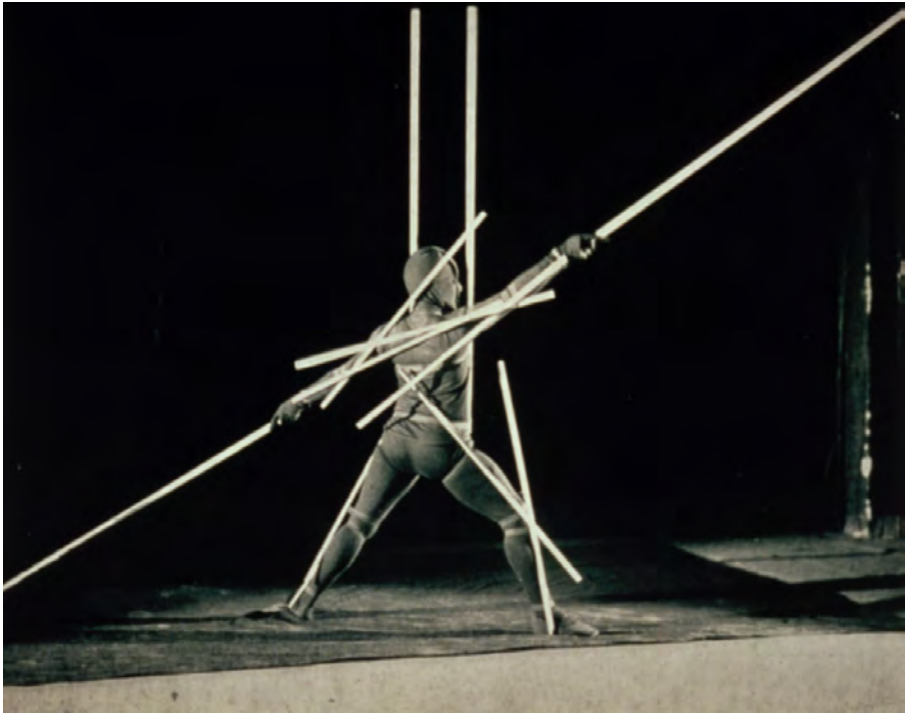
It is natural that the aims of the Bauhaus – to seek the union of the artistic-ideal with the craftsmanlike-practical by thoroughly investigating the creative elements, and to understand in all its ramifications the essence of *der Bau*, creative construction – have valid application to the field of the theatre. For, like the concept of *Bau* itself, the stage is an orchestral complex which comes about only through the cooperation of many different forces. It is the union of the most heterogeneous assortment of creative elements.

(Schlemmer 1971: 81)

The participants of the Stage Workshop intensively searched for new ways to incorporate new technological materials into stage design, making performances like *Metal Dance* (1929) and *Glass Dance* (1929) where the materials became the main *characters* of the drama. New machine-like objects started to appear on stage and make their own choreography. The movement and visual appearance of the real performers started to mimic the mechanical nature of these new 'actors'. Beside its crucial role in creating new visual environments for the performer's action, technology started to shape the essence of the actor's appearance on the stage.







The mechanisation and abstraction of the actor's movement and their visual form was emphasised in the Bauhaus mechanical dances by Oscar Schlemmer

© 2013 Estate Oskar Schlemmer, Munich

According to Christopher Baugh:

The starting point for Moholy-Nagy's artistic work came from his perception that true reality could be found only in the modern industrial world of new technology and the invention of machines. [...] The essential 'purity' of expression and form offered by colour and machine 'will not tolerate the actor with indistinct or splotchy make-up and tattered costuming'.

(2005: 123-124)

This first passionate embrace of the Human and the Machine has to a great extent anticipated our latest fascination with technology. Furthermore, in Oskar Schlemmer's and László Moholy-Nagy's writings one can recognise their huge excitement with the technology and an ever-growing utopian hope for the 'ideal' human-machine relationship. In their own words, for Schlemmer:

Possibilities are extraordinary in light of today's technological advancements: precision machinery, scientific apparatus of glass and metal, the artificial limbs developed by surgery, the fantastic costumes of the deep-sea diver and the modern soldier, and so forth.

(1971: 28-29)

and for Moholy-Nagy:

Nothing stands in the way of making use of complex APPARATUS such as film, automobile, elevator, airplane, and other machinery, as well as optical instruments, reflecting equipment, and so on. [...] There will arise an enhanced control over all formative media, unified in a harmonious effect and built into an organism of perfect equilibrium.

(1971: 67, 70)

The other members of the Stage Workshop also developed a strong interest in the proposed metamorphosis of the human body into mechanised, distorted, geometrical forms. Kurt Schmidt and Xanti Schawinsky both individually carried out similar experiments further blurring the borders between theatre, puppet theatre, and the visual arts. Lighting, costumes, props, and masks achieved equal importance to the actor on stage. The quality that counted the most was the overall, total image of the performance.

The actor would become a productive part of an overall web of relationships in which he would be fully integrated into the physical environment of sound, light, color, motion and so on.

(Moholy-Nagy, quoted in Mansbah 1980: 22)

All these efforts to create a dynamic and rhythmical play of different abstract geometrical forms and colours, new materials, strange and grotesque costumes and masks, bizarre machines, and visual and sound effects – however abstract and extravagant their appearance might be – had a very clear social purpose. They celebrated woman's ability to *make* things and objects. These objects, while serving individuals' creativity, would in the final instance help them to create a totally righteous environment where everybody could freely express their talents – talents that were being constantly and brutally suppressed by the capitalistic way of living. And, in their view, the full expression of one's talents was the ultimate purpose of human life. Many of their writings are dedicated to this idea.

With their inspired and original activities, the artists of the Bauhaus showed how political and metaphysical aspects of theatre

could exist without excluding each other, making highly aesthetical, original, multi-layered, and at the same time socially engaged works of art.

film projections in the totaltheater

However faithful and outspoken devotees the artists of the Bauhaus undoubtedly have proven to be in their 'use of complex APPARATUS', that is, of different media and technology in theatre, there are, to my knowledge no surviving documents which would substantiate that they actually ever used film as part of their stage productions. This fact is rather paradoxical, and not easily explained. However, one should take into account their almost meticulous precision and systematic carefulness when it came to the practical application of theoretical ideas in live performance. Was the use of the projected moving image a part of their future plans for more advanced multimedia work? The disintegration of the Bauhaus, the unfavourable political climate and the censorship imposed by the new Prussian government in the late twenties closed the activities of the Stage Workshop at the moment when, certainly, many of their plans were not yet realised. However, it is my firm belief that the use of film as a part of stage works would have been an important addition to their practical research had they continued with their activities. This idea becomes more convincing when it is taken into account that the founder and director of the Bauhaus, Walter Gropius, made designs for the Synthetic Total Theatre building in 1926, where he planned to place 16 screens for the same number of film projectors (see page 30).

I have not only envisaged the possibility for film projection upon the whole cyclorama of my three-fold stage by means of movable projectors, but I can also set the entire audience *inside a film*, as it were, by projecting on walls and ceiling.

(Gropius, quoted in Cole 1963: 313)

The Synthetic Total Theatre became the symbol for the ideal theatre building, which would be able to provide undisturbed and immediate contact with actors and drama. The audience was placed in the centre of the performance and surrounded by the dynamic scenography that changed in accordance with the development of the play. The artist, architect, and theatre designer Frederik Kiesler, had a very similar (again never realised) idea for his Endless Theatre. He had already used film projections when he produced the set for Čapek's *R.U.R. (Rossum's Universal Robots)* in 1922, showing the space and action outside the stage where the robots were manufactured.

Both ideas for the theatres occurred as a result of a concern with the new role of the spectator in this new democratic theatre and as a recognition of the new dynamic quality of the filmic space with its possibilities for the spatial extension of the dramatic action. In the very foundation of these ideas, however, was an old desire for creating the transparent medium that would, with the use of all available artistic and technological means, conceal itself and create the feeling of being physically present at the 'real' place of the drama. The same desire for immediacy one can easily trace in the modern concept of virtual reality.

projected image in the political theatre

Erwin Piscator was a theatre maker who is most famous for his large and systematic use of the projected moving image in theatre. In the early days of his work he collaborated with Dadaists and afterwards had links with the Bauhaus. Even though he had a very different vision of how the art of theatre should look, this collaboration left a noticeable influence on him regarding the shared enthusiasm for



Erwin Piscator

synthetic art. Only after he became the director at the Volksbühne in Berlin in 1924, did he start to experiment with film projections and other media extensively. As mentioned earlier, Piscator was not a pioneer in the use of projected moving image; rather, he followed an already existing tradition in German theatre. However, the reason why he chose to employ film in stage design was the wish to achieve another kind of artistic outcome from that sought by artists predominantly concerned with simple narrative and spatial extension of the stage. His artistic belief was dominated by a very clear and simple objective: to show to the working class the engrained corruption of the capitalist society, its guilt for the recent catastrophic war, and the necessity for change and proletarian revolution (Piscator 1963). Following this, he developed the 'documentary play' where he used slide projections and documentary film footage of real political events to support the action on the stage and to justify the authenticity of his political statements. He employed this technique for the first time in the play *In Spite of Everything* in July 1925.

The whole performance was a montage of authentic speeches, essays, newspaper cuttings, appeals, pamphlets, photographs, and film of the War and the Revolution, of historical persons and scenes. [...] For the first time we were confronted with the absolute reality we knew from experience.

(Piscator 1963: 94, 96)

The performance was a great success and the new artistic method directly proved its credibility. It showed the as yet undiscovered aesthetic power of the document when placed in a structure where it supported the already expected realism of the play.



Theatre programme sheet (Programmzettel) to Piscator's production "Die Zeit wird kommen", Central-Theater, Berlin, 1922

The drastic effect of using film clips showed beyond any theoretical consideration that they are not only right for presenting political and social mechanisms, that is, from the point of view of content, but also in a higher sense, right from the formal point of view. [...] The momentary surprise when we changed from live scenes to film was very effective. But the dramatic tension that live scene and film clip derived from one another was even stronger. They interacted and built upon each other's power, and at

intervals the action attained a *furioso* that I have seldom experienced in theatre.

(Piscator 1963: 97)

Using the same technological equipment but with a very different artistic approach, Piscator achieved the convincing effect of the *real* that many theatre makers, pursuing illusionistic method, could only have hoped for. It is important to underline the fact that in this piece a whole range of other media beside the film was incorporated into performance. The 'montage of authentic speeches, essays, newspaper cuttings, appeals, pamphlets, photographs' did not fragmentise the perception of the play; on the contrary: it enhanced its expressiveness and coherence. This is a very important feature for my study of total theatre in terms of the relationship between its apparent multimediality and its ultimate purpose to create a place in which the spectator experiences the performance as a *real*, unmediated event. I will return to this issue in more detail in the second chapter.

Piscator continued to use documentary footage in his future work, but in 1926 he also started to use films which were specially shot for his theatre productions. In *Tidal Wave* the same actors who appeared live on the stage were filmed and came out simultaneously in the projected movies. This opened new possibilities for the interaction of the real and virtual characters, but also caused unprecedented problems for both director and actors, who had to synchronise their acting with the projections. Piscator continued to use film projections, with mixed results, throughout his entire career. His persistence during difficult times and the consistency

of his multimedia approach make him one of the central figures in this kind of theatre. His most important contribution is perhaps best described in the words of his enthusiastic admirer and biggest critic, the theatre journalist Herbert Ihering: 'Film is no longer [...] a trick or a stylistic nuance. [...] The film has a dramatic function' (Piscator 1963: 110).

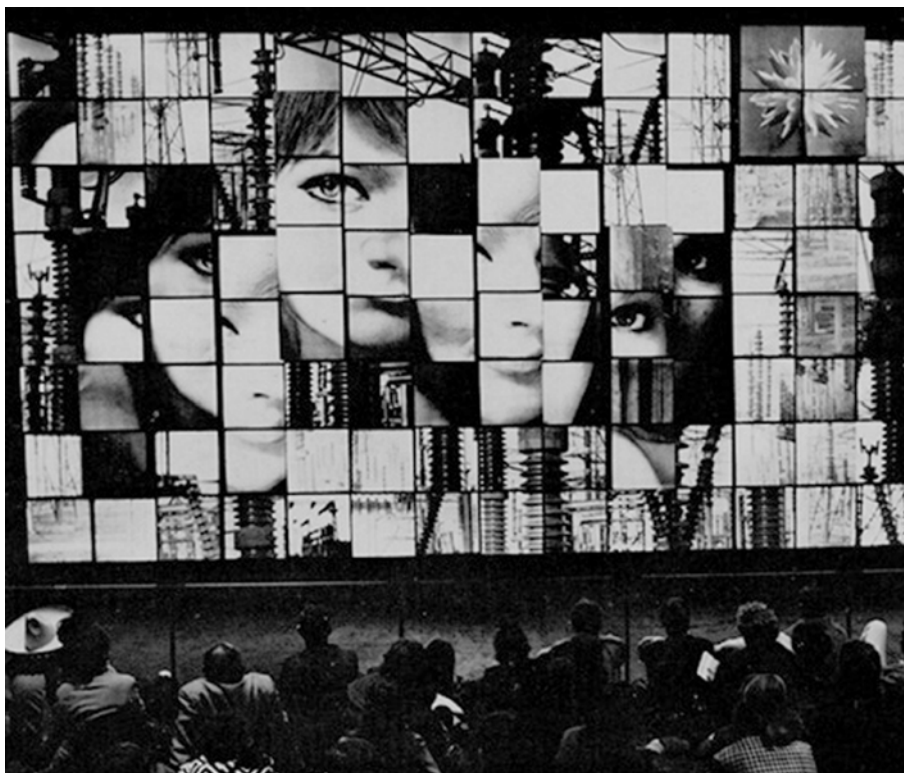
the magic of *laterna magika*

For many scholars and theatre makers, Josef Svoboda stands for the personification of the 'ultimate modernist scenographer' who succeeded in 'transcending the metaphor of scenography as a *machine for performance*' conceived by theatre visionaries from the beginning of the last century (Baugh 2005: 86, original emphasis). In his long and extraordinarily prolific career, Svoboda made set designs for more than 700 productions. He became famous for his innovative and scientific approach to the use of film projections inside a dynamic and kinetic stage. He further pushed the role of the film image placed in theatre context towards a more complex and refined interrelationship. The film projection in his scenographies started to portray the landscapes of the protagonist's inner realities and subtle human dramas, otherwise invisible when illuminated by the other theatrical means.

Svoboda's stage existed as a place of transformation and magic, a place that would employ high technology to generate mystery and metaphors of complex human experience, although he did not use the stage to valorize technology or simply to display its powers. His fundamental concern was

to use technology to reveal the human condition of the drama: to explore the ability of the theatre to make an authentic new reality on the stage that 'testified to more important discoveries about the human spirit than any [individual] technical characteristic could provide'.

(Baugh 2005: 88)



Josef Svoboda's Polyekran, 1958

Svoboda gained international fame with the *Laterna Magika*, a multimedia theatrical installation created for the World Fair in Brussels in 1958. Although primarily designed to be a presentation of the economical and cultural achievements of the socialist Czechoslovakia, this polyphonic performance showed the first

features of a later theatre attraction which continues to exist as an independent theatre company to the present day. Live action on stage was accompanied with projected film and photo material in a revue-like presentation. Svoboda used several screens (some of them were movable and would appear and disappear during the show) to create an amusing interplay between live actors and musicians, and their projected virtual companions. The significant success of this first presentation assured the bright financial future of the project, which very soon evolved into a more artistic enterprise. This success also meant more freedom for Svoboda to experiment with the sophisticated and expensive, and not necessarily theatrical technology in the highly subsidised Czechoslovakian National Theatre. His major artistic concern was how to use this total theatrical machinery and create something that he called 'psycho-plastic space' (Baugh 2005: 87), a space that would move together with the dramaturgy of the performance. He rejected both the illusionistic (naturalistic) and the illustrative function of scenography and strived for a more abstract theatrical image, which would in the spectator's imagination evoke the unique location of the drama. In order to achieve the theatrical magic that he was more than often praised for, he emphasised the importance of the balance between the projected material and the form of the surfaces on which the image was projected – with the actor's action. In his productions actors appeared engulfed in projected imagery, making the stage a coherent, very often a dream-like space of the drama. He designed complicated mechanisms for the mobile screens, used many new materials to enhance their reflective quality, and even reinvented an old, nineteenth-century theatrical ghost trick, combined with

the latest digital technology, producing unprecedented theatrical images.²

Svoboda left a unique scenographic legacy for the new generation of multimedia theatre makers who use projected images to try to create their own theatrical worlds. As one of the most important achievements in his practice, I would emphasise his elaborate combination of the two-dimensional projected image with the three-dimensional space of the stage. In that respect Svoboda solved many problems which troubled early users of film within a theatre context, and which seem to constantly reappear in the most recent wave of multimedia theatre practice.

the conclusion of the first chapter

In this chapter I intended to provide a short overview of the historically rich interrelationship between theatre and multimedia, up to the present time where a set of similar practical and theoretical questions has reappeared following the influence of digital multimedia on contemporary performing practice. I will address these concerns in more detail in the second chapter.

