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The production of a play, musical or opera can be compared to the manufacture of any complicated process or product. At present, there is no standard method of accumulating the data necessary for staging a play, musical, or opera, even though the production process is similar for all three. Theatrical productions have stage managers, directors, and assistants responsible for collecting forms, reports, and design-plans in various formats. This data is taken by hand, on personal laptops, or on software programs such as AutoCAD (Computer Assisted Design) or WYSIWYG (What-You-See-Is-What-You-Get). Software programs currently in use are not particularly linked or compatible. This lack of a cohesive data retrieval system is frustrating, time consuming, and expensive.

The focus of this study is to propose and describe one possible solution. Existing technologies could be developed into a software system, henceforward called *Artisterené*, that gathers, stores, and organizes theatrical production data.

This software system functions as a virtual prompt script with three major components that work in tandem. The first component is an interactive, three-dimensional animation program for blocking (movement on stage). The second module is a secure online subscription service of theatrical databases (stage dimensions, technical capabilities, scores or scripts, contacts, etc.). The third component synchronizes cues extracted from master lists submitted by each production team (lighting, sound, and set

design). These color-coded cues are superimposed on the *Überscript* (master script or score) for the current production. This system manages the production process from beginning to end. Management can remotely edit production data by using hand-held devices. The production data is then added to a show-specific repository with online access by authorized personnel.

Database subscriptions and software sales of *Artisterené* will target opera and theatre companies, and educational institutions. This software system will standardize the production process and greatly reduce planning and rehearsal time. *Artisterené* could emerge as the universal format for sharing production data, and could become a definitive teaching tool used to train directors and stage managers.

STAGING AND PRODUCTION: A PROPOSAL TO DEVELOP
A COMPUTER SOFTWARE PROGRAM FOR
OPERA AND THEATRE DIRECTORS

by

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CHAPTER I

INTRODUCTION

The entertainment industry in the twenty-first century is big business, but it has origins rooted in the traditions of live opera and theatre. With the advent of the digital age many changes have occurred that have altered viewing and performance venues. Radio and television have increased the circulation of new music and drama, and improved film and camera techniques have moved the motion picture industry forward. Panavision, stereo, Surround-sound™ and Pro-logic™ systems have increased the quality in audio-visual systems, while smaller, faster and more efficient computer chips coupled with high speed, wireless Internet access have changed the role and importance of computers in business and at home. Companies seeking to stay current must constantly monitor changes in order to stay competitive in the marketplace. The law of supply and demand catches companies that ignore public demand; they fall by the wayside. If public sales are dictated by computer access that is faster and more efficient, then common sense dictates that smart businessmen should do all that is possible to stay in touch with their consumers by watching promising technological advances.

Many aspects of the entertainment industry have continued expanding and incorporating new technology. One of the most successful examples of profitable change is the use of three dimensional animation techniques in video games and cinema. Other more traditional live forms of entertainment must still adhere to the law of supply and

demand. The philosophy in question is whether the use of technology (and all that it entails) means some element of the "art" of live performance is compromised.

Technology is a tool that man uses for the purposes of speed and efficiency. Why has a computer software program not been developed to coordinate and organize the theatrical production process? If a comparison of the technological advances in both manufacturing and theatrical production were made, a great disparity would exist. No computer-based tools for rehearsal or blocking in theatre are available, while sound, design and lighting technologies are on the cutting edge. The author thinks that the same advances and benefits of new technologies that have revolutionized manufacturing production processes should be made available to opera and theatre managers.

Opera and theatre companies around the world function professionally, for profit or non-profit, with community support or through educational institutions. Whether these companies are non-profit or professional, they have similar functions within the entertainment industry. Even non-profit theatres must be well organized and function as businesses. Each production mounted is earmarked with specific limitations based upon the amount of money available and how much rehearsal time is allotted or estimated as necessary. These limitations vary according to the difficulty and scale of the production, the expertise of the performers, the type of audience targeted, and the objectives of the producers, or Board of Directors. In the end, the entertainment business is still driven by the same machinations as other businesses: profit, loss, supply and demand.

This dissertation explains the need for and describes the software production program and subscription service concept called *Artisterené*, meaning “the player or the performance reborn.” This program will save directors and producers rehearsal and planning time. More advanced modules with links to multiple theatrical databases will be available (by online subscription service) for professional theatres. Cast and crew in a show will be given degrees of authorized access, depending on what role they perform in the production process. With a single, centralized data and retrieval system, authorized users will track, edit, or view various aspects of the evolving, virtual, production process via multiple interface venues (phone, fax, hand-held device, computer, etc.).

So why has nothing like *Artisterené* been developed? Many people have tried to develop theatrical software programs, but they could not figure out how to write one that could integrate the various elements of production. The advanced synchronization and animation graphics that are available in video games have brought the software programming industry to the levels of sophistication required for a theatrical production program, including the ability to track and align the blocking (spatial movements assigned to performers), with the temporal flow of the script or score.

Statement of the Problem

In 2002, opera and theatre companies had an income of over a billion dollars a year, with 68,000 live performances given to at least 35.7 million audience members.¹ With such money at stake, the business of opera and theatre is always in need of assessing and improving efficiency.

The traditional methods of staging take up as much as three-fourths of the rehearsal process as well as use valuable resources of time and energy that might otherwise be applied to character development or production cohesion.² A quicker alternative needs to be available to stage directors to record and track staging. Currently, performers spend most of their time trying to remember where to move and what to say, so they are not normally able to concentrate on developing their characters until performance time. If more time were available during the rehearsal process, then directors and performers could spend more time developing their characterizations.

Any software program designed for theatre would need to be much more complex than *Pygraphics*, the leading software program used for marching band. Operatic and theatrical productions are so similar, the same software system could be used for both industries. At present there is no single method, handwritten or other, that is used to manage and organize information flow for the production process in theatre and opera.