I also introduced the notion of 'totality' in art and its aesthetic and ideological implications for the theatre art of the last century. In the second chapter I will discuss the notion of 'totality' from the perspective of the most recent theories of 'remediation' (Bolter and Grusin 2000) which will, in my view, provide a new understanding of this old and very often indiscriminately used term.

I have also tried to document the comparatively recent history of the relationship between theatre and moving image. In this chapter I have similarly identified several functions of projected film for theatre. Many of these functions can again be traced in contemporary performance practice. My aim in the next chapter will be to explore the new functions of the projected image that have appeared in interactive digital performance.

(Endnotes)

1 Guillaume Apollinaire in the prologue of *The Breasts of Tiresias*, 1914 adds: 'A circular theatre with two stages / One in the middle the other like a ring / Around the spectators permitting / The full unfolding of modern art / Often connecting in unseen ways as in life / Sounds gestures colors cries tumults / Music dancing acrobats poetry painting / Choruses actions and multiple sets' (quoted in Aronson 1981: 492).

2 The same effect was 'reincarnated' in the modern digital performance *Losing Something* (2007) directed by Kevin Cunningham in 3LD Art & Technology Center in New York.



Future of Memory, Troika Tronix, 2003
(Courtesy of Mark Coniglio, photo Richard Termine)

chapter 2

theatre art in the age of digital remediation

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Over the last two decades of the twentieth century, theatre art underwent a significant transformation. Many new forms emerged, challenging old concepts and classifications. In place of the vocabulary associated with traditional genres and styles, today we speak of 'hybrid', 'post-human', 'telematic', 'prosthetic', or 'liminal' performance. In academic writings on contemporary performing arts and theatre, a new terminology has been adopted and new theories are sought, to keep pace with these changes. Accordingly, today we discuss the 'ecology' of performance; we search for the 'virtual actors' outside the 'obsolete bodies'; we look for the 'hyper-real' inside and outside the 'human-real'; we 'identify' ourselves with 'avatars'; we are 'deconstructing' and 'rethinking' our 'real body,' through placing its digital 'double' into the 'videospace' or 'cyberspace' of the 'post-dramatic' and 'post-choreographic' theatre.¹

The invention of the personal computer and its subsequent implementation in everyday life coincides with this latest metamorphosis of theatre. Or, as Lev Manovich puts it regarding culture in general:

[C]ultural categories and concepts are substituted, on the level of meaning, and/or language, by new ones that derive from the computer's ontology, epistemology, and pragmatics. New media thus acts as forerunner of this more general process of cultural reconceptualization.

(2001: 47)

The dividing line between theatre, visual arts, architecture, and digital arts becomes permeable and fluid. Often, one can hardly identify the specific medium in which the work of art is brought to the audience. Similarly, the role of the audience and their relationship with the performer and the performance has also changed. Instead of being a mere passive receiver of the author's ideas, the spectator is now expected to show some practical and creative engagement during the (joint) artistic process. The space where the theatre work is created and presented has also changed. For many performing artists, the traditional theatre building is an inappropriate, outdated and futile environment. Theatre artists are searching for alternative, more natural spaces that can provide authentic scenography for their site-specific performances, and support the desired intimacy with the audience during the performing act. Virtual spaces like the Internet are used as a stage for a performing action, overcoming physical distance and breaking the geographical borders that stand between the artists and their remote, but nevertheless physically engaged audience. Take for example Stelarc's *Ping Body, an Internet Actuated & Uploaded Performance* (1995) where the audience using the Internet could control the 'choreography' actuating the performer's body via a computer-interfaced muscle-stimulation system.

Digitisation of film and video, their current affordability and technical flexibility, has led to a new revolution in the use of the projected image in theatre. However, despite the change from analog to digital, the role of the projected digital image has stayed more or less the same as that of film and video in the previous history of analog multimedia theatre.² What has changed drastically, however, is the relationship between the projected image and the performer/spectator who is now, as a result of computer technology, able to directly control and manipulate the content and physical attributes of the projected image. Digital interactivity, in this respect, represents the defining techno-aesthetic feature of contemporary theatre. This technological invention has provided the basis for the emergence of the new performing species commonly called Digital Performance.

The recent widespread use of the computer as a new tool for creating material that is traditionally coupled with 'old' media (typography, graphics, film, video, music) was followed by a wave of theoretical discussions about *remediation*.³ The process by which an old medium gets adopted and adapted by a new medium has received significant attention in the study of new digital media (Bolter and Grusin 2000). While this discussion has resulted in a greater understanding of the processes of remediation within computer multimedia, it also opens, in my view, some new and hitherto unexplored perspectives for the understanding of remediation in the context of other art forms, especially theatre. In my first chapter, I emphasised the theatre's inherent ability to absorb all other arts, creating the key condition for the realisation of total theatre. Today the same process of absorption, borrowing, and adaptation is taking place in digital new media. My aim in this book, however, is to

suggest that some of the latest changes in theatre art are, in fact, signifiers that the same process of remediation is taking place within theatre itself, which is now remediating the latest big remediator – new digital multimedia. This assertion is very much in accordance with the following statement offered by David Bolter and Richard Grusin in their influential book *Remediation: Understanding New Media*:

What is new about the new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media.

(2000: 13)

The production of the Danish National Opera, *Dichterliebe* (2004), an opera with 'digital scenography' – a set design built exclusively from digital images, is an illustrative example of the 'refashioning' of an old theatre form, opera, through a challenging encounter with the new digital media. The frequent use of idioms such as 'digital scenography', 'interactive theatre', 'digital dance', or 'performer-computer interface' in contemporary performing practice clearly signals that this process of 'refashioning' of the performing arts is already in an advanced stage. Hence the theory of remediation may provide a useful framework for the re-examination of the notion of total theatre in the context of digitalised performing arts.

In my first chapter, I offered an overview of the history of multimedia theatre, from the first inceptions of the ideal of total theatre to the moment of the introduction of the computer in theatre and the birth of digital performance. In this chapter I will explore

another line of development which lead to digital performance: the history of digitality. I will begin with a short overview of the technical and conceptual development of the computer and media computing, from the first visionary concepts to the present day developments.

a short history of the computer and media computing

The idea of a computing machine which would be able to undertake complicated calculating operations for humans, faster than humans, can be traced back to the seventeenth century. Blaise Pascal and Gottfried Wilhelm von Leibniz, who worked independently of each other, are usually associated with the invention of the first calculators, the mechanical machines that were able to add, subtract, and multiply numbers accurately (Mayer 1999: 8-9). Their ideas had a follow-up in the work of numerous mathematicians, philosophers, and scientists in ensuing years, and this continues to the present day.

However, the modern computer cannot be seen as an exclusively computing device. Manovich sees the development of the modern computer as 'a convergence of two separate trajectories: computing and media technologies' (2001: 20), pointing to its roots in the work of Charles Babbage (Analytical Engine, 1833) and the invention of photography by Louis Daguerre (Daguerreotype, 1838); thereby adding to the computing function of the computer another, equally important feature – its capability to host multimedia.

In his essay from 1945, entitled 'As We May Think', the

American military scientist Vannevar Bush described a futuristic machine capable of associative searching of stored multimedia, simulating the ways in which the human brain works. The machine was called the 'memex' and it was designed as an analog, mechanical system:

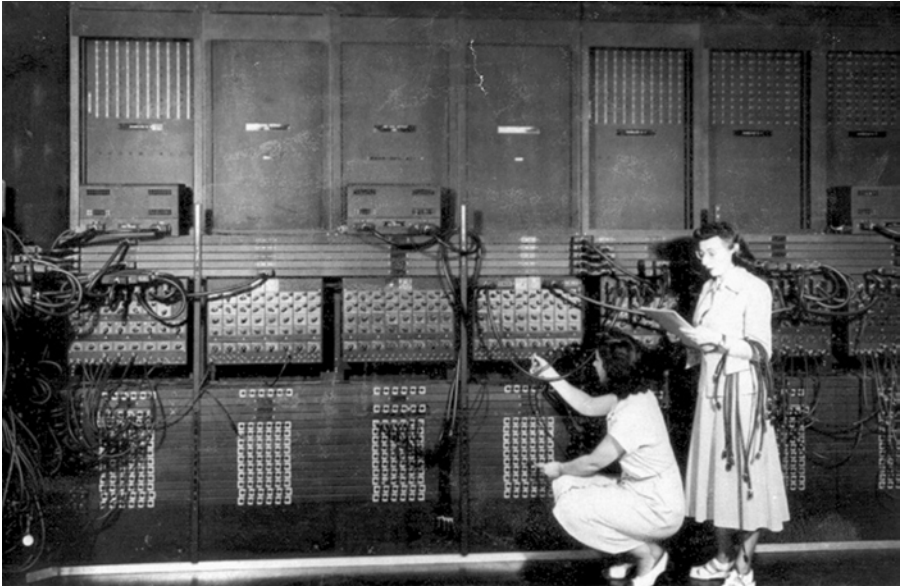
A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory.

(Bush 2001: 149)

Parallel to Bush's ideas, the mathematician Norbert Wiener explored methods of ensuring a more efficient system for communication between human and machine. He coined the term 'Cybernetics', describing the new potential that lay in the symbiosis of human being and computer. The word 'cybernetics' derives from the Greek *kybernetes* meaning 'steersman'. Besides its enormous significance for developments in the field of Human Computer Interaction (HCI), Wiener's ideas provided a conceptual framework for a whole generation of digital performing artists, who, following later significant developments in computer technology, eagerly explored the new aesthetic possibilities of human/computer interfaces.

Parallel to these visionary ideas, computer scientists and engineers were working out the first concrete technical concepts which would challenge the limitations of the technology of the time. The first electronic digital computer was fully operative in

the autumn of 1945 (Mayer 1999: 9). The huge, bulky machinery that occupied a whole room was called ENIAC (Electronic Numerical Integrator and Computer) and was designed by a team of scientists at the University of Pennsylvania.



ENIAC (Electronic Numerical Integrator and Computer), 1945

The next important steps in the development of the modern computer were made during the sixties. Inspired by the ideas of Vannevar Bush, American computer enthusiast and a graduate student of philosophy Theodor (Ted) Holm Nelson coined the expressions 'hypertext' and 'hypermedia', foreseeing further developments in the conceptualisation of digital multimedia. The main idea behind these terms was that texts or different parts of text, pictures, and sounds could be interconnected and approached directly by the user, avoiding the sequential reading and writing characteristic of analog texts.

[T]he structures of ideas are not sequential. They tie together every which-way. And when we write, we are always trying to tie things together in non-sequential ways.

(Nelson 2001: 159, original emphasis)



Engelbart's mouse

Douglas Engelbart implemented Nelson's idea of hypertext. Engelbart is now considered to be one of the most influential figures in the history of personal computing. He was an engineer and thinker who is credited with the invention of computer gadgets and concepts like the mouse, multi-window display, the word processor, electronic mail, and networked computers. The invention of the mouse as an 'extension on the user's hand into data-space' (Paul 2003: 10) revolutionised the way in which people interacted with the

computer and was crucial to the development of the first personal computers in the seventies. He created the conceptual foundation for the development of the Graphical User Interface (GUI) that subsequently allowed millions of non-professional computer users to communicate easily and intuitively with the computer.



Xerox Alto

The practical realisation of the GUI happened in 1973, when computer scientists Alan Kay and Ivan Sutherland, associated with the Xerox PARC (Palo Alto Research Center) in California, designed

the Xerox Alto as the first experimental computer equipped with the GUI instead of CLI (Command Line Interface). Furthermore, Kay introduced the concepts of folders, menus, and overlapping menus on the desktop. These concepts were perfected by Steve Jobs and Jef Raskin, who, working with Apple Computers, helped pave the way for the Macintosh (1984), the first commercially successful personal computer that featured the GUI and other functions that were later widely adopted and feature in personal computers today. Over time, the computer has gained more functions and features, the development of which continues into the present. However, for the study of digital performance, the most important features of the computer are those related to the display of its multimedia content and its interactivity with the human.

digital performance – technical roots...

In addition to its practical application in everyday life, the computer, from the sixties onwards, was conceptualised as the form of technology which would be able to alter our perceptual experience, and even revolutionise the very nature of our reality. The computer was seen as the ultimate machine that would eventually succeed in relocating human beings to desired alternative environments – programmable virtual spaces with physical and psychological laws substantially different from those of everyday experience. In his 1965 essay 'The Ultimate Display,' Ivan Sutherland speculates about such a virtual reality – a 'best-case' scenario for the human-machine interface of the future:

The ultimate display would, of course, be a room within which the computer can control the existence of matter. A chair displayed in such room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a bullet displayed in such a room would be fatal. With appropriate programming such a display could literally be the Wonderland into which Alice walked.

(2001: 236)

From the moment of its inception, the idea of Virtual Reality has been praised in euphoric terms. Often described as the step through the famous 'Alberti's window' (Lister et. al. 2003: 126), or the 'entering into' technology itself, VR stirred up questions regarding disembodiment and identity in cyberspace, and the possibility of the exchange of the 'complete sensory experience' (Lévy, quoted in Lister et. al. 2003: 118). Opposed to this optimism stands the heterogeneous group of sceptics who either do not see anything essentially new in VR (comparing it with the nineteenth-century stereoscope and other similar illusionistic gadgets), or do not believe in the possibility of its full technical realisation, pointing to its embarrassingly unconvincing, crude, and primitive imagery (Lister et. al. 2003: 117, 121).

It is not the purpose of this book to elaborate on the numerous anthropological, sociological, political, and technological arguments commonly employed in this dispute. However, if one puts aside its conspicuous utopian character, the idea of Virtual Reality does deserve the attention of this book, at least for two reasons. Firstly, it deals with the same longing for immersion, recognised in my previous chapter as the foundation stone of the

ideal of total theatre. Secondly, its technical setup mirrors that of immersive digital scenography, a basic ingredient of many digital performances.

Ivan Sutherland made both a conceptual and practical model for the first digital immersive human-machine interface. He experimented with head-mounted three-dimensional displays ('glasses') containing digital graphics sensitive to the position and the movement of the person who wears it. Following the movements of the person's head, the change in the displayed images would give the impression that the person's point of view was changing accordingly, evoking the feeling of a presence *inside* the graphics. Furthermore, these experiments led Sutherland to conceive of new possibilities in mapping human movements with other kinds of computer output.

Sutherland's work showed how human actions could become computable information that was then passed to the human subject [...] to then inform or control their further actions. This took a graphic and tactile form in a cybernetic 'feedback loop' between computer and human being.

(Lister et. al. 2003: 112)

This 'feedback loop' forms the basis of all sensor systems used in contemporary digital performance, where performers, using the position and movement of their bodies, through computer mediation, influence the content and quality of the computer outputs (projected light, images, video clips, and sounds), which further influence the performer's subsequent actions. The interactivity between human and machine, achieved in this way, is provided by the joint work

of the theatre maker and the computer engineer (often one and the same person), suggesting a union of artist and technologist. A very illustrative example for this techno-artistic union could be found in the work of the Swedish born engineer Bully Klüver, who, in the 1960s, dedicated his technological inventions to the joint projects with artists such Robert Rauschenberg, Andy Warhol, and John Cage. Many other artists of the sixties understood the artistic potential of the emerging computer technologies, but only a few had the opportunity to work with such rare and expensive tools, which at the time were dedicated almost exclusively to scientific and military research.

(non)digital beginnings...

The interactivity between the artist, the work of art, and the audience (in a non-digital form) was already in use, and very popular, in the young American avant-garde movement, ever since the Alan Kaprow's *18 Happenings in 6 Parts* was performed at the Reuben Gallery, New York, in the late fifties. In a series of Happenings that followed, Kaprow intended to eliminate the distinction between the artist and the spectator, and the supremacy of the work of art over real life. During such a Happening, the audience was usually offered some 'guidelines' and was invited to participate by creating their own meaning from a chain of randomly juxtaposed events created by the artists/performers, which happened without any predefined purpose, on different locations simultaneously. 'The audience was left to make what it could of the fragmented events, for Kaprow had warned that "the actions will mean nothing clearly formulable so far

as the artist is concerned''' (Goldberg 2001: 130).

This merging of visual arts (painting and sculpture) with the theatre, and spectator's active participation in the process of making art, outlined a path which was to be followed by many visual artists from then on. They included the elements of *liveness* and spontaneity in their hitherto mainly static art, creating a hybrid of visual arts and theatre frequently called 'performance art' or 'live art' (Goldberg 2004: 12). The ideas of action, indeterminacy, randomness, decentralisation of authorship, and non-linearity had roots in the work of John Cage a decade earlier, and have remained the central features of performance art to the present day. During the time that Cage spent in the Black Mountain College (1948-1957), he became famous for his radical split with the way that all the traditional art forms – music in particular – were produced and practiced by the artists and perceived by the audience.

Essentially, indeterminacy allowed for 'flexibility, changeability, fluency and so forth', and it also led to Cage's notion of 'non-intentional music'. Such music, he explained, would make it clear to the listener that 'the hearing of the piece is his own action – that the music, so to speak, is his, rather than composer's'.

(Goldberg 2001: 124)

A similar philosophy characterised another heterogeneous artistic group famous for 'indeterminacy, flexibility, changeability, and fluency', whose work, in addition to the heretofore listed characteristics, ignored even the geographical borders by appearing in several countries simultaneously. The members of *Fluxus*

radicalised the art scene of the time and made space for new young artists in many different countries to express their shared visions about the societies they lived in. (Apart from *Fluxus*, there were other artistic collectives in the sixties which operated in a similar way – groups like *Art Aktuel*, *Aktionen*, *Art Total*, and so forth.)

The examples above show that there was a passion for interaction and audience participation long before digital interactivity came into being. Some even go so far as to suggest that the work of the above mentioned artists has somehow anticipated (if not determined) the future developments of digital art:

The events and happenings of the international Fluxus group of artists, musicians, and performers in the 1960s were also often based on the execution of precise instructions. Their fusion of audience participation and event as the smallest unit of a situation in many ways anticipated the interactive, event-based nature of some computer artworks.

(Paul 2003: 13)

Thus, long before it appeared as a new technical feature of the personal computer, the idea of digital interactivity had attracted many visual artists who were ready and willing to utilise its almost metaphorical power in interconnecting the work of art with its audience. In his article 'Behaviourist Art and Cybernetic Vision' (1967), British artist and theoretician Roy Ascott described his vision of a future art form, which would fully affirm the cohesion between cybernetic (interactive) technology and the emerging democratic and radical avant-garde aesthetics:

We find an insistence on polemic, formal ambiguity and instability, uncertainty and room for change in the images and forms of Modern Art. And these factors predominate [...] to draw the spectator into active participation in the act of creation. [...] As the process is open-ended the spectator now engages in decision-making play.

(Ascott 2001: 997-98)

The artist who practically translated these ideas in his work was Myron Krueger. He is renowned as the author of the first interactive cybernetic art works and the creator of both the term and the technical conception of the notion 'Responsive Environment'. In the early seventies, he designed and directed the performances/installations *Metaplay* (1970), *Live Graffiti* (1970), *Psychic Space* (1971), *Maze* (1973), and *Videospace* (1975) – interactive, telematic, multimedia works that used the computer as a mediator between the visual artist and an active spectator placed in a 'sensitive' environment. These works, though resembling the latest interactive computer multimedia installations, were substantially different in their setup. Whilst in the latter humans interact with the programmed digital (graphic, video, sound) applications, in Krueger's case, the computer was used to seamlessly connect the spectator/participant with the artist who was placed in a remote room where s/he created graphic material projected in front of the participant. Even though the spectator had the impression that the computer was drawing the graphic shapes and objects on the screen, it was in fact the artist who, with the help of video camera and computer, was following the movements and reactions of the spectator/participant. The sensory floors were used to give information about the position of the spectators and their

movements, and to trigger different light and sound effects. Using responsive environments in this way, Krueger's ideal was to create, as he called them, 'Artificial Realities' – basically a form of Virtual Reality that did not require the use of cumbersome VR helmets and glasses. Krueger's ideas eventually led to the design of the immersive multimedia CAVes in the early nineties. The equipment used in Krueger's projects, including computers, video cameras, sensors, projectors, and projecting screens, perfectly matches the standard setup of the modern digital cybernetic performance. (See Chapter 3 for common technical setups in contemporary digital performance.)

the characteristics of digital performance

Tracing the roots of digital performance, I found three different currents which intermingled to create this new techno-artistic form. These are: multimedia theatre, avant-garde visual (live) arts, and computer technology. But what is digital performance in the first place?

The simplest answer, probably, would be the following: digital performance is any theatre or dance performance that uses a computer. One could argue that any public performance equipped with digital technology should be called digital performance. This definition would be broad enough to avoid the risk of excluding any sort of idiosyncratic digital performance from its scope. However, many, with good reason, would not be satisfied with the evident clumsiness of this definition, which is simply too inclusive; in the last two decades it would be very difficult to find many *non*-digital

performances. Almost every contemporary production, even in the lowest equipped theatre, uses at least one piece of digital equipment – the digital compact disc player or digitally controlled light mixer, for playing the soundtrack and controlling the lighting respectively.

Commonly, when we refer to digital performance, we usually mean a form of theatre (theatre understood in its broadest possible sense) that contains digital technical facilities which enable the performer to create, control, organise, or interact with digital multimedia content, which is projected onto the stage in real-time. In other words, theatre with an actor who is inter-acting with and within 'digital scenography' – the digital realm of light, sounds, and images originating in the computer. The serious drawback of this definition, however, is the fact that some works, even though regarded as the hallmark of digital performance, would be excluded. Here, I primarily think of Stelarc and his 'interactive mechanical ballets' where no single image or sound is projected onto a 'stage' in the way that the definition prescribes.

Digital performance appears to be too heterogeneous, and it is very difficult to decide what does and what does not belong inside its vague and apparently open-ended borders. A better way of dealing with this problem, in my opinion, is to give a description of some important techno-aesthetic characteristics of digital performance.

In the time of its dazzling growth in the nineties, driven by the need for self-definition, computer new media was by some authors compared with theatre. In her book *Computers as Theatre*, Brenda Laurel uses several analogies between digital multimedia and theatre in her search for the 'poetics of interactive

form' (1991: 35). Laurel argues that many models in the human-computer interaction resemble theatre, and could more easily be understood if one compared them with the theatre theory proposed by Aristotle in his *Poetics*. She offers a broad spectrum of analogies with dramatic elements, structures and techniques in her attempt to comprehensively define the heterogeneous nature of, at the time emerging, new medium. I will use a similar approach whilst going in rather the opposite direction. 'Borrowing' the method of her analysis, I will refer to elements of the theories of new digital media offered by Lister et. al. and Lev Manovich in their respective books *New Media: A Critical Introduction* (2003) and *The Language of New Media* (2001). Using their classifications in the analysis of new media, I will try to get closer to the essence and a more acceptable definition of my subject of study – digital performance.

According to the authors of the book *New Media: A Critical Introduction*, 'the key terms in discourses about new media [are]: digitality, interactivity, hypertextuality, dispersal, and virtuality' (2003: 13). I will explore some of these characteristics of new media in the context of my analysis of digital performance.

digitality

The defining characteristic of digital performance should be its self-evident *digital* nature. What does digitality mean? It means that all information, texts, films, graphics, sounds, and all other media produced by the computer or stored in it, are represented as long lines of numbers.

All new media objects, whether created from scratch on computers or

converted from analog media sources, are composed of digital code; they are numerical representations.

(Manovich 2001: 27)

In contrast to *analog* media where information on physical reality is stored in another *analogous* physical form (for example the information about light reflected on an object is stored as analog information in film emulsion; or the sound of a music piece is stored as analog mechanical writing on vinyl), in the computer all media are computable and can be changed by applied algorithmic operations at a very high speed. As a consequence, this has a number of advantages for performance. Firstly, it stores a huge amount of information in many different media on a very small piece of hardware; secondly, this information can be accessed at a very high speed; and thirdly, manipulation of this information is immediate and highly flexible.

In the world of theatre, this means a rich, dynamic, and convenient source for creating, storing, and manipulating media material for visual and sonic design, and the possibility of real-time interaction with this material during the performance. Digitality made it possible to achieve almost perfect synchronisation between different scenographical elements such as lighting and sound using relatively cheap equipment. Once (before digitisation) only the privilege of the biggest, state sponsored theatres, the moving image projecting technology is today affordable even for the most alternative, amateur productions.

A vast amount of graphics, animations, photos, videos, and sounds can be stored on a single hard-drive which today has

a capacity measured in tera - rather than megabytes. All these different media could be automated (programmed) or manually controlled from a single computer simultaneously.⁴ As a result, today we have a large number of theatre productions with an extensive use of digital equipment. Although it is not possible to characterise all of these productions as digital performance, the use of digital equipment leaves a certain aesthetic print, even in the most traditional theatre performances. One cannot but notice the ever-increasing number of repertory theatre productions where the projected digital video is used for different scenographic purposes. In addition, a whole range of new digital performances emerged directly as a result of the introduction of digital technology.

hypermediality

Hypermediality is the next characteristic of new media that can be used in the analysis of digital performance. As mentioned earlier in this book (p. 65), the terms *hypertext* and *hypermedia* are inventions of Theodor Nelson and describe the non-linear nature of digital narratives. Hypermediality is a direct consequence of digitality. Any discrete piece of digital material, in any format, can be made into a link to jump from, or to, another link. Hypermediality can also be defined as 'non-linear multimedia' – multimedia that can be interactively approached by the user (Lister et. al. 2003: 26).

In the discourse of the personal computer, the term *hypermediality* describes the technological ability of the computer to connect different kinds of media in a free and associative order, creating a unique flow of information using the intertwined system

of hyperlinks.

The element of a 'controlled randomness' that emerges in Dada, OULIPO,⁵ and the works of Duchamp and Cage points to one of the basic principles and most common paradigms of the digital medium: the concept of random access as a basis for processing and assembling information. American digital artist Grahame Weinbren has stated that 'the digital revolution is a revolution of random access' – a revolution based on the possibilities of instant access to media elements that can be reshuffled in seemingly infinite combinations.

(Paul 2003: 15)

We can also easily identify hypermediality in the context of digital performance. During the performance, using 'controlled randomness', the different multimedia parts are triggered and connected either by the technician, the performer, or the spectator. We jump from one frame of the projected video, to the sound or visual effect, from the still graphic or photograph, to recorded speech of the actor, radio news or a piece of poetry. Within the same video or sound track, we can 'scratch' from the beginning to the end, and back to the middle in the way we want. It is due to hypermediality that single software on a single computer can serve as a universal control panel for a whole range of different technical functions, from the lighting to the sound design. It is also due to hypermediality that certain performers' physical gestures captured by sensors, followed by the associated sounds or images, can give to the performer's body the role of a mixed audio-visual (multimedia) 'instrument'.

Hypermediality is much more visible in hybrid multimedia

performance/installation environments, where the 'controlled randomness', indeterminacy, and non-linearity of the narrative open opportunities for the spectator/participant to create hyperlinks with different elements of the multimedia content, creating unique and non-repeatable narrative structures.

Taking into account the *hypermedial* character of digital performance, it is more appropriate to refer to *hypermedia* rather than *multimedia* theatre. However, even though it may seem that a hyperlinked structure of performance is open to an endless number of possibilities and random stories, this choice is actually always limited by the author's (programmer's) choice, and the narrative can never escape the imposed borders.

virtuality and immersion

The common denominator for all Virtual Reality systems is 'simulation':

If we trace the early history of VR technology we find, in a practical and instrumental context, a strange shift taking place in the relationship on images and other sensory experience to external and pre-existing reality. This has been conceptualised as a shift from the practice of 'imitation' (or 'mimesis') to that of simulation.

(Lister et. al. 2003: 110)

'Simulation refers to technologies that aim to immerse the viewer completely within a virtual universe' (Manovich 2001: 16). This describes the ability of the new media technologies to 'transfer' their audiences from the realm of everyday physical reality to a

simulated visual, sonic, and tactile virtual world. While our bodies are still in one space, our senses are immersed in a seemingly different universe. As a result of the division of the body and the sensory apparatus of a participant in VR, a certain sense of disembodiment is acquired.

As the technologies develop, some of the anxieties surrounding them – including a sense of disembodiment, loss of physical reality, inability to ‘touch’ one’s work and a sense of distance or alienation – are being addressed by a rhetoric of human connection and closeness.

(Dove 1994: 284)

The perceptual ‘voyage’ based on the deception of the senses is an essential psychological characteristic of theatre or any other art dealing with fictional worlds. Tracing the genealogy of immersive environments Manovich lists ‘Baroque Jesuit churches, nineteenth-century panorama, twentieth-century movie theatres’, but he fails to take into account the ultimate VR of the nineteenth and twentieth centuries – the total theatre of Richard Wagner, Erwin Piscator, or Josef Svoboda.

How does digital Virtual Reality differ from these theatrical realities? What are their similarities? How do they combine in contemporary digital performance?

The technical cornerstone of VR is digital interactivity, that is, the possibility that participants who inhabit its digitalised landscapes, using the movements and position of their bodies (traced and measured by sensors), can change the visual and sonic qualities of all digital objects in this virtual world. In the ideal

VR the inhabitants move through totally convincing photorealistic environments, which simulate characteristics of a fictional world (see p. 69 on 'Ultimate Display'). They pass by the different virtual objects and meet other virtual and real inhabitants. The simulated world does not need to exist as a reference anywhere outside the VR. It only has to convince the users that they are 'really' inside a coherent universe. As the participants move, the world changes in accordance with their movements. This virtual world is still defined within Cartesian coordinates, but anything else is left to the imagination of the computer designer and programmer.

Although very often depicted as an already existing reality in science fiction movies, VR is still far from its projected ideal. And while some claim that VR is already a medium in its own right, it is not difficult to notice that the majority of its enthusiasts usually speak only in terms of its *future*, predicting the different scenarios for its development, and the radical consequences for the human race, once these systems finally achieve the required technical perfection. The main reason for this disappointing delay is the insufficiency of contemporary technology to meet the requirements of such a photorealism. Technology is simply too imperfect, too rare, and too exclusive. This rarity and exclusiveness can be compared with the time of the first computers which, like VR today, existed in laboratories far away from the *senses* of the ordinary audience. Virtual Reality is still less *reality* and more (science) *fiction* for the majority of the human race.

Can VR, even in its more developed stage, really be seen as a fully new and original artistic medium? Manovich points to the discussion where VR is seen as 'the logical successor of the

cinema and potentially the key cultural form of the twenty-first century'. Describing the user who 'inside the narrative space' interacts with virtual scenography, virtual actors and digital avatars representing other users, Manovich rightly asks 'whether [these] scenarios indeed represent an extension of cinema, or if they rather should be thought of as a continuation of theatrical traditions such as improvisational or avant-garde theatre' (2001: 82). I would add that VR, in the form of digital performance, is already very much present in our culture. Parallel to scientists, theatre artists are finding a way to challenge the limitations of technology and to successfully create digital immersive environments for their artistic purposes. Describing the performance of *Sulphur 16* (1998) produced by *Random Dance Company*, Jackie Smart gives us the following description of a VR-like digital scenography:

[T]he live bodies of the dancers enter into this already-unreal technological environment; the use of light, sound and projection and the ways in which the space is constructed all operate to remove us from human reality and transport us into a world in which time, space and the body seem to operate according to digital laws.

(Smart 2004: 42)

The interactive dances of the New York based *Troika Ranch*, or Nuremberg's dance group *Palindrome* could be described as interactive dances inside the Virtual Realities. While VR engineers struggle to create believable virtual spaces relying exclusively on cutting edge interactive technology and photorealistic illusion, theatre artists still rely upon an ancient and proven 'technology'

– they engage human imagination. Although far from the perfect photo illusion, they still succeed in moving the audience into the space that ‘seems to operate according to digital laws’. I have already mentioned the numerous similarities between the technological and aesthetic concept of VR and digital performance, and the main difference between the two lies in their various aims and objectives. In short – for artists ‘(photo)real’ does not equal art, and for scientists ‘artistic real’ does not equal realistic.

interactivity – attraction of interaction

Manovich argues that interactivity is so immanent to digital new media that the use of the term ‘interactive computer media’ is entirely tautological; ‘it means stating the most basic fact about computers’ (2001: 55). The moment one is involved in any action on the computer, one is automatically involved in interactivity. The same could be said when it comes to digital performance. Interactivity is the core and the defining characteristic of digital performance. The term *digital* in digital performance equals *interactive*. One can use computers to play music, project video, and control lights in any multimedia performance, but without certain level of interactivity between these elements and the performer or spectator, this performance cannot be called digital. Other important features of digital performance, like hypermediality and virtuality, would not be possible without interactivity, which lies at the very heart of digital performance.