¹ Zannie Giraud Voss, Glenn Voss, Christopher Shuff, and Ilana Rose, "A Report on Practices and Performance in the American Nonprofit Theatre based on the Annual TCG Survey," *Theatre Facts* Website downloaded 13 pages on August 17th, 2005 from http://tcg.org/frames/programs/fs_mp_facts.htm; Kushner Management Advisory Services, "Annual Field Report 2002," *Newsline* OPERA America Vol. 13, No. 6 (March 2004): 19-33

² Michael Bloom, *Thinking Like a Director* (New York: Faber & Faber Inc., 2001).

Purpose of the Study

The purpose of this study is to propose and describe the development of a software concept, referred to as *Artisterené* in this paper. This software system will function as an interactive, virtual prompt script that could augment and standardize the current opera and theatrical production process from beginning to end. This application will be used as a tool to eliminate repetitive tasks, to reduce administrative effort, to standardize and speed up communication methods by exchanging information with databases on the Internet while improving the quality of the participant experience in general.

A theatrical software program could accept actor characteristics, such as weight and height, and use the data to calculate the tolerances or specifications for set and costume design. With *Artisterené* the director could view multiple perspectives of the set designs before the sets are built, thus enabling creative license and corroboration before the first nail has been driven. This software program might address the five weaknesses in the present system in the following ways:

- 1 HANDWRITTEN NOTATION - using interactive blocking and staging features (with synchronized animation)
- 2 WASTED RESOURCES - managing information for administrative tasks (with databases)
- 3 DE-CENTRALIZED COMMUNICATION - providing a central, easily accessible source of information for all stakeholders (by remote access per authority codes)
- 4 CHALLENGES OF MULTIPLE LEARNING STYLES - enabling actors to use blocking information that is presented in a visual style that is easier to memorize (virtual staging review from multiple perspectives)
- 5 LACK OF OVERALL PERSPECTIVE - enabling the collaboration of various creative teams during the conceptual design phase of a production (with portable

hand held editing devices and a compatibility with outside design programs)

Limitations

This study is not an in-depth historical paper or survey of directors or stage directing. Many descriptions or definitions are solely for the purposes of explaining why the development of a production process program is necessary, and how the development of a single, interactive, theatrical production process program might benefit education, business and the Arts.

CHAPTER II

STATUS OF RELATED LITERATURE

Computer Software Programs

Although many books have been written about stage directing and management, no books, articles, or dissertations solely dedicated to the creation of a theatrical production software program currently exist. The author has formed the *Artisterené* concept based on years of personal directing and performance experience.

During the crafting of the initial software concept, a dialogue began with the Information Technology (IT) department at the University of North Carolina at Greensboro (UNCG). The first task undertaken by the IT department was a detailed search of copyright and patent databases for the existence of articles, books, a process, a product or a similar idea in existence domestically or worldwide. Unions affiliated with theatre and opera have been checked via the Internet.³ When the idea was cleared as unique, the author was free to pursue the next stage of the provisional patent application process.

³ America's Guild of Musical Artists (AGMA), Opera America, Actor's Equity Association (AEA), American Conservatory Theatre (ACT), International Alliance of Theatrical Stage Employees (IATSE), League of Resident Theatres (LORT), and the Stage Manager's Association (AMA).

The following discussion groups research materials according to related topics that form the foundation upon which the *Artisterené* system rests; no previous theatrical software samples exist from which to work. References were gathered from sources on historical staging, production (opera or theatre), the director, and handbooks or manuals for both theatre and opera.

Historical Staging

Some of the better sources for how staging was first written down, and who was responsible for writing it down may be found in both Ehren Fordyce's 2002 dissertation from Columbia University, "When Directing Became a Profession: The Emergence of the *regisseur*, *mise en scene*, and *metteur en scene* in Early 19th-Century Paris" and Arnold Jacobshagen's essay, "Staging at the *Opera-Comique* in Nineteenth-Century Paris: Auber's *Fra Diavolo* and the *livrets de mise-en-scene*" from Volume 13, Number 3 in the 2001 *Cambridge Opera Journal*. Both sources credit French theatre with notational origins. A college textbook edited by Leland Fox in 1995 on Goldovsky's studies in opera was helpful as a source of notation and technique for singers and directors.⁴

Helpful discourse on historical scenes and set design can be found in two dissertations. One dissertation by Marie Costanza on Gian Carlo Menotti and the USA production of *Juana, La Loco* (1991), and Gregory De Silva's wonderful exposition on a San Francisco version of *Don Carlos* (1993). Both works examine the strengths and weaknesses in opera production from beginning to end through various viewpoints.

⁴ Anthony Addison, *Goldovsky Studies in Opera* Vol. 6, *Staging the Music: Notation and Techniques for Singers and Directors* (Houston TX: D. Armstrong 1995).

Costanza focuses on the director and De Silva on the performer. Joel Justesen's dissertation on "A History of the Initial Stagings of New Productions at the NY City Opera: 1966-1975" comes in two volumes. Justesen's years of research yield carefully documented information gathered from the New York City archives. Detailed data on programs, advertising, artists, performances, directors, set designs and costumes are listed by month and year for the eleven-year period.

The last three resources by King, Radice, and Savage were not as helpful for specific examples of written notation, but provided interesting historical notes taken by observers or participants.⁵

Production (Opera or Theatre)

Some older sources for production practices are still excellent reference material. The two volume set from 1961, *Opera Production: A Handbook* by Quaintance Eaton, and the 1967 book by Walther Volbach, *Problems of Opera Production*, are still relevant sources because the audition, rehearsal, and performance process of opera production has not varied much from the mid seventeenth-century.

A very well written and organized dissertation on production conception comes from Russia written in 2002 by Olga Hadley "Savva Mamontov and the Moscow Private Opera: From Realism to Modernism on the Russian Operatic Stage." This work focuses

⁵ T. J. King, "Staging of Plays at the Phoenix in Drury Lane, 1617 – 42." *Theatre Notebook* 19 (1965): 1466–68. Mark A. Radice, ed. *Opera in Context: Essays on Historical Staging from the Late Renaissance to the Time of Puccini* (Portland, OR: Amadeus Press, 1998). Roger Savage, "Il corago and the Staging of Early Opera: Four Chapters from an Anonymous Treatise circa 1630," *Early Music*; Trans. by Sansone, Matteo, vol. 17, no. 4 (Nov. 1989): 495-511.

on specific styles of directing that changed from a realistic production perspective to a more abstract presentation practice through the examination of nineteenth and twentieth-century Russian opera.

A master's thesis by Holly Norton from 1981 takes an in-depth look at one performance of an Abilene Christian University opera production from a backstage viewpoint of *Così fan tutte*. Interviews are recorded from behind the scenes in production meetings and budgets concerns. Specific rehearsal notes and stage management practices are discussed along with performance accolades.

The Director

Many sources exist on directing in general. Two articles stand out as good comparison studies for directors; Martin Bernheimer's "The Director vs. Composer" that appeared in the *Los Angeles Times* on August 17, 1980, and Richard Gilman's "Directors vs. Playwrights" that appeared in the April edition of the *Saturday Review* in 1982.

Traditional methods of analyzing a play can be found in Michael Bloom's 2001 *Thinking Like a Director: A Practical Handbook*, Frank Hodge's 1971 *Play Directing: Analysis, Communication, and Style*, and Harold Clurman's 1974 book *On Directing*, published by Macmillan in New York. The Bloom book is by far the most detailed and helpful, providing step-by-step directing tasks for a production. The Clurman book functions as a textbook of sorts for the director seeking better ways to organize the profession, rather than as a "how-to" guidebook for the beginner.

Three useful sources addressing the artistic director's viewpoint may be found in Dean Lundquist's 2000 thesis, "The Challenges of Opera Direction." Not to be overlooked are the 1954 books by Gorchakov, *Stanislov Directs Opera*, and the 1968 text by Boris Goldovsky, *Bringing Opera to Life: Operatic Acting and Stage Direction*. These two texts provide the bulk of conventional opera workshop practices used or referenced today.

Handbooks or Manuals

Two newer books written for stage managers are excellent resources for anyone interested in the details of professional and non-professional theatrical production. The *Stage Manager: The Professional Experience* written in 2000 by Larry Fazio, and the 1992 version of *The Stage Management Handbook* by Daniel Ionazzi are clearly designed with multiple illustrations, references, and definitions for the novice in theatre. The degrees of organizational complexity and the importance of good record-keeping are emphasized when successful productions are desired. The Fazio book is particularly helpful, as it provides twenty-first century methods of theatrical production methods. Six figures from the Fazio book appear, with permission, in Appendix B. Either of these books could easily be used as manuals for the aspiring stage manager.

Four books are written in a "how-to" format for musical theatre: Elaine Novak's 1996 *Staging Musical Theatre: A Complete Guide for Directors, Choreographers and Producers*, Lehman Engel's 1983 *Getting the Show On: The Complete Guidebook for Producing a Musical in Your Theatre*, David Young's 1994 *How to Direct a Musical:*

Broadway - Your Way!, and David Craig's 1989 *On Performing, A Handbook for Actors, Dancers, Singers on Stage*.

The definitive book for theatre management was written in 1990 by Stephen Langley: *Theatre Management and Production in America*. This huge tome of information has many references for the unions, societies, companies, legalities, grants and descriptions for every aspect of theatre management. It functions as an encyclopedic collection of useful management tools from box office ticket receipt generation to sample equity contracts for touring professionals.

CHAPTER III

PAST AND PRESENT

History: Ideology of Art in Colonial America

In the past Americans have lived through the Depression, the Industrial Revolution, the Cold War, inflation, and international terrorism. During extreme times of crises, certain civil or private liberties are often limited for one reason or another. During times like this, the arts become critical outlets for personal expression. When crises end, the need for personal expression remains. Often, a new sense of purpose arises, and the process of making a living, rather than just surviving, returns to society.

In times past, the need for personal expression through art was often cast in the role as sinful or wasteful behavior. This viewpoint is confusing and has very specific origins. Public mistrust and ignorance of the arts stems from a precedent set during the founding of this country. These trends were well established long before the separation of church and state in the twentieth century. Conservative religious groups such as the Puritan Commonwealth and the Quakers of Pennsylvania were prominent in the early Continental Congress. They played a significant role in influencing the formation of the fledgling American democratic government. Music, art, and theatre were grouped together with gambling, cock-fighting, prostitution, and bear-baiting. All of these things were seen as activities that distracted the hard-working man from leading a

responsible, productive, pious life.⁶

Two elements worked together to contribute to the negative association placed on performing arts venues. First, most theatres were owned and operated by Europeans. Patronizing a British establishment in the time preceding and during the American Revolution was frowned upon. Patrons of the arts were deemed at best as unpatriotic, and at worst, treasonous. Righteous people in the late seventeenth century were strongly discouraged against attending or associating with anything British. Unfortunately, there is some truth to the assumption that only wealthy, aristocratic people could afford a life of leisure and thus support the arts. Classical art was only possible through the patronage of the rich, noble families of Europe, and hardworking colonials were adamant in their desire to break away from anything that reminded them of aristocratic class distinctions. Any rules that were set by a single man, even if that man was a king, were questioned. American forefathers wished to follow the rules of a power higher than man (God) according to their own particular belief system. William Penn was a conservative Quaker who oversaw the founding of the Commonwealth of Pennsylvania. In 1682, Penn wrote these excerpts:

[Theatrical life and the performing arts] lured people from their work, induced them to squander their money, deluded young women, and gave a false picture of life...excited people to rudeness, cruelty, looseness and irreligion...⁷

⁶ John Church, "Theatrical Regulation in America before and during the American Revolution" *Opera Insights*, Education, [Article on-line], (OPERA World, Inc., 2001), 1-3, accessed 13 October 2004); available from <http://www.operaworld.com/special/theatrical.shtml>; Internet.