Interactivity in digital performance is primarily a technical feature. It always requires some sort of human-machine interface

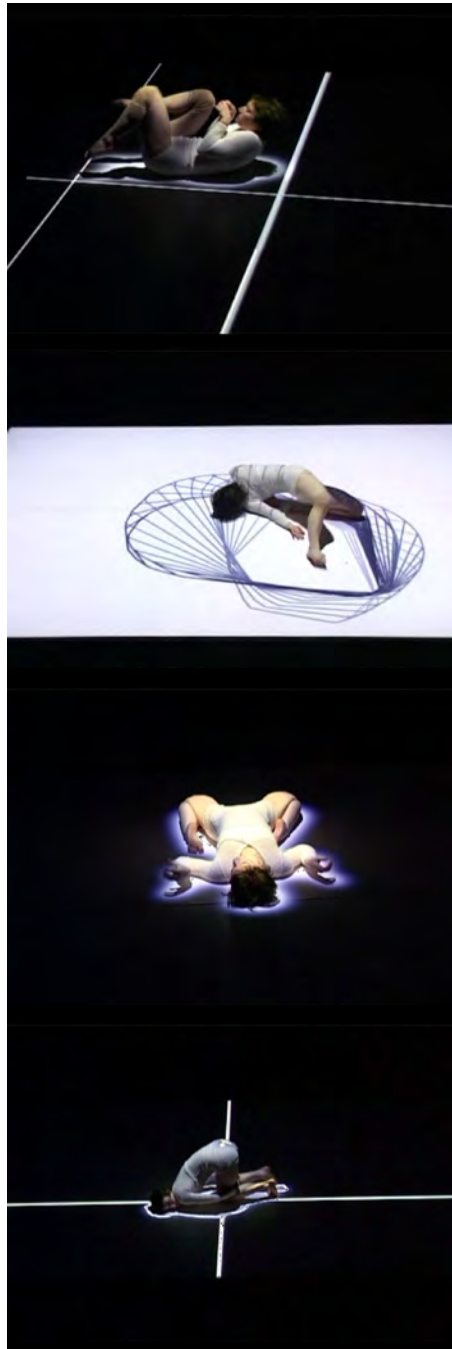
as a basic technical condition for its existence.⁶ This technical characteristic, however, induces a set of aesthetic traits that separate digital performance from other forms of theatre. Interactivity primarily influences the visual and sonic qualities of the performance and its dramaturgy. In my opinion, three kinds of interactivity dominate digital performance today:

<i>Interactivity between:</i>	
Performer	Digital Scenography
Spectator	Digital Scenography
Performer	Spectator

Table 2:

Three forms of interactivity in digital performance: interactivity between performer and digital scenography (meaning all digital material projected or played from the computer during performance); interactivity between the spectator and digital material of the performance; and interactivity between the performer and spectator through the mediation of the computer.

When performers, with the movements and position of their bodies, instigate physical changes in the projected image, played sound or projected light, they control the digital scenography of the performance. When they change the cues and improvise with the order of scenes, they control digital dramaturgy.



In the Frieder Weiss's performance Glow (2006) the dancer produces a different light effects and geometrical patterns using the position and movements of her body.

This interaction between performer and computer multimedia is the most common way to use interactivity, and it is most often seen in dance theatre. The body of the performer is considered an *instrument* capable of choosing and 'playing' different 'samples' of the multimedia material. In other situations, the performer, via computer mediation, interacts with the physical objects and changes shape and position, or creates feedback loops, allowing the object to control or actuate the performer's body.⁷

In the second type of interaction, the audience is invited to interact with the digital material on the stage. Sometimes this interaction is concealed and used as a defamiliarising effect aimed at directly involving the audience in the performance structure. Most frequently, however, this type of interaction is used in the hybrid type of performance/installations with an open narrative structure. Within a loose framework, members of the audience have the possibility of developing their unique narratives. This kind of interaction is characteristic of the live art installations in galleries and museums.



The participatory performance/installation projects: the audience interacts with the digital images; Camille Utterback: Text Rain (1999).



In Telematic Dreaming (1992) Paul Sermon uses a bed as a high-resolution screen where the spectator meets the performer, who is placed a thousand kilometers away.

When the performer and spectator are placed in separate and remote places, but still can visually, sonically, and physically communicate with each other via computer technology, this represents a third kind of digital interaction. In some telematic performances, the clear distinction between performer and spectator is sometimes very blurred. The 'choreography' of the former is utterly dependent on the behaviour of the latter, and the sense of a new 'digital intimacy' is constructed. The theatre act is reduced to its most intimate (even though physically remote) inter-acting form, that which occurs between two people.

Instead of giving a definite and precise definition of what digital performance *is*, previously I have tried to give some ideas of what digital performance *might be*, considering some of its main

characteristics. This field of theatre is extremely dynamic and in a state of constant change. However, in all of these different examples there exists a human-machine interface, a form of performer-computer symbiosis, a *cybernetic* link that allows artists to use digital technology in the described ways. Therefore, instead of creating a strict but at the same time all-embracing definition for the heterogeneous aggregate of different artistic forms, I can only propose a different name when describing theatre that deals with digital interactivity. In my view *cybernetic* theatre, or *CyberTheatre* (in accordance with the unofficial digital spelling convention), would better describe the common trait of many works which we would like to categorise as part of this emerging techno-artistic branch.

Passing from the historical and descriptive to the theoretical consideration of CyberTheatre, in the next part of this chapter I will address Jay David Bolter and Richard Grusin's theory of *remediation* (2000). My intention is to apply their theory of new media to the art of theatre. One segment of this theory, on the interrelation between 'hypermediacy' and 'immediacy', can help provide, in my view, a new and better understanding of the idea of total theatre seen in the context of CyberTheatre.

remediation – a new understanding of total theatre

In their book *Remediation: Understanding New Media*, Bolter and Grusin argue that 'the key to understanding how a medium refashions its predecessors' is the oscillation between 'two logics of mediation', between immediacy and hypermediacy – in other words between 'the transparent presentation of the real and the

enjoyment of the opacity of media themselves' (Bolter and Grusins 2000: 19, 21). The term immediacy is used in two senses: it refers to the conventions of visual representation capable of creating the experience of seemingly transparent and 'unmediated' reality, such as photo realism, linear perspective, erasure of device, or automaticity, but it also refers to the 'real' in the sense of the 'vivid', 'authentic' or 'total' experience. This second sense of *immediacy* is achieved by *hypermediacy*: 'hypermedia seek the real by multiplying mediation so as to create a feeling of fullness, a satiety of experience, which can be taken as reality' (53). Similarly, hypermediacy has a twofold meaning: it is used to designate both the appreciation of the medium itself, the fascination with device as artifice, and the multiplicity of media within a single site, or one medium's use of or reference to another (24, 72).

As opposite as these two 'logics of mediation' may seem, they are actually complementary and mutually dependent. It is in the process of remediation that one media refashions another 'in the name of the real,' and 'whenever one medium seems to have convinced viewers of its immediacy, other media try to appropriate that conviction' (65, 9).⁸ Immediacy is thus achieved by hypermediacy, for it is the immediacy (both in the sense of transparent representation of material reality and the true or authentic experience of the real) that is being appropriated and transformed in the process of remediation.

Though developed as an explanatory model in an attempt to understand the process by which new digital media remediate their predecessors, the theoretical approach worked out by Bolter and Grusin can be applied to the analysis of intermedial reference

regarding 'older' media as well. The idea about *immediate* experience of the medium as the *real* resonates quite remarkably with Wagner's ideal in which 'the spectator transplants himself upon the stage, by means of all his visual and aural faculties' fulfilling the basic condition for the total theatre (1993: 185). Seen as a totalising medium capable of aggregating other media, total theatre could be a very good example of the 'double logic' of remediation. Having as an ultimate aim total immersion of the audience into the 'real' of the theatre act (immediacy), total theatre paradoxically embraces all available media and technologies (hypermediacy) in order to achieve this ideal. As the number of devices multiplies, awareness of their existence becomes lower. In the perfect scenario of some VR theatre of the future, this awareness should eventually completely disappear. While in this most recent process of remediation *new* digital media has the role of the *old* media, CyberTheatre appears to be the latest totalising medium – the up to date edition of total theatre.

cybertheatre – moving multimedia to the stage

As I have already mentioned, interactivity as an artistic strategy existed long before the emergence of digital performance and it has its origins in the avant-garde visual arts and performance art of the fifties and sixties. Digital technology, however, made it possible to go much deeper into interactivity and to create a whole range of new artistic works which otherwise could not exist.

However, as is always the case with all new technologies, theatre artists still use digital interactivity primarily on account

of its technological novelty and attraction. Interactivity with its rather *magical* abilities, when it comes to an audience ignorant of its technical possibilities, is a seductive tool capable of surprise in a way the first trick films fascinated their first audiences. Only when the filmmakers stopped being fascinated and occupied by its exclusively technological nature, and when they started using its nature to express artistic ideas in a unique and hitherto unseen way, were they able to speak of a truly newborn artistic medium. The same should apply to CyberTheatre. Interactivity will have an increasingly important role and, with the expected development of digital technology, will most probably shape the nature of this theatre of the future. The active role of the spectator is expected to increase, but the question is: will it always be limited by the already structured dramaturgical guidelines? The other possibility is that CyberTheatre will become an independent art form with specific and unique aesthetics, significantly different from any other existing art form including the theatre as we know it.

A more important fact for this discussion, however, is that theatre, after the many other technological tools adopted during its long history, has adopted yet another. Whether this new, powerful tool will be used for the realisation of an old idea of totality depends first and foremost on the artists' ideological and aesthetic affinities. Judging by the interest in immersive systems like Virtual Reality, the idea is still alive and has a future. Theatre as the proven totalising art form embraces all available media and technologies to bring about the artistic truth of the time in which it exists. Today we live in the era of computer revolution and digital remediation. Our ever-increasing encounters with networked computer multimedia

are changing our outlook, knowledge, and the ways we experience our reality. It is in accordance with the logic of theatre that this new electronic window on the world is now moving to the theatre stage to be 'reconstructed', 'investigated', 'questioned', 'interrogated', exposed to different 'guerrilla' 'tactics' and 'strategies', and finally 'deconstructed' in a heroic act of a total theatrical 'remediation'.

(Endnotes)

1 The neologisms such as these permeate both the vocabulary of academics and the pronouncements of artists involved in the contemporary performing arts. See for example Gallasch and Baxster (2001), Hayles (1999), Ascott (1988), McAuley (2003), Broadhurst (1999), and Stelarc's homepage.

2 In my study I identified several functions of the use of projected film in theatre. The projected images are generally used: (1) to serve as scenography showing the location of drama, (2) to extend limited physical space of the stage showing the space outside the stage, (3) to extend fictional space of the drama showing fictional or real events which are happening, or have already happened outside the stage, (4) to create fast migrations of the characters from one space to another helping the fluidity of dramaturgy, (5) to arouse shock and surprise when these migrations happen unexpectedly, (6) to create an interplay between live and virtual characters, and (7) to show the inner state of the characters, their thoughts, dreams and memories.

3 In their seminal book from 1999, *Remediation: Understanding New Media*, Jay David Bolter and Richard Grusin offered a theory of New Media based on the assertion that what we today understand as New Media represents a sum of old media refashioned in a new digital context.

4 Software like *Isadora* enable us to control theatre lighting, six independent video projections, multi-channelled sound, and to interact with all these media in real-time using different sensor and camera tracking systems – from the single machine.

5 OULIPO (Ouvroir de Littérature Potentielle), the French literary and artistic association founded in 1960 by Raymond Queneau and François Le Lionnnais, who argued that all creative inspiration should be subject to calculation and become an intellectual game (Paul, 2003: 13).

6 Like in the VR, this interface consists of sensor systems, computer hardware and software, and video/audio equipment (projectors and screens, sound systems, lights).

7 Stelarc's performances very often use this kind of interactivity between human and machine, for example *Ping Body* (1995) or *Hexapod* (2000).

8 Bolter and Grusin's major example of the remediation 'in the name of the real' is the way in which new digital media adopt and reform the conventions of perspectival realism, previously 'perfected' by linear perspective painting, photography, film, and television, each one legitimating its 'newness' by the promise of greater immediacy.



Slaughterhouse 5, Studio for Electronic Theatre, 2008
(Photo Stanislav Milojkovic)





Waar is daar? (Where is There?), Studio for Electronic Theatre, 2005

part two

studio for electronic theatre

an e-born dream of total theatre

chapter 3

cybertheatre – hardware, software, and techniques

In the first part of this book I outlined a historical and theoretical survey of my area of research, analysing the development of multimedia theatre throughout the history of theatre and linking it to the development of CyberTheatre in the last few decades of the twentieth and the beginning of the twenty-first century. In this part, I aim to examine this subject matter from the point of view of a practitioner, using the examples and experience gained during my professional practice in CyberTheatre.

The practical part of my research was realised in cooperation with my colleagues from the Studio for Electronic Theatre, an artistic collective established in Holland in 2005 as a group of artists and scientists dedicated to research, education and production in the field of digital performing and visual arts. For the purpose of my case study I will analyse our work on three productions made in the period between 2005 and 2008: *Waar is daar?* ('Where is There?'), *Сокођало Project* ('Gadget Project'), and *Klanica 5* ('Slaughterhouse Five'). In all these projects I had a triple role as director, multimedia digital artist, and set designer.

The performance *Waar is daar?* (2005) was produced in Amsterdam as a co-production of the Studio for Electronic Theatre, STudio for Electro Instrumental Music (STEIM), and Delft University

of Technology. The following two projects – *Сокођало Project* (2006) and *Klanica 5* (2007/08) – were produced in Serbia as a result of collaboration between the Studio for Electronic Theatre and local Serbian cultural organisations: Academica, National Theatre Užice, and PVC Theatre Novi Sad.

In the following two chapters I will first analyse the technical (Chapter 3) and then aesthetic aspects of each of these projects (Chapter 4), aiming to give an overview of my artistic intentions, results achieved, failures, and potential directions in which our work in CyberTheatre may develop in the future. However, the main goal will be to offer my understanding of the cybernetic digital theatre, viewed from the perspective of the professional theatre maker, and to shed light on the new role of theatre director in this up-and-coming artistic discipline.

In order to provide a clear overview of the technical issues, problems, and solutions that (re)appeared during the preparation and realisation of the projects with which I was involved over the last few years, I will first briefly give some details about hardware, software and techniques that are commonly used in digital performance. I tested and used many of these technologies in my work on Studio for Electronic Theatre projects and will evaluate them in accordance with my experiences. In order to provide a more comprehensive understanding of the performance technologies available today and offer a broader basis for further research, I will also mention some hardware and software that I have not had chance to 'test-drive', but have a knowledge and understanding of, having seen them in action in the work of my colleagues.

tracking and capturing

In the previous chapter I argued that digital interactivity represents *the* technological feature that distinguishes digital performance from the other multimedia theatre forms. Two of the key techniques that make digital interactivity possible are the *tracking* and *capturing* of the physical characteristics of the performer or spectator who participates in this interaction. The 'captured' properties, such as position, movement, or shape of a performer, are further utilised to create the dynamic changes in the audio-visual (multimedia) content of the performance, thereby creating an interactive (hypermedia) digital performance. However, in order to track and capture any physical properties of the performer or spectator on stage, the computer needs to *sense* these selected properties. Computers generally have two means of detecting how the performer or spectator behaves on the stage, which are physical (magnetic and mechanical) or optical sensors. Physical sensors trace and measure physical changes caused by the performer or spectator – such as the position, direction of movement, speed, distance, proximity, acceleration/tilt, sound, or temperature. The other types of sensors register optical changes that appear on stage during the performance. The latter are associated with different cameras that can be used as capturing devices.¹

There are different kinds of physical sensors which are used in contemporary performing arts, and new ones are continually being developed. The majority of them are designed for non-artistic purposes (military, security, industry, medicine),² but artists with a certain degree of technical knowledge can modify them and employ them in accordance with their artistic needs. Physical sensors track

and capture the physical behaviour of the performer and send that information in the form of electronic signals to the computer. In the computer the signals produce either two values (zero and one – on or off), or a continuous chain of different values, depending on the type of a particular sensor. The sensors designed to send only two values are used for the switch commands that activate and deactivate sound, visual, or lighting cues. The sensors which send continuous electronic data are designed for more sophisticated tasks and can be used to control many different parameters and the quality of various media during the performance. These sensors can be worn by the performers, and sometimes are incorporated as a part of the costume. In this way, the body of the performer becomes an instrument with which the performer ‘plays’ different audio and video contents. In other situations sensors are placed on the stage as the invisible parts of the scenography in order to trace (or react to) the movement of the performers and/or spectators. They can either be connected to the computer by wires, or work wirelessly using radio, Bluetooth or WIFI connection. There are many manufacturers who produce physical sensors for artistic purposes, but the most popular sensor systems among performing artists, due to their functionality, ease of use, software support, and costs, are: *Eobody*, produced by Cycling ’74, San Francisco, USA;³ *ICube-X*, by Infusion Systems Ltd., Montreal, Canada;⁴ *Digital Dance System*, by DIEM – Danish Institute of Electroacoustic Music, Aarhus, Denmark;⁵ *JunXionboard*, by STEIM – STudio for Electro-Instrumental Music, Amsterdam, the Netherlands;⁶ and *Kroonde*, by La Kitchen, Paris, France.⁷

A wide range of cameras – from the very specialised and

expensive to the inexpensive web-cams – can be used as tracking and capturing devices. Web-cams can sometimes be a better solution than more expensive, high quality cameras because they produce a smaller amount of data for the computer to process. This leads to less latency from the received signal to the produced effect.⁸ Some theatre makers also use different security cameras as capturing devices. The camera can work in the same way as all other physical sensors, accurately tracing the position, dimension, shape, colour, position, and the movement of the actor. Additionally, the camera can be simultaneously used for the real-time processing of the captured live images and for the various video feedback effects. The sophisticated multi camera systems used in the commercial film industry and computer games are also used in performing arts.⁹ These systems – e.g. Vicon Motion System¹⁰ – work in combination with programmes for 3D animation, such as Autodesk's *Maya*, *3D Studio Max*, or *MotionBuilder*,¹¹ using the movements of the performers for the creation of complex special effects and refined animations. Lately, an inexpensive 3D sensor *Kinect* made by Microsoft is used for a very precise and accurate tracking.