⁷ Church, *Ibid.*, 1-3.

When the lawmakers of the land gathered together, their specific goal was to create guidelines for proper ethical and moral behavior. This precedent has had a profound and lasting trickle-down effect that has influenced lawmakers for the past two centuries. The origins of governmental censure and the drive to de-prioritize performing arts programs that began with noble intentions, lost impetus over time. It is crucial for modern lawmakers to understand why. The American government in the twenty-first century is no longer supposed to enforce and create laws for a higher purpose (God); the church is separate from the state. Modern government sets codes of behavior, debates ethics, and establishes right and wrong, along with punishment or rehabilitation procedures. Occasionally, the line between the two becomes blurred and echoes of colonial fundamentalism show themselves; however the distribution of power is divided between men, not religious leaders.

A Paradigm Shift: The PARC Study

In the late twentieth century, five national service organizations collaborated in a study to prove the value of art to society in reaction to both governmental and educational cuts, as well as to evaluate the perception of art as entertainment rather than as a creative discipline. This massive, three-year project included ten large communities across the United States and Canada whereby they sought to measure the level of participation in, and support for the arts. The five organizations that organized the study were the Association of Performing Arts Presenters, Dance/USA, the American Symphony Orchestra League, OPERA America, and Theatre Communications Group. The five

service organizations called themselves the Performing Arts Research Coalition (PARC) and conducted their research from 2002 through 2004. Each community was studied with the same criteria, with results based on the views of 800 or more participants from each of five geographic areas across the United States.⁸

The study revealed a more positive result than expected. Regardless of education, race, income, age, presence of children in the home or frequency of actual arts attendance, at least ninety percent of respondents agreed that the performing arts contributed to the education and development of children. Seventy-five percent of attendees and non-attendees of arts programs felt that arts programs were essential to the health of a community, an understanding of themselves, other cultures, and to creativity, in general.⁹ Research by PARC provides new information for society to acknowledge the important role that performing arts programs play in culture and education.

Contemporary Marketability: Annual Field Report Summaries

The results of the PARC study reveal that the performing arts are no longer as dependent upon governmental support for their success.

In these two years [2001-2002] federal sources provided only 14 percent of total public support, while 42 percent came from states and 44 percent came from local and other sources...The financial standing of performing

⁸ The PARC study is available at parc@operaamerica.org or by writing Performing Arts Research Coalition c/o Opera America, 1156 15th St., NW Suite 810 Washington, DC 20005-1704; (202) 293-4466 x214.

⁹ Source: Urban Institute Analysis of PARC Household Data, Table 4.1 in *The Value of the Performing Arts in Five Communities*, March 2002; and *The Value of Performing Arts in Five Communities* 2, June 2004.

arts organizations is now dependent upon business cycles, alternately thriving and suffering as the economy expands and contracts.¹⁰

These conclusions validate that the entertainment industry is made up of many functioning businesses that are categorized as professional, non-professional, for profit or non-profit, with community support, or supported through educational institutions. According to OPERA America (the largest not-for-profit service organization serving the creation, presentation, and enjoyment of opera for opera companies and for individuals around the world), opera in the United States and Canada is a multi-million dollar industry.¹¹ In 2002, professional not-for-profit theatres in the United States sold an estimated 32.2 million tickets. In comparison, the annual ticket sales in 2002 for the National Football League (NFL) was estimated around 16 million, less than half the tickets sold in theatres.¹² Professional theatre is a billion-dollar industry. In 2002, Walt Disney Productions spent over ten million dollars on the production of a single Broadway show adapted from an animated film, *The Lion King*. In Las Vegas, Nevada, the costuming budget for MGM's 2005 *Cirque du Soleil* was \$330 million.

Opera

A brief summary of the Annual Field Report for Opera in 2002 and 2003 was released in February of 2005. Total unrestricted income for opera in fiscal year 2003 was \$706 million. Some 2000 mainstage performances were presented to audiences of over

¹⁰ Urban Institute, *Ibid.*, p7.

¹¹ Kushner Management Advisory Services, "Annual Field Report 2002," *Newsline OPERA America* Vol. 13, No. 6 (March 2004): 19-33.

3.7 million people. Companies with budgets from \$1 million to \$3 million have been the most successful at controlling their costs. Box office receipts for opera have grown steadily every year since 1995, with an average of about a \$14.5 million increase each fiscal year.¹³

Copies of the Fiscal Year 2001-2002 (FY02) and FY03 Annual Field Reports are available in print from *Newsline* Magazine or by accessing Opera America's home page on the Internet.

Theatre

The annual report for theatre is called *Theatre Facts*. Figures cited here are from the report on the practices and performance of American Nonprofit Theatres compiled by Theatre Communications Group (TCG). This survey contains results obtained from 1,477 non-profit theatres between September 1, 2003 and August 31, 2004. This theatrical production workforce delivered approximately 67,000 performances to over 32 million people. Six budget groups were surveyed according to budget size (i.e., annual expenses) in 198 profiled theatres. Twenty-one theatres in the U. S. have budgets of \$10 million or more. Profiled theatres ranged in budget size from \$132,000 to \$42 million with the average theatre budget being around \$4.1 million. They earned \$520 million in income: \$371 million (71%) coming from ticket sales (the greatest source of earned income). The average theatre income for profiled theatres in 2004 was \$2.6 million, and the investment

¹² Ben Pesner, "Eyeing the Horizon," *American Theatre* Vol. 20 No. 9 (Nov 2003): 1-9.

¹³ The *Annual Field Report* is prepared for OPERA America by Roland J. Kushner, Kushner Management Advisory Services. The graphs and tables were prepared by Debra J. Harrison, of OPERA America.

ratio increased from 65% in 2000 to 89% in 2004. The growth in United States funding for theatres over a five-year period was 25% greater than the rate of inflation. On average, unrestricted net assets grew to \$6.1 million at the end of FY04 compared to that of \$3.4 million at the beginning of FY04. The total unrestricted income in theatre for fiscal year 2004 was \$1.57 billion with 55% earned and 45% contributed. Theatres in FY04 contributed over \$1.46 billion to the United States economy from salaries, services, and goods.¹⁴

Summary

These figures are provided to aid investors in deciding whether there is a potential market for the software program once it has been created. The reports conclude that the opera industry had a total unrestricted income of \$706 million, and \$ 1.57 billion for theatre: with combined performances of 68,000 for 35.7 million people, annually.

¹⁴ Zannie Giraud Voss, Glenn Voss, Christopher Shuff, and Ilana Rose, "A Report on Practices and Performance in the American Nonprofit Theatre based on the Annual TCG Survey," *Theatre Facts* Website downloaded 13 pages on August 17th, 2005 from <[http://tcg.org/frames/programs/fs mp facts.htm](http://tcg.org/frames/programs/fs_mp_facts.htm)>

CHAPTER IV

CURRENT THEATRICAL PRODUCTION PRACTICES

Scheduling and Planning

The positioning and movement of the actors on stage is referred to as blocking. The term *staging* is often synonymous with the words *blocking* or *choreography*. For the purposes of this study, *blocking* and *staging* are used interchangeably to denote movement on stage.

In opera and theatre, rehearsals are scheduled within a specific framework of time by working backward from performance week. Even though rehearsal times vary from show to show, the majority of the rehearsal process is spent presenting and re-working the staging, and the traditional methods of staging take up as much as three-fourths of the rehearsal process. Directors and stage managers schedule days of work and days of rest for the cast and crew. However, it is common to set aside the final two weeks before opening night for technical rehearsals. The week of technical rehearsals (tech week) occurs the last week before the performance, when crews representing separate technical aspects work together for the first time. During tech week, all verbal and written cues are solidified, and complete scenery is tested onstage. The technical crew sees the actors for the first time on stage, while equipment, sound, lighting, costumes, and props are gradually incorporated. The end of the first tech week in a musical or opera brings the orchestra and the singers together in a special rehearsal called a *sitzprobe*, where vocalists sing through their music with the instrumentalists for the first time. Lighting effects and

hand held props are added bit by bit until the show is run in a finished format (full run-through) about three to four days before the performance.¹⁵

Rehearsing: A Two-Step Process

An actor uses two basic skill sets for rehearsing and performing. Genuine learning comes from an active process that requires *doing*. Acting is more than just a repetitive action that is an approximation of what a director says during a rehearsal. Creating a character is more than just remembering words and mimicking action; for actors or singers to apply knowledge or a new skill in a meaningful way, rehearsals must incorporate two kinds of learning processes.

The first skill set involves memorization, repetition and practice, which is a fairly regimented and standardized process. The second level of learning involves the assimilation of abstract ideas. Traditionally, actors and singers learn how to study and perform by using the first skill set. The second "abstract" method can be achieved only after the first skill set is firmly in place. This level of learning involves a mixture of meaningful, cognitive processing combined with personal accountability. An abstract skill set allows performers to transcend the regurgitation of memorized lines or physical mimicry. The performer who is comfortable with memorization can learn how to perceive, act, and think in new ways by watching, listening, experimenting, and practicing tasks associated with his character's persona. When a performing arts student

¹⁵ Information on directing and rehearsal time is taken from Michael Bloom, *Thinking Like a Director* (New York: Faber & Faber Inc., 2001); Quaintance Eaton, *Opera Production: A Handbook* (Minneapolis: University of Minn., 1961); and Lehman Engel, *Getting the Show On: The Complete Guidebook for Producing a Musical in Your Theatre* (New York: Schirmer Books, Macmillan Pub., 1983).

makes the transition from a *skilled learner* to a *thinking learner*, he becomes responsible for his own development and growth. Providing an atmosphere conducive for performers to learn the necessary basic skills while allowing them the time to be able to *practice* the business of becoming responsible for their successes as well as their failures, is one of the most important goals of directors and teachers.

Beyond a certain point in higher education and professional theatre, mastery occurs when students or actors acquire the ability to ask questions while acknowledging their own role in their personal development. In this way, acting parallels living, and by gaining a discipline that teaches personal responsibility, the arts serve as a valuable role model. If rehearsal time could be re-organized to allow more time for character experimentation without a loss of money from the company, the quality of arts education and of performances could improve. A software program that enables directors to streamline rehearsals would allow actors and singers more time to access the second level of learning. In this way, the teacher, stage director and actor would gain.

Current State of Affairs: Weaknesses

It is illogical that many of the same high technological strategies that have been successfully embraced by industry are not being used for opera, musical or traditional theatre companies. This study proposes that the wisdom gained from successful business models could also profit the performing arts. By creatively developing and adapting existing computer technology, the author has created a proposal for the development of a software system that would address the weaknesses in the present theatrical system.

There are many three dimensional video games available in the market, and these games are being introduced to a computer literate generation. Developing existing technology towards operatic and theatrical production will optimize the quality of long distance communication, planning, tracking, retrieval, and staging methods that would allow faster and easier access to the creative process.

Weaknesses in the current production system include handwritten notation, resources that are wasted, de-centralized communication, the challenges of multiple learning styles, and the lack of an overall perspective.