In both cases, whether we use physical sensors or cameras, it will be necessary to translate the captured electrical signals into the digital messages that the computer can understand. The most common practice is to use analog to digital converters (A/D converters and MIDI interfaces), which will transform analog electrical signals into MIDI¹² or OSC¹³ messages. There are many different MIDI interfaces, depending on the number of sensors and MIDI channels one intends to use. When one uses a camera as a capturing system, the conversion of the optical signal is usually

done within the computer software and there is no need for a MIDI interface. There are several software applications primarily dedicated to camera tracking and capturing that can accurately track different physical features and gestures of the performer or spectator. The most attractive and accurate ones are *Delicode NI mate* (works with *Kinect* on both *Mac* and *PC*), *EyesWeb* and *EyeCon*. *EyesWeb* is an open software platform designed to support the development of real-time interactive applications. *EyesWeb* is developed at InfoMus Lab, at the University of Genoa. The Lab carries out scientific research and develops innovative multimedia and multimodal human-computer interfaces for application in performing arts and museums. This programme is free and can be downloaded from InfoMus Lab website.¹⁴ *EyeCon* is developed by the German engineer and theatre maker Frieder Weiss. *EyeCon* is an application entirely dedicated to performing arts and is highly intuitive and accurate; a simple, yet extremely efficient interactive tool.¹⁵ Both programmes can be run only on PCs. These two applications are also very useful in the process of *mapping* which is the subject of the next few paragraphs.

mapping

Once the data that correspond to the performer's actions have been captured and translated into MIDI messages, these actions are 'mapped' with the desired audio-visual effects. This is done by programmes designed for digital performance. In the last two decades a variety of software has been developed and digital performance practitioners can choose from a wide range of commercial and open

source programmes. In this overview I will mention only a few of the most popular ones.

macromedia director

Director was the first application designed as a multimedia programme capable of running different media (video, sound, graphics) simultaneously. Its relevance for the theatre lies in the fact that it enabled artists, for the first time, to use a single digital tool capable of processing both sound and visual effects, and project them onto the stage in real-time. Originally designed for CD-ROM authoring, online projects and 3D animation, *Director* has become popular in the performing arts. *Director* appeared in 1985 as an exclusively Apple Macintosh application, then entitled *VideoWorks*. Today *Director* is a part of the Adobe Creative Suite product line and can be run on both PC and Macintosh platforms. *Director* uses film metaphor in its structure, with the 'stage' as the portion of the screen where the action takes place, with the 'cast' and 'score' for the storage and arrangement of different media elements. The user is considered to be the 'director' of the project, hence the name of the programme (Macromedia 2004: 17).

Director is equipped with the scripting language *Lingo*, which is used for projects which require more complex programming. The application is designed in a way which allows many extensions using the plug-in applications called *Xtras*. These features make the programme very flexible for use in different working situations. Currently *Director* is mostly used for web applications and 3D computer games. Products of companies like Maid Marian Entertainment, Science Alberta Foundation, LEGO Studios, and

even Microsoft Encarta are developed using *Director*.¹⁶

max/jitter and pd

MAX appeared in the mid eighties in the circles of the avant-garde electronic computer music makers and is strongly associated with the so-called *laptop performance*. *MAX* is named after Max Vernon Mathews, a world pioneer in electronic music making. The author of the application was Miller Puckette who was at the time associated with IRCAM (*Institut de Recherche et Coordination Acoustique/Musique*) in Paris.¹⁷ Today many musicians and media artists use *MAX* as their core artistic tool. *MAX* was primarily designed for the real-time manipulation of sound and for the interactive composing of electronic music. Due to its open structure many extensions appeared over time and one of its versions called *MAX/Jitter* is currently commonly used in interactive multimedia performances that include real-time video processing.

MAX is an object-oriented,¹⁸ graphical programming tool that consists of building blocks that when connected together create 'patches'. The basic element of any building block is called an 'object'. Once the MIDI signal is sent to the application it passes through the patches and influences different parameters of sound, video, or graphic media. The user can define the type of changes and the degree to which these are affected by the performer, by changing different values of the effects and deciding which elements should be interactive and which should be controlled by the user via application's graphical interface.

At this moment, there are many different versions of *MAX* on the market, such as *MAX/MSP*, *MAX/Mopcode*, *MAX/FTS*, *NATO*, etc.

However, the most popular free version of the software today is *PD* (*Pure Data*), created by the original author of the first *MAX*, Miller Puckette.¹⁹ *PD* is increasingly accepted among the *MAX* community because of its open structure and the fact that many new objects and extensions are developed and shared among the users. *PD* can be downloaded from the Internet for free.

isadora

Isadora is the first commercial computer application that is entirely dedicated to the theatre arts. *Isadora* is the creation of Mark Coniglio, a theatre artist and computer engineer from New York/Berlin who designed this original programme for his dance company Troika Ranch. *Isadora* has become a very popular tool amongst artists because of its intuitive interface, simplicity, and a wide range of possibilities that are more difficult to achieve using other programming tools like *MAX* or *PD*.

Everything within the application builds on theatre metaphors. Artists can easily create complex interactive digital projects using objects called 'actors' inside the 'scene editor'. The actors are stored into video, sound, MIDI, generator, mouse and keyboard, calculation, and control groups. The actors can be used as standalone, predefined effects, or several of them can be combined together creating complicated patches for more complex structures. Each project in *Isadora* can be divided into different 'scenes' and the user can easily navigate from scene to scene, with the possibility of changing the parameters of any object within the scene on the fly. Navigation between the scenes can also be interactively controlled by the performer. Every action performed in

the scene editor is displayed on the 'stage'. In *Isadora* there is the option of using six stages, which means that the user can create six independent video projections from a single application.

In addition, *Isadora* has its own system for camera tracking. The user can simultaneously track several performers using their physical characteristics, such as position, colour, brightness, dimensions, proximity or speed. Interactivity can also be achieved using the level and frequency of sound produced by the performers. Users can create, store, and share their own actors and effects according to their particular needs. Because of all these features, *Isadora* has become one of the most popular interactive software programmes and its popularity continues to grow. Many professional theatres and galleries have *Isadora* as a standard application for their interactive digital performances and installations – the famous avant-garde New York based Wooster Group, among others.

quartz composer

This graphical application has been included in Apple's *Developer Tools* since the introduction of the operating system OS X *Tiger* in 2005. *Quartz Composer* is very similar to *Isadora* and is used for similar purposes. Like *MAX* and *Isadora*, this is also graphical and object-oriented programming tool designed for real-time manipulation of video and graphic material. It uses Apple's advanced Quartz technologies called Core Graphics²⁰ together with the other tools included in the operating system like Core Image²¹ and Core Video.²² *Quartz Composer* also has a function for sound manipulation, and like any of the previously mentioned applications it can be connected to music software applications, and can send

MIDI and OSC messages for the sound processing. This is very popular practice in the VJ (video jockey) performances where image and sound need to be synchronised. (The same technical principles are sometimes used in digital performance.) *Quartz Composer* also comes with a set of predefined effects, but there is a great deal of freedom for users to create their own objects and effects. The advantage of *Quartz Composer*, compared to the other similar applications, is the ability to have a higher resolution of moving image and a better frame rate due to its Core architecture. The downside of the programme is its very limited user manual. The newer versions of *Quartz Composer*, with many more examples and patches regularly appeared with each new operating system. However, after the appearance of OS X Lion and Mountain Lion, the software lost some of its functionalities and the future of the application seems to be unclear.

projecting

When captured data representing the performer's behaviour have been processed and desired visual effects applied, the resulting media material needs to be projected onto the stage and to become an integral part of the performance. It is important to emphasise that the whole process of tracking, capturing, processing, and projecting is done almost simultaneously – in real-time. This process of bringing digital multimedia onto the stage is the process of creating interactive digital scenography. In this procedure, the scenographer combines physical objects on the stage with the projected sounds and visuals, creating a new and dynamic theatrical space. When

fused together both the performer and the projected material should be equally visible and should create a balanced and coherent theatrical image unless you want to foreground one element over the other. These issues are solved either by using sophisticated projection technology or by creative solutions where projectors are partly used as the lighting device.

Depending on the author's choices and the availability of the equipment, different technical setups are possible. The usual technical questions concerning the digital scenography are the position and the number of video projectors, the type of projecting surfaces, and the position and number of the capturing devices.

projectors

Video projectors (beamers) play a crucial role in the design of digital scenography. Used properly, all prepared visual effects should be visible and achieve the desired function within the digital performance. There are numerous types of video projectors on the market, but the most popular ones are LCD (liquid crystal display) and DLP (digital light processing) projectors. These vary in price and technical specifications, but they are increasingly affordable and one can choose between many brands for a reasonable price. It is important to choose the beamer that can project very bright and clear images. The brightness is measured in ANSI (American National Standards Institute) lumens and the most common beamers these days have a brightness between 2 000 to 30 000 ANSI lumen. These projectors are generally capable of projecting a very clear image with high resolution in most situations. The dimensions of the stage and the light conditions (for example, background lights

on the open stage) will also determine which particular beamer should be used in which specific situation.

The projectors are attached to the computer either directly or via different video cards and splitters. The cards and splitter are used to split the video signal and to enable more video projectors to be attached to the single computer simultaneously. One of the most popular video splitters, MATROX's TripleHead2Go, can send a single video signal that can be divided and shared between three different video projectors which can project three different video streams independently without the need for any extra video card. At the present moment, this is the most convenient method of using multiple projections because no extra computer CPU (central processing unit) power is needed and all projected images can still have high resolution.²³

projection surfaces

In digital performance media material can be projected on almost any object on the stage depending on the artistic choices made. However, it is necessary to have in mind which materials are more appropriate for the kind of effects desired in various situations. The most common practice is to project rectangular images onto white and flat surfaces made from highly reflective materials. However, it is not unusual to use grey, black or even transparent screens for more specialised tasks. The projected images can be front or rear, projected from the floor, from special stands, or from the theatre grid. Depending on the type of projection desired, either entirely opaque or semi transparent materials can be used for the screen. One can also project on the scenographic objects with unusual

shapes and surfaces; or on the performer, using video projections as a lighting and sometimes even as a costume device. Alongside the development of projection technology, the role of projected images becomes ever more important and space for the original and creative use of video projections is increasingly expanding.

technical setups in set performances

waar is daar?

The digital performance *Waar is daar?* was created during the Studio for Electronic Theatre's two week-long residency in the STudio for Electro Instrumental Music in Amsterdam, in October 2005. STEIM offered us the space and equipment for our practical research and also offered a chance to get better acquainted with the interactive systems developed by their engineers.²⁴ Our second partner in this project was Delft University of Technology, which at the time was developing the Smart Art Sensor System, designed for use in digital visual and performing arts. We chose to combine STEIM's sensor interfaces with the Smart Art Sensor System, and camera capturing for the creation of the interactive scenography.

For our rehearsals and performance a digital camera was connected to a computer using a firewire connection. For the projection of the video, light effects, and 3D graphic material, we used two beamers placed in front of the stage, one on the floor and the other on the ceiling. All video material was processed in *Quartz Composer* using two Apple PowerBooks. For the processing of the sound we used a microphone placed above the actor. This was connected to the computer via an external sound card. We used

sound processing programmes *Ableton Live*²⁵ and *GarageBand*²⁶ which ran on a third PowerBook. For lighting we used a small lighting set containing three PCs and three profile spotlights (each one kw power) controlled by the twelve-channel mixer. The small stage with the dimensions five by four meters was in the middle, divided into two parts by the semi-transparent screen with the dimensions three by two-and-a-half meters attached to the grid.



Video feedback effect in the performance Waar is daar?

After a week of intensive work we realised that we needed to make some important but difficult decisions regarding the technical setup. As the project was advancing we understood that the best results were achieved using the camera capture method. All other sensor techniques appeared to be very difficult because it was

impossible to calibrate the sensors and to keep the results stable for a long period of time. We realised that we needed more time to solve these technical issues, than we initially anticipated. Working only with the camera was much more convenient and efficient. The other advantage of using the camera was that it was possible to create visually interesting video feedbacks whilst still tracking the performer and extracting data. In the following paragraph I will describe the setup for this video feedback effect.

The actor is placed behind the semi transparent screen. He is lit by three PC spotlights placed above him, each covered with dark blue filters. The camera is placed in front of the stage and captures the image of the performer. The camera is on infrared mode. The infrared image of the performer is captured and passed to *Quartz Composer*. The captured image is transferred through a number of patches which apply different visual effects to it. The processed and transformed image is then projected both onto the screen and the performer who is behind the screen. This projected image is again captured, together with the image of the performer and sent to the computer, thus repeating the procedure once again. In so doing, we created an endless loop of captured and projected images. In this way any movement made by the performer was followed by the stylised image of him and his previous projection on the screen. The performer could manipulate this effect in different ways. In this particular case, he appeared to have virtual wings that moved simultaneously with his physical body on stage.

While working on the production *Waar is daar?* we discovered several important technical 'realities':

Firstly, working with sensors is an extremely time-consuming

process. The discrepancy between invested time and effort, and the result achieved can be very disappointing and problematic for the project as a whole. In order to use any physical sensors in the actual performance, it is necessary to dedicate a great deal of time prior to the production, in order to get a stable and reliable configuration for the rehearsals and performance.

Secondly, very good visual results can be achieved using 'unorthodox' methods and procedures when it comes to motion capture. Using the camera in the way that is described above proved to be a very creative technical alternative to the use of physical sensors. We decided to use this technical setup as a starting point for our later projects.

Finally, in our opinion, it was clearly proven that digital scenography is a capable substitute for classical scenography. Combining only a relatively small screen with the real stage, we managed to create a theatrical space for the actor which was seemingly organic. Likewise, our intention of challenging the 'convention' of where the projection is normally placed (either above or next to the actor) has apparently paid off. By placing the performer 'inside the image' we made him an integral part of the digital scenography creating a new performing space, a hybrid of real and digital.

Сокоћало project

Сокоћало Project (Serbian for 'Gadget Project') was produced in the Serbian town of Užice, as a combined educational workshop and production in CyberTheatre, during the summer of 2006. While introducing the basics of digital performance to the local

theatre students and professionals, Studio for Electronic Theatre created a thirty minute-long show based upon a local prophecy. The performance was staged on location in a bomb shelter used in numerous Balkan wars.²⁷ Although the technical setup was to a certain extent dependent on the conditions of the location, it was very similar to that used in our previous project. However, on this occasion, we used only one projector and a semi-transparent screen with the dimensions three by four metres. One PowerBook ran *Quartz Composer* and was dedicated to the processing of the visuals. For the visuals we used a combination of pre-recorded material edited in *Final Cut Pro*²⁸ and the images captured during the performance. The computer was connected to the camera and the video projector. The other Apple computer was used to process sound effects. This time we used just *GarageBand* for the real-time transformation of the actors' voices. What was novel in this setup was the use of *Isadora*. We used it in combination with a second camera for the motion tracking and the translation of physical movements into audio effects.

For the *Сокођало Project* we worked with two actors and had a chance to experiment with some new ideas regarding the use of lights and projections. One of the performers was placed for the most part in front of the screen, while the other one remained behind the screen. The main challenge was how to equally illuminate the two actors whilst keeping the projections bright and clear. In order to solve this problem we decided to use only side lights, with the video beamer as another source of light.



The actors are lit using the side spotlights and the front projector

Using the technique we created at STEIM while developing *Waar is daar?*, we continued to investigate new possibilities for camera capture and video feedback. We produced two new effects based on this technique (these effects can be seen using Aurasma).

The first effect we named 'Painting with Light'. The performer who is placed behind the screen uses a small blue torch to reveal different details of the video projection by pointing the light to various sections of the screen.



The actor behind the projection screen is 'painting' with the small torch

By using this unorthodox technique we produced a surprising and beautiful effect. Although in this particular case we used a still image for dramaturgical reasons, the same effect can be used in combination with moving images.

Another innovative effect was produced when we combined the video feedback effect with strobe lighting. The performer who moved slowly behind the screen was lit by a strobe light in the intervals of approximately one second. His projected image corresponds with the small delay to his movements and the strobe lighting creating an unusual visual effect.

In both examples our scenographic intentions were to – using the combination of the lighting and video projections – make the actor an integral part of the projected image. By the innovative use of a single technique we created a surprisingly wide range of visual possibilities.





The delayed and distorted projected image follows the actor's movements

Klanica 5 (slaughterhouse five)

The theatre project, *Klanica 5*, represented the concluding piece of work for my PhD practice-led research. This performance was developed and performed in Užice and Belgrade, Serbia. It was organised by the same local partners as the *Cokořano Project*. The project was designed as a combination of an educational workshop and a theatre production. During the workshop participants learned how to use an open source programme for digital interaction – *Pure Data (PD)* – and were introduced to a range of different sensor systems used in digital performance. For the realisation of the educational part of the project, two new members, a programmer and a sensor expert, supported our standard crew from Studio for Electronic Theatre. The sensor specialist also participated in the production part. The initial plan was to make a site specific performance and to create an open-air stage in a car park in Užice, but due to the weather conditions this plan had to be changed. We moved to the main stage of the National Theatre. This caused a number of changes from our original ideas, but the basic concept remained the same. Our ambition was to create an interactive digital performance in which not only the performers but also the audience could be partly involved in interaction. In that sense, *Klanica 5* represented our second attempt to work with physical sensors. The scenography for this performance was created in such a way as to allow for widespread use of video projections throughout. The combination of different transparent and semi-transparent plastic foils was used as the main part of scenography, at the same time serving as the projection surface.