Handwritten Notation

The first weakness is a permanent record that is tediously written by hand; it is based on the personal traditions and experiences of individual stage managers. There is no standard set of blocking notation that exists in the industry. A handful of basic blocking symbols is used by stage managers who usually customize the notation for each show. Each stage manager must complete a legend or *key* that explains his individual system of notation. In order to fully appreciate the complexity involved in creating and interpreting handwritten notation, three figures accompany the following discussion of notation. The reader will see a prompt script key, one page of script, and a very complicated blocking example with its corresponding notation as recorded by the Stage Manager for the Mark Taper Forum for performances of the play, *Julius Caesar* in April, 1991. These figures appear as a courtesy of Cari Norton and Daniel Ionazzi. It is important to note that a prompt script is the master document that records the production

process throughout the lifetime of the show.

Figure 1 is a partial prompt script key for the customized blocking notation used in the *Julius Caesar* production. The prompt script key appears in front of the copied version of the script that makes up one section, or about one-fifth of the stage manager's prompt script. The key is necessary in case the stage manager is not present, so his replacement can smoothly run the show.

JULIUS CAESAR Prompt Script Key		
L = Stage Left		hnd = Hand
R = Stage Right		ft = Foot
U = Up Stage		P → = Push
D = Down Stage		L ↙ ↘ = Look at each
C = Center Stage		other
X = Cross		Δ = Change
X _n = Cross n steps		⊙ = Sit w/ legs out
↪ = Shape of path of cross		In this direction
st = Step		→ = to
⊙ = Position of lying down		⊥ = Kneel
ch = chair		h = Hunker Down (squat)
mes T = Massage table	⊙C = Caesar	⊙A = Antony
T = Table	⊙B = Brutus	⊙P = Portia
cof T = coffee table	⊙CAl = Calpurnia	⊙D = Decia
⊎ = Table cloth	⊙Met = Metellus	⊙CL = Calus Ligarius
ben = Bench	⊙T = Trebonius	⊙F = Flavius
— = Stop	⊙M = Marullus	⊙S = Soothsayer
F = Face	⊙Pu = Publius	⊙Po = Popilius
⊎ = Take	⊙L = Lucius	⊙Lu = Lucillus

Figure 1 – Sample Prompt Script Key

Figure 2 is a page of the script *Julius Caesar*. Handwritten numbers between 10 through 60 appear next to the actor's dialogue indicating that there are fifty different cues that need to be managed while this page of dialogue is spoken. The written numbers in this example show which of the cues reflect the movements of the actors so that they occur by or with, specific parts of the corresponding dialogue.

3.1C		<i>Julius Caesar</i>	
	Unshaked of motion ; and that I am he,	70	
	Let me a little show it, even in this –		
	That I was constant Cimber should be banished,		
	And constant do remain to keep him so. 10		
	CINNA (<i>kneeling</i>)		
over)	O Caesar –		
	CAESAR Hence! Wilt thou lift up Olympus? 14		
	DECIUS (<i>kneeling</i>)		
	Great Caesar – 16		
	CAESAR Doth not Brutus bootless kneel? 18		
	CASCA Speak, hands, for me! 20		
	<i>They stab Caesar, Casca first, Brutus last</i>		
	CAESAR Et tu, Brute? 21 Then fall, Caesar! 28	He dies	
	CINNA		
	Liberty! Freedom! Tyranny is dead!		
	Run hence, proclaim, cry it about the streets! L		
	CASSIUS		
	Some to the common pulpits, and cry out	80	
	'Liberty, freedom, and enfranchisement!' 60		
	[<i>The onlookers show signs of panic</i>]		

SB:
L-54
S- FF
V- 75

Figure 2 - Sample Script Notation

Figure 3 shows the floor plan or layout of the stage from a bird's eye view (from directly overhead). The symbols on Figure 3 use the blocking notation symbols described on the stage manager's prompt script key (Figure 1).