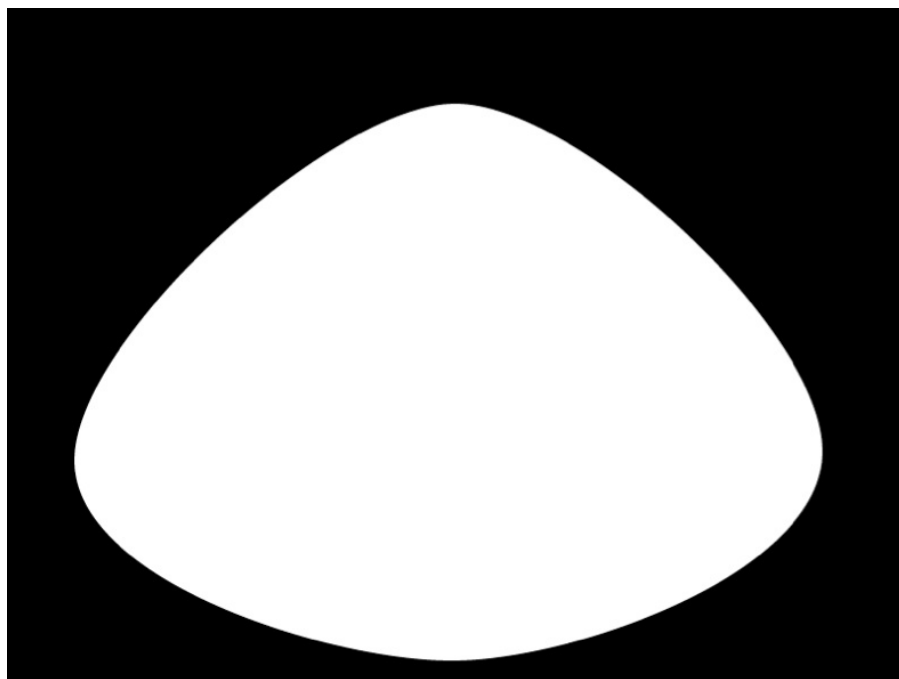
This performance was different from the two previous

performances because this time we worked with five performers. The technical setup was more ambitious than in the previous performances. However, the stage where we performed was much bigger than originally planned, which caused some technical problems and had a negative consequence for some of the effects that we wanted to use. We had at our disposal four video beamers for front projections, side projections and lighting. All projectors were connected to the two Apple MacBook Pro computers, three of them via a single TripleHead2Go video card. We used different sensors to interact with the audience and performers. They were all connected to Kroonde sensor interface via Bluetooth wireless connection. Remembering the difficulties experienced in our first encounter with physical sensors and having no time for lengthy technical preparations, we decided to limit their use. The sensors were used exclusively for the interactive sound effects. While the audience was entering the theatre, the sensors reacted to the oscillations produced by their steps and different sounds were triggered as the spectators approached their seats. Another accelerometer sensor was worn by a performer and was used to produce the effect we called 'virtual drums'.²⁹

The core software application for this performance was *Isadora*. It was used for the interactive sound effects and also as the main control panel for sound, video and light cues. All pre-recorded video material was edited in *Final Cut Pro*, graphics were designed in *Macromedia Fireworks* and all sound effects were edited in *GarageBand*. The music for the performance was composed and produced in the *Guitar Pro* application on the PC.

In this performance our ambition was to introduce a very

simple but nevertheless useful technical novelty. We wanted to use video projections as the main source for our lighting design. Although we had already partially used video projections for the lighting in our previous projects, on this occasion we decided to design most of our lighting using only video projections. The procedure was simple and straightforward. Desired light patterns can be created in any graphic application like *Photoshop*, *Illustrator*, or *Fireworks* and then exported to any photo format. The created graphics can be projected from *Isadora* or *Quartz Composer* onto the stage. It is important that the beamer is strong enough to make the projections bright. The beamer was placed high and far enough away to cover the whole stage with light.





The lighting pattern produced in Fireworks projected as a source of lighting

In this way, instead of using complex and expensive lighting sets, we created sophisticated lighting effects using only a single projection device. Light designed in this way can be very dynamic, with much potential for additional experimentation. Due to the complexity of the whole project, we only had time for a few simple and rather conventional effects.

(Endnotes)

1 2 For more on manufacturers who are producing physical sensors for the application in security systems, see Watchport Sensors (<http://www.digi.com/products/videosensors/watchportsensors.jsp>); and for the examples for the application in medicine, see Ascension Technology Corporation (<http://www.ascension-tech.com>).

3 <http://www.cycling74.com/products/eobody>

4 http://infusionsystems.com/catalog/all_categories.php

5 <http://www.diem.dk/english/diem/digdance/tech.php>

6 <http://www.steim.org/steim/products.html>

7 <http://www.la-kitchen.fr/kitchenlab/kroonde-en.html>

8 In the practice of Studio for Electronic Theatre we use SONY and Panasonic mini DV cameras only when we want to use special video feedback effects. Otherwise, we use simple USB web-cams like Philips ToUCam 740K. Some theatre makers also use different security cameras as capturing devices.

9 To name only a few: PhaseSpace Optical Motion Capture, Motion Lab Systems, Peak Performance Technologies, Qualisys Inc., Vicon Motion Systems, etc.

10 Motion Capture Systems from Vicom (<http://www.vicon.com/>)

11 Autodesk Design Innovation (<http://usa.autodesk.com/>)

12 MIDI (Musical Instrument Digital Interface) is the protocol adopted by electronic music engineers in the early eighties and is used for communication between different electronic devices and the computer or between two computers. MIDI allows computers, synthesizers, MIDI controllers, sound cards, sound and video programmes, to control one another, and to exchange system data (<http://en.wikipedia.org/wiki/MIDI>).

13 OSC (OpenSound Control) is a protocol for communication among computers, sound synthesizers, and other multimedia devices, similar to MIDI, but somewhat more flexible and efficient (http://en.wikipedia.org/wiki/OpenSound_Control).

14 <http://www.infomus.org/EywIndex.html>

15 EyeCon, Video Motion Sensing (<http://eyecon.palindrome.de>)

16 http://www.adobe.com/cfusion/showcase/index.cfm?event=finder&productid=1524&loc=en_us

17 [http://en.wikipedia.org/wiki/Max_\(software\)](http://en.wikipedia.org/wiki/Max_(software))

18 'Object-oriented programming (OOP) is a programming paradigm that uses 'objects' and their interactions to design applications and computer programs' (http://en.wikipedia.org/wiki/Object_oriented).

19 http://en.wikipedia.org/wiki/Pure_Data

20 'Quartz is the powerful graphics technology family that forms the foundation of the 2D imaging model for Mac OS X. Quartz offers two integral parts, the sophisticated Quartz 2D drawing engine and the Quartz Compositor advanced windowing environment' ([http://en.wikipedia.org/wiki/Quartz_\(graphics_layer\)](http://en.wikipedia.org/wiki/Quartz_(graphics_layer))).

21 'Core Image is a pixel-accurate, non-destructive image processing and rendering framework for Mac OS X. As part of the QuartzCore framework, it extends the rendering capabilities of Quartz with its plugin-based architecture for applying filters and effects' (http://en.wikipedia.org/wiki/Core_Image).

22 'Core Video is the video processing model used by QuickTime 7 on Mac OS X to interface with the rendering and compositing layers in its graphics model. It delivers the images from QuickTime or other video source to the rest of the Quartz technologies in Mac OS X' (http://en.wikipedia.org/wiki/Core_Video).

23 <http://www.matrox.com/graphics/en/gxm/products/th2go/home.php>

24 STEIM is famous for the *JunXion*, a software application which translates different electronic signals into MIDI messages. The other popular interactive programme developed at STEIM is *LiSa X*. We were also introduced to the *JunXionboard* and *Sensorlab*, sensor interfaces used in interactive (music) performances.

25 Ableton Live is a sound and music application both for Mac and Windows. Ableton Live is designed as an instrument for application in live performances, but also as a tool for composing and arranging (http://en.wikipedia.org/wiki/Ableton_Live#cite_note-0).

26 GarageBand is a part of Apple's iLife multimedia suite. It is an application that allows users to create music and sound effects.

27 In the Second World War these underground tunnels were used as a weapon factory by Yugoslav partisans who proclaimed the Užička republika ('Užice Republic') in 1941. This part of Serbia was for several months the only unoccupied territory in Europe. In 1999 the same place was used as a bomb shelter during the NATO air raids on Serbia.

28 Final Cut Pro is a professional non-linear editing system developed by Apple.

29 The performer, using the movements of her arms, triggered the sound sample of the drums thereby creating the illusion that she 'really' played invisible drums.





Slaughterhouse 5, Studio for Electronic Theatre, 2008
(Photo Stanislav Milojkovic)

chapter 4

directing cybertheatre

cybermensch in a refugee camp

At the very beginning of my research, I was preoccupied with the theatrical concept of the *Cybermensch* – a *cybernetic Übermensch* – a performer who has total control over all media used in digital performance. I imagined the rather utopian concept of an ultimate technical interactivity in which the performer – using position, voice, and gestures – could change the lighting cues, edit video effects on the fly, control the loudness and the pitch of the sound, and change the sound of their amplified voice. I imagined all kinds of creative possibilities and theatrical magic resulting from what seemed to be a somewhat radical concept. I considered the potential nature of a dramaturgy adjusted to this new theatrical and technical situation, and possibilities for improvisation, whilst remaining concerned about the new role that the theatre director should have in this evidently unstable and fluid artistic structure. I recalled László Moholy Nagy and his meditation on what the ideal new director of his Totaltheater should be:

To see that such a process is not chaotic, but that it develops with control and organization, will be one of the tasks of the thousand-eyed NEW DIRECTOR, equipped with all the modern means of understanding and communication.

(Nagy 1971: 68, original emphasis)

I came from a rather conservative theatre culture where *theatre* means theatre entailing all the conventions and stereotypes about what theatre *must not be*.¹ In that theatre culture, one of the unquestioned postulates is that which claims that performance *must be repetitive*. That means that once the theatre play is good and thoroughly rehearsed, it must be performed in essentially the same manner every time. Any divergence from this rule is a serious mistake, a sign of artistic indolence. I have to admit that my personal artistic vision is sometimes faithfully intertwined with this more conservative vision of theatre. I think Nagy had this in mind when he speculated about the 'thousand-eyed new director' and his ability to 'control and organise' all the new technological tools. That was, in any case, the aesthetics of his time – John Cage appeared only two decades later and after him in the late fifties and sixties the revolutionary ideas of decentralised art emerged among the avant-garde artistic circles in the United States. The ideas of 'control' and 'organisation' were targeted as the most conservative and were thoroughly rejected by the artists and new art critics. Instead of 'control' and 'organisation' they promoted 'randomness', 'flexibility', 'changeability' and artistic 'anarchy' as new aesthetic models (Goldberg 2001: 124).

Yet the concept of the Cybervensch was threatening my seemingly innate artistic conservatism. This concept promised anything but repeatable performance. On the contrary, the concept actually indicated that the performer would have all the technical means to offer a new performance on each occasion. Additionally, when I visualised a *spectator* equipped with these new technical attributes, the possibility of having a *director* in any real sense of

the term looked hopeless, even if he had a million eyes. Naturally, that was exactly *the* quality that many of my *radical* colleagues in performing arts were hoping for – no control over a work of art.² I felt caught between the extremes of my artistic schizophrenia.

Digital interactivity is an extremely seductive technical novelty. I am sure that I was not alone when I thought, after my first encounter with an interactive software application, that theatre art would be changed in a matter of years, and that very soon all theatre artists would embrace interactive digital tools in their practice. It looked so magical and powerful. Yet disappointingly, many years afterwards, except within the art of dance, there are only a few repertory theatres which have even tried to use interactive technology in the way the digital enthusiasts were hoping for. In my opinion the reason for this must lie partly in the conservatism so typical of the theatre. However, one can equally blame the artistic radicalism of the digital enthusiasts who often forget that the radical avant-garde from the sixties was *radical* and *avant-garde* only *in the sixties*.³ Half a century later, we need to find completely new artistic solutions, which are not to be achieved by the *random play* of some digital visual effects contained in a quasi-philosophical and *questioning* – but generally *always* politically correct – *concept*. After several years of enormous enthusiasm, the field of digital performance suddenly appears already oversaturated and tiresome. The initial surprise of the audience watching an interactive performance for the first time, the awareness that something *is really interactive*, is soon replaced by the sobering question – ‘Yes, it is interactive, but what can I do with it?’ The technology appears to be decades ahead of our artistic creativity

and fantasy. We still do not know what to do with interactivity.

And yet, I strongly believe that digital interactivity will fundamentally change the look of theatre. Only I do not believe that new technology alone is able to change art at the very moment when it appears. The process is slow and complex, and many other factors besides technology are involved. Whenever an important technological novelty has been introduced to theatre, it has always taken some time before any re-examination of the nature and principal function of theatre occurred. I do not consider our era exceptional in this respect. Digital technology is responsible for the overall technological progress of our era, and that progress inevitably raises a huge set of ethical questions.⁴ It is exactly the role of theatre and other arts to raise these questions and to try to answer them artistically, measuring technological progress against the price that human beings have had to pay spiritually. It is only logical that new theatre will be impossible without the very technology which made technological progress possible.

My first research project was, technically speaking, a *digital* performance, but more importantly, it was a performance about a human being, a lost and disillusioned human being who was doubly betrayed – first by the myths about his own country, and then by his placing hope in the technologically superior system that advertised itself so loudly as a moral paradise on Earth, but nonetheless did everything in its power to corrupt that image in the most unscrupulous ways. More than that, *Waar is daar?* (2005) was a story about the essential human desire to be transcended somewhere else – there. But where is there? It is neither *there* in the ruins of the lost paradise of childhood, nor *here* in a refugee

camp on the outskirts of the brave new world, in which jinxed gold constantly slips through his fingers. That *there* is nowhere to be found; instead only an unfulfilled desire for it is what moves him from one disappointment to the next.

There...

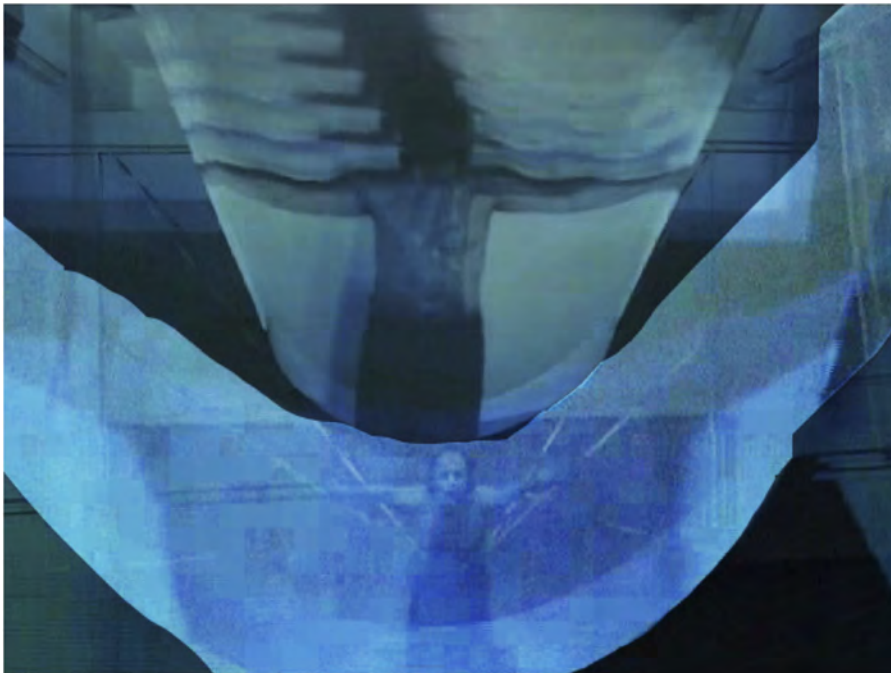
Time and time again I went 'there'

And felt myself 'here'

Maybe if I stay here

I will feel myself 'there'

(Charif and Hassan 2005)



Saleh Hassan in Waar is daar?

In the project *Waar is daar?* we worked with an Iraqi actor,

Saleh Hassan, who had the idea of staging a poem by his poet friend Chalaan Charif, which is based on the poet's memories of his childhood in Baghdad and his long and traumatic experiences in a refugee camp in Holland. The theme and the story were somewhat my own, because of the shared traumatic experience of political oppression followed by exile. That experience was the main theme of this Arabian anti fairy-tale.