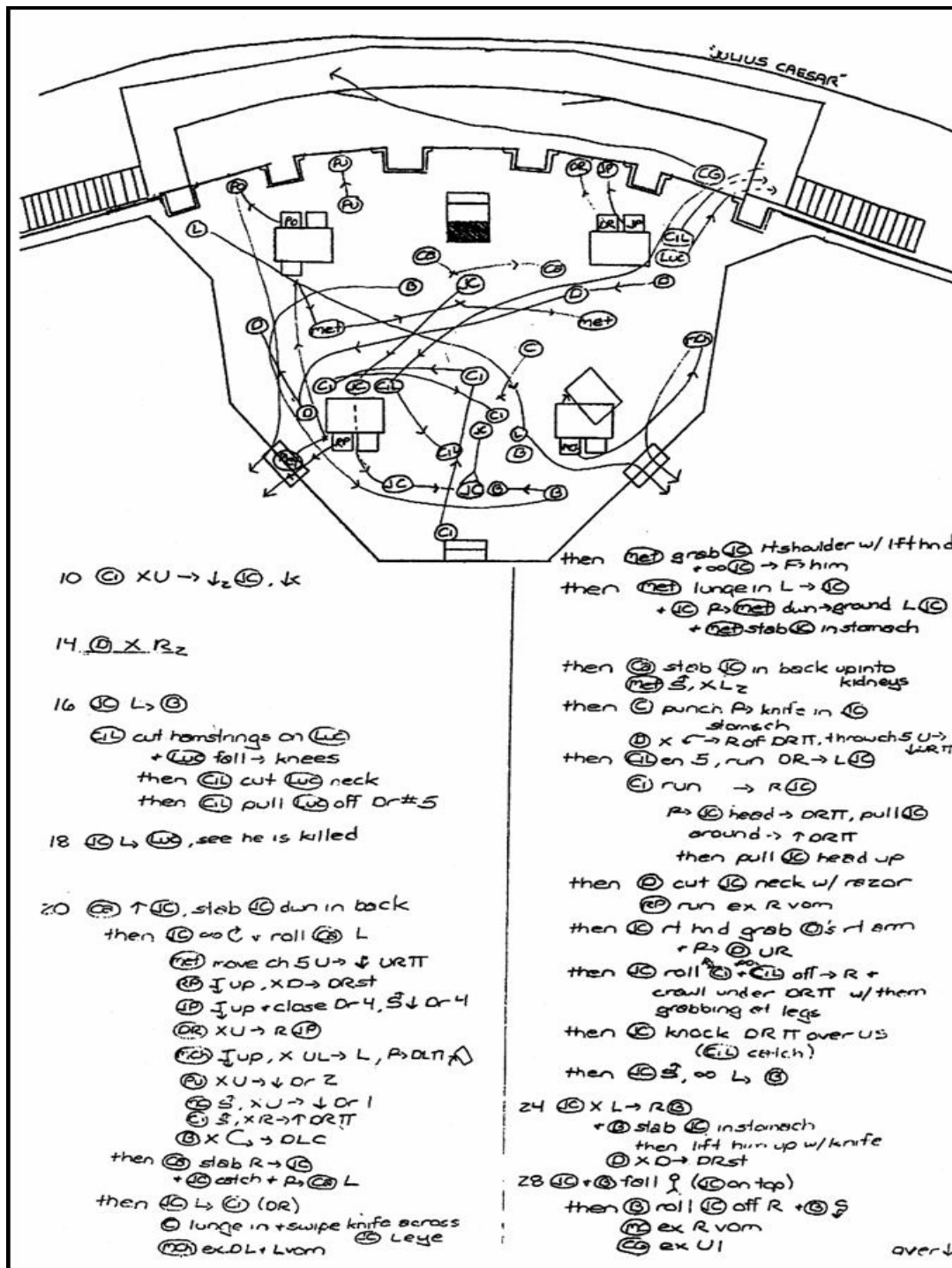


Figure 3 – Sample Blocking Notation

Stage managers are required to track blocking and revision for every page of a script or musical score onto the floor plan for each scene. Most plays are at least 50 pages long and most operas average 200 pages in length.

Having a software program that uses three dimensional animation for interactive blocking with tracking, instant replay and revision capabilities would speed up the planning and rehearsal process. Staging a show with click, drag and point features on a portable hand-held device would eliminate the need for the handwritten system altogether.

Wasted Resources

The current system has a second weakness; a great deal of time and effort is spent organizing, accumulating, developing, revising, copying and collating a master document. A master production or rehearsal notebook is created for every operatic or theatrical production. The compilation and maintenance of this master document is the responsibility of the Stage Manager. This paper document is divided into carefully tabbed sections and placed into a three-ring-binder for easy access and quick reference. There can be sections set aside for blocking, cues for blocking, costume ideas, use of props and set, lighting, sound, music, special effects, forms, schedules, calendars, contact information, rehearsal and production notes and conceptual drawings for set designs. Essentially, this master book contains all the paperwork used in planning, mounting and archiving a production.

For the sake of explanation, the following discussion focuses on an original production - meaning that all elements (scenery, costumes, lighting, etc.) are designed specifically for a particular show.

The prompt script has a copy of every page of the script for a play or a musical placed opposite a blank page. Before rehearsals begin, set designer(s) make sketches, either by hand, or with a computer software drawing-program such as AutoCAD™ or WYSIWYG™ (What You See Is What You Get, pronounced “wiz-ee-wig”). Sketches must be made for each act and scene of a show. These sketches, called floor plans, are given to the stage director by the set designer(s). After approval, the director passes along copies of the floor plans to the stage manager, and, depending on the company, his assistants. As the floor plans for each scene are released, they are copied scene-by-scene, and page-by-page and then placed onto the blank pages positioned opposite the matching dialogue or music in the show.

When entrances and exits are decided by the director, that movement is notated in pencil, directly onto the copy of the floor plan for that scene. In this way the prompt script, in part, becomes a two-dimensional visual map of the staging action record. That record is added to or updated during rehearsals as the production progresses. A well-organized prompt script is so crucial to the lifeblood of the theatre that in backstage slang it is affectionately referred to as “the stage manager’s bible.”

It is not uncommon for the piano-vocal score of an opera to be three to four hundred pages in length. For example, Verdi’s *Falstaff*, published by Ricordi, is 471 pages long. Mozart’s *Don Giovanni* and Adamo’s *Little Women*, published by Schirmer,

are both over 300 pages long. Therefore, keeping track of initial blocking and the subsequent changes in any production is a laborious, but necessary job.

More and more stage managers of both opera and theatre are trying to create administrative copies, signs, notices, invitations, notices, hand-outs, schedules, contact sheets or notes on their laptops or computers. The master production book is already becoming fragmented because the need is so great for more efficient tracking methods.

It is obvious to see how the use of paper copies is a major drain on resources as well as an inefficient use of manpower. If an alternative method could be found to the handwritten tracking system that has been in use for hundreds of years, much time, energy, and money could be saved.

De-Centralized Communication

Pre-production planning has been known to last from an average of three to six months to as long as three to six years. During every aspect of production, coordination and communication are vital elements. With the advent of the Internet, some theatre companies set up WebPages or email groups to cope with their communication issues. It is becoming commonplace for the director and his production planning crews to be separated by great distances during most of the preliminary planning stages of production in both opera and theatre.

The disadvantage with public WebPages or email groupings is one of protection; the advantage is one of expediency. Even though time is saved by using the Internet, from the perspective of the whole production, there is still time lost in the creation of

more selective contact lists or email groupings: those that cannot be created by choosing the “reply to all” option.