For me, adapting this poem for the stage meant making a theatrical image of an inner journey of the protagonist. Initially, our dramaturge and I had the idea of creating a new scenario based on the poem, but later on, we decided to use the poem without changing a single word. The poetic material was dense, and I tried to direct it in a way in which the many hidden images, streams of emotions, memories, and fantasies, came alive visually. That idea allowed for the extensive use of multimedia material. But before that, I needed to work with the actor.

Saleh Hassan came to Holland as an established actor in his home country, with his own style and working philosophy. He had worked as a comedian and sometimes played more serious dramatic roles, but had never been involved in anything that might be called 'experimental' in any sense of the term. We needed an abstract, estranged, and physical performance, with less of the emotional affectation that is the trademark of so many Iraqi actors. We needed to calm his initial impulses, and work on more subtle acting techniques. Another Iraqi theatre maker, Hazim Kamaledin, a specialist in oriental dance and physical theatre, came from Antwerp to give him a workshop in moving techniques. We gave Hassan training in physical theatre, insisting on oriental acting

techniques, *Butoh* in particular. *Butoh* (also known as *Buto* or *Ankoku Butoh* – the ‘dance of the darkness’) is a Japanese contemporary dance form which draws its artistic vocabulary from ancient Asian spirituality and mythology (Fraleigh and Nakamura, 2006: 1). The emergence of *Butoh* coincides with, and is very closely connected to, the Second World War and the atomic bombing of Hiroshima and Nagasaki. The disillusionment and disappointment with the human condition in modern materialistic society is its main theme. I also rehearsed with Hassan the set of movements characteristic of the *Sufi* ritual dance, incorporating authentic movements from his own culture. We were looking for a unique language, making use of old techniques, and inventing our own. This was often difficult. Hassan and myself had very different ideas about the artistic form we were supposed to be creating together. I worked with Hassan independently for a month before we were finally ready to start the rehearsals with the technology.

This part of the project was realised at STEIM, where our struggle continued. The technical aspect of the performance’s audio-visuals was realised by Matthias Oostrik, a multimedia specialist, Marcin Pakulnicky, a sound artist, and Ronaldo Aguilar, whose Smart Art Sensor System was the engineering project for his PhD dissertation at Delft University of Technology. Tatjana Ljubic was the dramaturge and costume designer. Most of us were working together for the first time and we hardly knew each other. We had only two weeks to finish our performance and to present our work to the STEIM audience.

After the extremely difficult physical training, and his honest but very often painful efforts to find a new acting style during the

preparatory period, Hassan got the difficult task of controlling digital scenography using the sensors. He looked anything but enthusiastic at the prospect. (Un)fortunately for all of us, the sensors did not work. We kept getting unstable and therefore unusable data all the time. We tried everything. We got help from the STEIM's engineers and tested every single piece of equipment but something was always wrong. The clock was ticking and the tension was high. We needed to make a decision – either to stop the whole project or to continue without the sensors that were, incidentally, the main reason for our residency in STEIM. And then Matthias Oostrik introduced his video feedbacks. We looked at them as if we had seen a real Saint Elmo's fire over Hassan's martyred body – we were saved.

Although no one could have considered our actor to be anything approaching a Cybermensch, we succeeded in creating an interactive performance without using a single physical sensor. Someone strictly interested in digital technology would certainly not have been very impressed with our technical setup. We used only a digital camera, but that was enough to create unusual real-time digital effects. All other effects were pre-recorded and edited, but due to the fact that we had a few obviously interactive scenes at the dramaturgically very important moments in the play, we created a sense that many other scenes were done interactively. Doing so, we learned something very important about the dramaturgy of digital performance. It was proven to us that a performance can be interactive, and at the same time it can be organised as a stable dramaturgical structure. We simply created a dramaturgical space for the interactivity, a framework for its safe use. We chose to keep

interactive effects only for a couple of scenes where the interactivity was dramaturgically justified. I think that these scenes looked beautiful, especially because they were generated interactively. We learned how to use the effects economically, for those parts of the dramaturgical structure which could not have been made without interactivity.

However, digital interactivity is not the only important element of the digital performance. The other building blocks require equal attention. Making the digital scenography also means generating audio and video material with different computer applications. Cybernetic theatre is digital multimedia theatre after all. It requires specialist knowledge of the nature of interactive media and computers in general. The director needs to know how to work with the computer programmes, or at least to know what it is possible to create with any given application. In addition, all other traditional, 'non-digital' elements of the performance are still there but they are all very much influenced by digitality. The actors, with their voice and body, are still the most important element of any performance. The director needs to adjust the *mise-en-scène* to the technical requirements of the digital scenography, which is much more dynamic than classical scenography. Similar adjustments are needed for the lighting. Costume and make-up are used in a way which allows direct video projections on the performer's body, making it possible to use video as a costume and make up device.

The experience I gained working on *Waar is daar?* was enormously important. I realised, amongst other things, that my many previous doubts about CyberTheatre were purely theoretical. In real life, our performance was finding its true nature progressing

organically from the initial theoretical concepts. Everything happens in a creative process of negotiation and compromise. Sometimes these compromises were made with technology, sometimes they were made with the performer and other team members. Most frequently, however, they were made with the theoretician inside the artist himself. During the production, under conditions of extremely high stress and fear about the final result, things usually acquire their own logic. Most of the time, one realises that even in a seemingly hopeless situation, a new, unexpected solution will appear, if only one is able to think about the performance in terms of an already existing entity whose real, secret nature is about to be revealed. During that discovery process, one learns whether the true nature of the performance is interactive or not, whether the performance can qualify to be digital, or whether its fate is to stay with the other, 'mortal' ones. However, from the artist's point of view, the most important thing is that at the end, the audience should not be aware of any real-time digital technology, but only of the real-time exchange of human experiences.

cybertheatre in a bomb shelter

In the summer of 2006, as part of the local Open Arc Theatre festival, Studio for Electronic Theatre was invited to present the concept of CyberTheatre to the theatre students and professionals in the small Serbian town of Užice. We were asked to organise a ten-day-long educational workshop and to present the results of this workshop to a wider audience in the form of a site-specific digital performance. The aim of this project was twofold. We wanted to

teach young artists how to use computers in their theatre practice, but also to promote the idea of CyberTheatre to a wider audience in Serbia. As a thematic framework for the project, we decided to use a local legend about two prophets who allegedly foresaw the entire future of humankind. Tracing the roots of the famous Balkan Kremna prophecy we conceived a performance called *Сокођало Project (Gadget Project)*.



Сокођало Project (Gadget Project)

In the middle of nineteenth century, two Serbian peasants from the village of Kremna (near Užice) were able to foresee the events which would subsequently change world history (Golubovic and Milenkovic 1988). They described in detail the images of the approaching political revolutions, dictatorships, great wars, death of

the old empires and the birth of new states, technological revolutions, interplanetary voyages, destructive weaponry of the future. Whatever they predicted, either within their own local borders or abroad, sooner or later became true. In their lucid minds, they saw the decay of the human race and all the apocalyptic consequences that would follow the moral decline. Thus they became the most notorious 'black' prophets in this part of Europe.⁵

Among many other technological inventions, they saw the image of *Сокођало*, a magical gadget capable of *seeing* everything at any time and place. They wrote:

[...] men will build a box and within the box will be some kind of gadget, Сокођало, with images. With Сокођало men will be able to see what is going on in any corner of the world, but they will not be able to communicate with me already dead, even though this image gadget will be as close to this other world as hairs on the human scalp are close to each other.

(Golubovic and Milenkovic 1988: 189)

At a historical location, in the catacombs of a bomb shelter used in the Balkans' many wars, we organised an interactive digital performance recreating both the prophecy, and its controversial meanings in the context of the most recent schismatic wars in Yugoslavia.⁶ The performance referred to the fresh memories of bloody ethnic conflicts, political turbulence, high-tech bombs (courtesy of the NATO intervention), and the media war that greatly fuelled the combat on the ground. *Kremna Prophecy*, with its subject matter of politics, death, and technology, provided the framework for both the theme of the project and its 'mediatised' form.

My fascination with *Kremna Prophecy* was an old one. I knew about the legend since my childhood and was always astonished, and slightly frightened, by the subject matter and the stories it contained. For many years I wanted to make a theatre play based upon this legend. One of my ideas concerned the strange machine described by the prophets as an ultimate media machine capable of connecting us even with the realm of the dead. I very much liked the idea of placing current global political events within the old legend that was born in a remote village in Serbia. My initial idea for the drama contained the mystery about the origins of *Сокoћaлo*. In my script the first drawings of *Сокoћaлo* were made in America by the famous Yugoslav/American scientist Nikola Tesla. He wanted to use this machine in order to create the ultimate weapon that would eventually bring the whole of civilisation to a long and sustainable peace. The drawings had the ill fortune to be burned, together with Tesla's New York laboratory, in Huston Street in 1885, and were only seen by his closest friends. Nevertheless, one of the 'friends' succeeded in making a rough reproduction of the main drawing and sold it for \$ 71(!) (enough to cover his gambling debt) to an agent of the British secret service. After the invention of television, many mistakenly thought that this was also the realisation of *Сокoћaлo*.

The story continues further when the Serbian secret police mysteriously gained possession of the designs in the late eighties. A team of their most famous scientists began to work on *Сокoћaлo* in Vinča, a military town/laboratory close to Belgrade. They finished the first prototype in 1991. However, due to its cursed fortune, the project was put on hold after a secret visit of the Serbian president to Vinča. The President saw *Сокoћaлo* and what he saw through

the device was a TV report about his arrest that would happen 10 years after this historical visit to Vinča and his subsequent death in prison a few years later! The project was moved to Iraq (one of Serbia's few allies at the time), but there it suffered the same fate as with the other President, only this time it had far more serious consequences for the entire world. In our public announcement for the performance we promised to reveal the first genuine version of this mythological media machine: 'While we are still waiting for an official report for what coalition troops found in Saddam's palaces (if we ever get it, depending on what the third President is about to see in Сокођало) we are proud to announce that the Studio for Electronic Theatre, however, has finally constructed the first genuine version (the very one from the prophet's vision) of Сокођало, which is now to be seen and to be seen in for a larger audience'.

This short and ironic conspiracy theory served only as a starting point for the creation of a new concept. We needed to adapt the whole story to the current political situation in the countries of former Yugoslavia and their problems with the traumatic and nationalistic past and present. This new performance dealt both with technology and the consequences caused by its misuse. However, the whole project also needed to be adjusted in accordance with the technical ideas that we planned to teach the students during the workshop. The content that we gradually developed during the process referred mostly to the disturbing experiences from the recent wars in Yugoslavia, where media technology played a vital role in dispersing the hatred and national animosities, inspiring extremists on all sides in the conflict to commit horrendous war

crimes. The same technology was later used to cover up the crimes, and place blame on the *other* side. Placing the political story in the mythological context of a prophecy, we wanted to show these recent tragic events and the associated media manipulations in a new and estranged light. Without taking sides, we wanted to give a new, artistic voice in the discussion about the crimes and responsibilities in a country (countries) that has great difficulties in undertaking a genuine reconciliation. We worked with young people who wanted to live in a different society from the one that pushed the country into political, economic, and moral misery.

The way we worked on this performance was very different to what we did previously. In the *Сокоћало Project*, we worked with only a very loose concept and there was no text or scenario to start with. Yet we wanted to make a comprehensible story using all the theatrical and technological means available. We wanted to combine physical theatre, dance, film, music, and interactive media into a coherent theatre performance. The artistic crew of Studio for Electronic Theatre was supported by the local artists. We worked with the actors Vahidin Prelic and Ivana Pavicevic, and the composer Vladimir Bojovic. The participants of the workshop also contributed to the creation of the performance.

The performance consists of a number of theatrical episodes loosely connected to the main theme. In the first story, Pythia tries to wake up the prophet to ask him not to tell the future but the past. What has really happened? In a country manipulated by media to such a degree, both the past and the future look equally mysterious.



Photos from Сокођало Project

In the second story, the audience is presented with the film, a fake documentary about Saint Retrograd, an imaginary city where all wars start and end. In one of the city's secret locations, the most important scientists have gathered to create the ultimate media weapon, *Сокоћало*, which will change the future, but also the past, of humankind. In the third scene, we created the techno remake of a famous nineteenth-century revolutionary song, popular among the Yugoslavian unionists, a song that romanticises their centuries-long struggle to free the South-Slavic nations from the Ottomans and Austro-Habsburgs and create a common state where all its different ethnic groups will live in peace. Seen in the perspective of the broken Yugoslavia and its recent wars, the song sounds absurd, unreal, cynical, and depressing. The song is followed by the episode in which revolutionary partisan heroes turn into nationalists and cold-blooded war criminals, killing each other on the monuments from the Second World War.

The performance ends with the dark vision of the prophets from Kremna of the ill-fated future of the alienated and mediated modern World. The scientists will eventually create *Сокоћало*, capable of seeing everything but there will be nothing left on Earth worth seeing. Everything is already turned into moon-like landscapes. The only hope is with them who are able to look inside themselves and reject any ideology.

As this project was designed to be a combination of an educational workshop and theatre production, we intended to keep focused on digital interactivity from the very beginning of the process. We wanted to show the students different ways in which digital multimedia can be used as digital scenography. This

time we used video feedback effects as the main visual tool from the very beginning. Both scenography and costumes were entirely adjusted accordingly. The costumes were made from white and highly reflective plastic material. The whole scenography consisted of a single big semi transparent screen. All action happened in front of, or behind the screen which served as a projecting surface for different video materials. The aim was to make the performers and the visuals appear as a coherent entity, to unite the two-dimensional world of the video image with the three-dimensional theatrical space. On the top of that we wanted the audience to be totally immersed into that image. In order to reach this goal, we worked more ambitiously than previously on the interactive sound effects. We used *Isadora* as the motion-capturing device and *Logic Pro* to trigger different sound effects, making the whole performance more interactive. Additionally, we used *GarageBand* to change the sound of the performers' voices, to make them unexpectedly start speaking in the voice of the opposite sex. Both actors had a strong background in classical verbal theatre, but were eager to experiment with the physical theatre and technology. They wanted to explore the new possibilities offered by digital technology, and our collaboration was very productive. We spent long hours trying to achieve the common goal – a *total theatre* performance.

Working again in my home country after so many years of exile was a special opportunity to witness again the incredible dedication to theatre. All participants worked at an extremely fast pace, twelve hours a day, without a single day off during the whole project. It was my great pleasure to offer, in return, some new artistic tools for the young generation of theatre artists who were so

enthusiastically involved in the project. Luckily, this was not the last project that we made in cooperation with the young theatre artists from Užice.

total theatre in an empty space

The final piece of my practical research – the CyberTheatre project *Klanica 5* – was realised in August 2007, with the follow up in Belgrade the next year, with the same partners as in the previous year, in Užice, Serbia. Following the success of *Сокоћало Project*, which was well received by the audiences and participants alike, the organisers gave us another opportunity to continue with our long-term project of the 'digitalisation' of Balkan theatre. Our project was financially supported by the European Cultural Foundation, Serbian Ministry of Culture, and many other local and international cultural organisations. The idea was again to organise an educational workshop and parallel to the workshop to produce a theatre performance for a wider audience. This time we had more participants from almost all the Balkan countries, more teachers, and the project lasted longer. We also organised open lectures and public presentations of the results achieved during the workshop. The Studio for Electronic Theatre team was supported by Paul Verity Smith and Martin Dupras from the UK-based digital performance company Miranda Arts. Both Smith and Dupras are experienced teachers in the field of digital multimedia performance and together with Matthias Oostrik, they were responsible for the organisation of the educational part of the project. In the last week they joined our production team. I was the director and leader of the production team. We chose to make a site-specific performance at a car park in

the centre of Užice, where the main post office building stood before it was destroyed by a NATO bomb in 1999. This location was to be a stage for the adaptation of Kurt Vonnegut's famous anti-war novel *Slaughterhouse Five* (1969). It was my intention to combine the story from Vonnegut's novel with my theatrical concept of empty or *emptied* spaces.

On 22nd April 1999, during the notorious war between NATO and Serbia, the Serbian city of Užice suffered the loss of its main post office. The building designed to connect people and help them communicate from afar disappeared in almost an instant. No other building in the neighbourhood was knocked down, nobody was hurt or died, nothing else changed – only the post miraculously vanished, as in a fairy tale. Instead of the post office, the citizens of Užice beheld the appearance of an *empty space*.

In his legendary book *The Empty Space*, Peter Brook claims that for theatre to take place it is enough to have 'a man [who] walks across [the] *empty space* whilst someone else is watching him' ([1968] 1996: 9). I would go further and argue that in this *empty space*, the drama of human existence is revealed and that the search for space is an essential activity of the theatre maker.

Likewise, in our second quest to reveal the great theatrical potential of the public spaces of the town of Užice, we decided to explore its most famous *empty space* where layers of meanings, riddles, and prophecies wait to be discovered and examined in order to serve the well-being of the community of the future.

Sadly, the empty space of Užice's post office is not the only empty space created in recent wars in the former Yugoslavia. Many other buildings disappeared, and many homes perished, leaving

only the memories of the times when these *empty spaces* were anything but empty.

With this project we wished to pay tribute to all these empty spaces and raise awareness of their existence, not only in the sense of physical emptiness in the wounded cities and villages in the Balkans but more importantly about the emptiness in the souls of their former inhabitants.

The participants of the workshop were young theatre and video artists, musicians and students from the Balkan countries. They learned how to use modern digital technology and sensor systems, and were encouraged both to employ these in a creative way, and to critically reflect upon the times whose bitter after-effects still very much influence their everyday lives. The workshop lasted twenty days, and during this period, we collectively built, stone by stone, a theatrical monument, a reminiscence of human struggle against its own irrationality.

The open and fragmented structure of Vonnegut's novel allowed for a relatively easy dramaturgical adaptation for the stage. Together with the dramaturge, I divided the novel into several episodes and then restructured the content, bearing in mind our aesthetic and technical needs. The novel *Slaughterhouse Five* is a small but multilayered and enormously complex book, with many characters, stories, and sub-stories. In our adaptation, many characters and events had to disappear, and sometimes a few of them merged into a single entity, but the general storyline remained more or less the same. One of the main goals in this part of the process was to keep the plot comprehensible. We wanted to defamiliarise all other elements of the performance and for that



Janos Bus as Billy Pilgrim in Klanica 5

we needed to have a firm storyline. Otherwise we feared that the narrative might seem unintelligible and too abstract, causing the whole performance to fall apart.

In Vonnegut's novel, the central character, Billy Pilgrim, is a young American soldier who, as a prisoner of war in Germany, experienced the fire bombing of Dresden in February 1945. After he was captured and brought to a Dresden prison camp, Billy was enormously impressed by the look of the city that was considered to be a European architectural jewel. During a single night of bombing, Dresden was destroyed completely and transformed into an *empty space*. The psychological impact of this event on Billy was so strong

that he got *unstuck* in time. He claimed that he was abducted by aliens and taken to the faraway planet Tralfamadore, where he was displayed in a zoo and examined by the extraterrestrials. On Tralfamadore, he learned about the *real nature of time*. After having this experience he started to unwillingly visit different periods of his life.

Billy has gone to sleep a senile widower and awakened on his wedding day. He has walked through a door in 1955 and come out another one in 1941. He has gone back through that door to find himself in 1963. He has seen his birth and death many times, he says, and pays random visits to all the events in between.

(Vonnegut 1991: 17)

Besides its extraordinary plot, the novel also contains many self-reflective passages. Vonnegut's metafictional remarks about the art of literature sound uncannily familiar to the current debates in digital performing arts criticism and theory. The part where the writer speaks about the nature of novel on Tralfamadore served as an inspiration for our self-ironic comments about the modern interactive multimedia theatre.

There are no books on Tralfamadore. There is, though, something we call 'hyperelectric static dynamic theatre'. It is at once a book, cinema, theatre, and electrovision; and the actors are we – the audience. We, Tralfs, watch this theatre that happens in one moment. There isn't any particular relationship between the events shown, except that the author has chosen them carefully, so that, when seen all at once, they produce an image of life

that is beautiful and surprising and deep. There is no beginning, no middle, no end, no plot, no moral, no story, no action. What we love in our theatre are the depths of many marvelous moments seen all at one time.

(Klanica 5 2007/08)

Notwithstanding its poetic exaggeration, such a description very much reminds me of the fluid and fragile dramaturgy in digital performance that I was discussing earlier in this chapter. Shall we ever be able to 'produce an image of life that is beautiful and surprising and deep' and abandon the good old linear dramaturgy once and for all? Can such an *instant* dramaturgy ever be 'beautiful' and 'deep' outside the fictional context of a theatre performance on Tralfamadore? In the case of *Klanica 5* we consciously chose a more conventional and earthly one. Following the ironic approach of the novel, we decided to finish our play using a part from the middle of the book, where heavy bombardments of Dresden are described – in reverse. One can hardly imagine any simpler cybernetic intervention than playing an old documentary film backwards. In our play this is a concluding scene and it follows like this:

American planes, full of holes and wounded men take off backwards from an airfield in England. Over France, a few German fighter planes fly at them backwards, suck bullets and shell fragments from the American planes. They do the same for wrecked American bombers on the ground, and those planes fly up backwards to join the formation.

This firefighting formation flies backwards over a German city that is in flames. The bombers open their bomb bay doors, exert a miraculous magnetism which shrinks the fires, gather them into cylindrical steel

containers, and lift the containers into the bellies of the planes. The Germans below have miraculous devices of their own, which are long steel tubes. They use them to extinguish fire from the American planes. But there are still a few wounded Americans, though, and some of the bombers are in bad repair. German fighters help them to extinguish fire and make everything and everybody as good as new.

When the bombers get back to their base, the steel cylinders are taken from the racks and shipped back to the USA, where factories are operating night and day, dismantling the cylinders, separating the dangerous contents into minerals.

Touchingly, it is mainly women who do this work.

The minerals are then shipped to remote areas and buried in the ground so they would never hurt anybody ever again.

The American soldiers become smaller and turn into high school kids, then primary school kids. Everybody turns into a baby. Adolph Hitler too turns into a baby. And all humanity, without exception, turns into babies, conspiring biologically to produce two perfect people named Adam and Eve.

(Vonnegut, rewritten in Klanica 5)

The adaptation and translation of the script to Serbian was the first step in the realisation of the project. The design of the scenography was the next step. I envisioned a labyrinth with high walls which would create not only a scenography for the performance, but would also arise as a huge sculpture on the place where the post office once stood. Before entering the stage, the audience was supposed to walk through this labyrinth and trigger different sound effects. The wooden construction was built, and plastic foil

was prepared for the covering. Unfortunately, just a couple of days before the premiere, the weather conditions changed and the organisers decided to look for an alternative location. In spite of our great wish to present our project on the location, the risk was too high. Sudden and very intensive storms pushed our project from the outside location onto the main stage of the National Theatre. The whole scenographic concept had to be rearranged for the new situation. We used all the elements of the original construction and adapted them to the requirements of the new location.

In terms of the number of participants and technology used in its realisation, *Klanica 5* was the most ambitious project made in my three-years-long doctoral research. It was equally ambitious when it came to its aesthetic aspirations. My intention was to test in a real situation all my abstract ideas about total theatre and the role that digital technology can have in this concept. The subject matter of the novel allowed for the extensive use of digital technology. The goal was to make a performance with elements of verbal theatre, documentary theatre, visual theatre, dance, physical theatre, novel, interactive sound installation and interactive multimedia theatre, where all these elements combined to create a coherent theatre event. No single media mode was allowed to have a more important role than the other. Everything had to serve the idea of a balanced theatrical narrative where the audience is not especially aware of all of the different media but experiences the whole complex structure as a unified theatrical event. Several things needed to be done in order to achieve these ambitious goals.

'Red Scene'

Technical Crew



10 m

12 m

Projector 3

Projector 1

Projector 2

Audience

Audience

1 m



The initial design and final scenography for Klanica 5

performers

In my concept of total theatre, the performers are the most important ingredients in the creative process. They are the core element and lend a distinct style to every performance. Therefore they should be trained both as verbal actors and physical performers or dancers, in order to maximise the use of their voice, body, movement, and facial expression. In CyberTheatre, these elements can be further emphasised and amplified by the use of technology. When it comes to the training methods for the performers, my personal preference is a combination of oriental physical theatre techniques and verbal exercises applied to the physical position and condition of the body. In this way relatively easily the necessary *abstraction* of expression can be achieved, which goes beyond the naturalistic or psychologically motivated methods of acting. Instead of having engaged only a verbal or only a physical aspect of the performer, using this technique allows the whole being of the performer to be expressive.



Estranged realism in Klanica 5
(Photo Stanislav Milojkovic)

SO IT GOES®

**KLANICA
SLAUGHTER
HOUSE**

Kurt Vonnegut's

režija, digitalna scenografija i adaptacija fahrudin nuno salihbegović

igraju: jana buš / vahidin bešlić / andrijana lubina / mer mustafadžić / jovana rakić / tešević & d. alojz / videogram m. / kosim / ranica delić / videoarac / muzika: vladimir bojović / kostim: ranica delić / boris butorac / tehnički direktor & svetlo: ton majstor: boris butorac / operateri: vladimir bojović, krunoslav ananović / montaža: producent & direktor projekta: aleksandar dendić

dizajn: fahrudin nuno salihbegović

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to use them only when we had a very good dramaturgical reason. At the opening of the performance while the audience was entering the theatre they triggered the pre-recorded sounds of a walk over wreckage. The sound of broken glass and debris indicated that the audience was entering the ruins. The same sound reappeared after the fire bombing when Billy Pilgrim walked through the destroyed streets of Dresden.⁷ This effect, from the very beginning of the performance, was not designed to make the audience directly aware that they were 'really' walking over the ruins but rather to create an unconscious feeling of this. It was certainly not designed to be obvious that it was the audience themselves who were triggering the sounds interactively. The last thing we wanted was to inspire them to playfully engage in an interactive sound-game. On the contrary, we wanted a hidden interaction – something is provoked that is not immediately apparent. As a theatre artist I am certain that this works on an unconscious level but my belief is also that these *invisible acts* work as powerful generators of undertones which can determine the atmosphere of the play.

The other example is also very much connected to the hidden content of the play. When Billy Pilgrim is abducted and placed in the Tralfamadore's zoo, the extraterrestrial visitors of the zoo are called to ask him questions. In Vonnegut's novel, the Tralfamadorians are mostly invisible creatures, and only their eyes sometimes can be seen. That idea appeared very straightforward, the easiest solution for staging our scene in the zoo. However, we decided to make a scene where the actual audience in the theatre would appear as the audience on Tralfamadore. We turned the camera towards the audience, captured a distorted image of the people watching our

play and projected it onto the screen in the zoo on stage. We had a very good reason to do this. Very often during the play it is not sure whether the things are really happening in the way they seem to be happening or whether they occur only in Billy's confused mind. There are too many déjà vus and different characters from different times and spaces saying exactly the same lines of text. To make it even more confusing, single characters speak with the voices of three different people. Billy enters the boxcar of a German train and finds himself in a flying saucer. There exists constant and serious uncertainty about the credibility of Billy's universe. Yet, there is no alternative, no other rational possibility that would offer a way out. Billy is hopelessly caught in his world as is the audience that travels together with him. The moment they recognise themselves as distorted images of the audience on Tralfamadore's zoo, this whole confusing game is even more enhanced. What do they see on the stage – Tralfamadorians or themselves? The only certainty is Billy's despair.

In *Klanica 5* we achieved, to a certain level, the particular style that we were hoping for. We worked hard to balance all the different media elements to create something which can be considered a unique style of performance. We used old documentary film footage about events described in the book, and combined them with the science fiction effects on the yet undiscovered planet. We mixed the dance parts with the verbal theatre and interactively created soundscapes with the composed music. We succeeded throughout the whole piece in keeping all these different elements as part of a coherent whole. The digital technology had an important role in achieving this. This does not mean, however, that there is no room

for improvement.

In the conclusion my impression is that the technological part especially has great scope for further experimentation, whilst some very interesting segments of the script could have come to the foreground had we approached some of our initial ideas with greater courage. The pressure to make a finished performance in such a short period of time again played a negative role. Or maybe it was the lack of time that made us, once again, extra creative, capable of achieving results that normally would have been impossible to achieve – as I often prefer to think. Nevertheless, my feeling is that in the near future we need to make a decision to dedicate a project exclusively to the research of the technical issues arising from our previous projects, without the pressure of artistic results. Such a project should give us greater technical confidence in our future artistic endeavours.

(Endnotes)

1 The institution of theatre in South East Europe is generally still very much influenced by the very rigid Soviet (realistic) model from the beginning of the last century. The whole process of theatre making is strictly codified and it is full of the unwritten rules and conventions. Experimentation is accepted only within the provided conventional framework.

2 See more about this subject in the Chapter 2, 'Non-digital Beginnings' (p. 47).

3 At that time the whole new generation of young artists radically questioned the established art scene. Artists like Robert Rauschenberg, Allan Kaprow, Jackson Pollock, Robert Whitman, Yves Klein, and many other visual and performing artists associated with The New School or Judson Church in New York irreversibly changed 'ethics' and 'aesthetics' of the mainstream art. However, in the years to follow this art philosophy became a new establishment (see more about this in the Chapter 2).

4 A number of dystopian science-fiction movies have been made in the last few decades predicting a range of possible problems associated with the extensive use of digital technology. In the movies like *Strange Days* (1995) and *The End of Violence* (1997) the issues about freedom and privacy play prominent role.

5 The myth about the two Serbian prophets is still very alive in the Balkan countries. There are numerous books and other publications which try to give their own account about this famous cultural and psychological phenomenon from the nineteenth century.

6 Yugoslavia disappeared as a state in the early nineties in a series of civil wars driven by nationalistic euphoria. In nine years more than two thousand people were killed and few million were expelled from their homes. What once was Yugoslavia, are now seven independent countries.

7 In February 1945 Dresden was systematically fire bombed and totally destroyed by the allied British and American forces. Between 135 000 and 200 000 civilians died during a single night of the bombing, more than in Hiroshima and Nagasaki.





Slaughterhouse 5, Studio for Electronic Theatre, 2008
(Photo Stanislav Milojkovic)

conclusion

During my three year-long doctoral research in the field of cybernetic digital performance, my ambition was to identify some of the roots of multimedia theatre and to locate the new territories where digital multimedia and theatre merge together into a single medium – the cybernetic theatre. In the course of this research, I discovered that *any* existing theatre is, by definition, multimedia theatre. Moreover, theatre – like no other media in history – has an ambition to be ‘total’ art, *the* art, which, while embracing all other media, will be able to produce an unseen, unique, and ‘total’ aesthetic experience. Due to its totalising nature, theatre absorbs all other media in order to enhance its expressivity. The latest of these remediations is happening today in the field of cybernetic digital theatre.

Although the area of digital performing arts is extremely vast and versatile, it is my belief that the origins of contemporary digital performance are generally threefold. They lie in the multimedia theatre that used projected moving images from the beginning of the twentieth century; in the avant-garde visual performance art from the sixties; and in the interactive computer multimedia from the eighties. Although there is as yet no satisfactory definition of *digital performance*, one can speculate as to the possible directions of its future development. One possibility is that it will become an independent art form with specific and unique aesthetics, significantly different from other existing art forms. Using interactivity as its core technological feature, digital performance will evolve into a new autonomous art. The other possibility is my thesis that theatre will again absorb all these new technologies and evolve in a way that creatively addresses new aesthetic concerns. Interactivity will have

an important role but only within a framework of a (stable) narrative. The active role of the spectator should increase but it will always be limited by the already structured dramaturgical guidelines. The end result could well be very similar to the first scenario regardless of the terminology. In both cases, 'the thousand-eyed NEW DIRECTOR' will be needed to keep everything under (some kind of) control.

How has the role of director changed for me personally? What did I learn as a theatre director working with digital technology? I initially used digitality primarily to improve the technical aspects of my theatre performances. Digitality helped me to simplify technical issues and to synchronise different technical elements, which would have otherwise required much more time and effort. Then I began to recognise some completely new possibilities that emerged from digitality. As I began my doctoral research, I began to consider digital interactivity as a powerful new device which, in my opinion, was able to significantly change the outlook of contemporary theatre. I saw it as a technical feature capable of altering the whole artistic language of theatre. My fascination with interactivity led me to the concept of the *Cybermensch*, an omnipotent performer who would be able to control the entire theatre event including all the technical aspects. This theatre cyborg was destined to be liberated from all the technical and dramaturgical limitations which disturb an 'analog' performer. My enthusiasm for this concept lasted until I started to understand its many technical and aesthetic controversies. After three years of intensive practical research, I consider it primarily useful as a metaphor for 'theatre to come'. Much more research should be dedicated to this for the desired technical sophistication to be achieved.

However, my practical research in digitalised theatre has inspired me to investigate other aesthetic areas which may also be characteristic of future developments in theatre practice. What is the destiny of text in this kind of theatre? Is this kind of theatre only suitable for non-verbal and physical forms? In all our productions, we tried to bridge the 'almost schismatic tension between textocentrism and scenocentrism' (Toporišič 2004: 10) which seems to be one of the characteristics of contemporary theatre. In our performances, we placed the verbal and visual theatre next to each other. We decided to (re)introduce *word* and its power in the context of a new, highly visual and technically sophisticated theatre. The technology opened a myriad of new possibilities whereby the actors could deliver their lines in an original fashion. Enhanced by digital sound effects, the word itself became digitalised. In an environment of digital scenography, they came closer to each other and became organic.

Finally, this practice-led research helped me to comprehend something vital regarding the nature of total theatre, a discovery which illuminates the theoretical discussions on remediation to which I referred earlier. Halfway through my research, I coined the term 'invisible video', which referred to the video projections which are visible only as a part of the bigger theatrical image. One media concedes its expressiveness in order to enhance the expressiveness of the other, 'totalising' media. Hypermediacy leads to immediacy. The more different media are used in the performance, the more they disappear in this all-encompassing event called theatre.

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