Without centralized communication separate contact lists are compiled and used, and it is easy for the chain or order of contact / command to become confused. People get messages they do not need, or they receive multiple copies. On the other hand many theatrical productions, even those with web sites, still use isolated modes of communication such as cell phone, mail carrier, and fax machine, unfortunately, each of these methods is exclusive to the other.

Challenges of Multiple Learning Styles

When actors or singers show up for the first time after auditions, they receive blocking or directed movement in some fashion. Directors vary in how much blocking they give their performers and how much movement they allow the performers to create on the spot. Either way, the fourth weakness in the present system is that before blocking rehearsals begin, the actors or singers have no idea what to expect. They must become skilled at recalling the previously memorized script or score while they receive and process new blocking material: one or the other is typically easy, in and of itself. It is the juggling of the two while staying true to character, that is the challenge for most performers.

Some people are more successful at learning how to coordinate new physical movements with mental recall than others are. Directors are less likely to re-hire performers if they have too much difficulty, or take too long, balancing and retaining data

during the rehearsal process. It is for this reason that experienced directors hesitate to select unknown performers for leading roles if they are unfamiliar with the performer's work ethic, and rehearsal attitude or ability. In this way, the present system is non-conducive to multiple learning styles (aural, verbal, visual or physical).

Just as performers are judged by their ability to process new information quickly, so too are directors judged by their ability to create an ideal learning environment. The amount of time a director takes to get a point across to his actors or singers during rehearsals is also crucial to the success of the company. Shows are planned and mounted around practical limitations, such as the availability of pertinent things such as the theatre, the cast, appropriate funding, etc. The old business adage is apt: "time is money." Based on this premise, wasted time in rehearsal wastes money.

People learn in different ways (aurally, visually, verbally and physically) at dissimilar speeds. Currently, teachers in primary and secondary education are expected to adapt their classroom methods to accommodate these learning styles. The adaptation to learning styles is a moderately recent concept that has not been introduced in the rehearsal room. Directors expose their actors or singers to one teaching or information method and then expect them to "get it."

Lack of Overall Perspective

One of the goals of the director is to share his overall artistic perspective with the audience. This viewpoint is created in the minds of the pre-production staff and designers during the pre-planning stages of a show. Until a model or graphic drawing of

scenes becomes physical, various designers in the production crew have no way of knowing how their creations will fit in with the director's initial conceptualization. Long distances add to the problem. Gone are the days when the producer, the director and the set designer sit down at the local coffee shop to discuss the show. Long distances can prohibit the designer from being able to supply a scaled-model to the rest of the cast and crew. Without seeing a three-dimensional model of the set during the early planning stages of a show, there is greater room for error, or a lack of agreement on the overall artistic perspective until the set is built.

With inexperienced designers, with those working on an unfamiliar stage, or with a new production crew, long distances increase the potential for subtle problems that can occur with physical perspectives such as audience sight-lines, or any individual conventions associated with the artistic desires of specific directors. Occasionally, designers are so excited about their idea that they either cannot wait to surprise their counterparts with their amazing concept, or they do not want to be told they cannot do it, so they wait to spring it on their cohorts when construction is already in progress. In these instances, communication is not the problem, the root cause is the lack of uniformity, or the lack of a clear standpoint around which a production can be built. Either way, the cost for corrective procedures in set design, complimentary costume creation or the feasibility of blocking rises exponentially with the amount of time it takes to discover the disparity.

CHAPTER V
MODEL OF SUCCESS: *PYGRAPHICS*

Technology as a Tool

Computers are tools that men use for the purposes of speed and efficiency. One of the goals of this research is to explore the development of a master process program capable of replacing the prompt script in theatre and opera. Many stage managers have laptops or computers they use to create forms and to communicate via email, but they do not have a single program that unifies the production process. Just as blocking notation varies from stage manager to stage manager, so too do the methods used to organize and track elements of production. The complex nature of the theatrical production process has prevented the development of a centralized management tool.

The Perfect Example

A successful software technology developed for marching band directors provides an excellent model for *Artisterené*. Within the past two decades, the traditional mindset of marching band direction was influenced by the invention of a software program called *Pyware*. Like stage directors, band directors had to spend hour after hour writing out movement maps and routines for hundreds of marching band students. After each student was assigned his part, many more hours of rehearsal were needed to solidify the choreography; it was difficult to teach students where to go and when to move. They had no concept of the final picture because formations could be perceived only from a

distance. Teaching fifty junior high school band students to move from a giant circle into the letter “G”, then “O” might take a band director weeks, when the final routine might last only six to ten minutes. Students and teachers were frustrated.

One director finally had had enough. He developed a simple marching band skills software program that used X’s and O’s to represent students on a grid-like field to replace the tedious handwritten notation. Other band directors used the program because it saved them planning and rehearsal time. Students liked the new program because they could track themselves individually, and see how they fit into the larger formations by viewing printouts. Eventually, the marching band program became so successful that a software company named *Pygraphics* was formed. According to Don Mischer, Executive Producer / Director of the 1996 Centennial Olympic Games in Atlanta, Georgia *Pygraphics* is now so popular that it has been adopted in virtually every college and university as part of the standard curriculum for prospective band directors.¹⁶

In the marching band drill program each student is numbered and grouped according to the type of instrument he plays. The student can view printouts from a broad perspective, and identify where he needs to be in relation to the whole at any given time during the routine. This new perspective greatly reduced confusion among students, and they found their positions faster, because they could see how they fit into the larger picture. This program reduced rehearsal and planning time. Students using the program gained greater confidence in their ability to learn routines, which became an added bonus.

¹⁶ *Pygraphics* website is located at www.pyware.com: Internet, accessed on April 23rd, 2004.

The *Java Drill* software program synchronizes with and links simple graphic movement to the measure numbers in music. The user selects a tempo (speed of playback) and then taps a computer key consecutively to move the routine forward in time. The band director is able to print out selected snapshots of important moments in the routine, and then hand these out to his students.

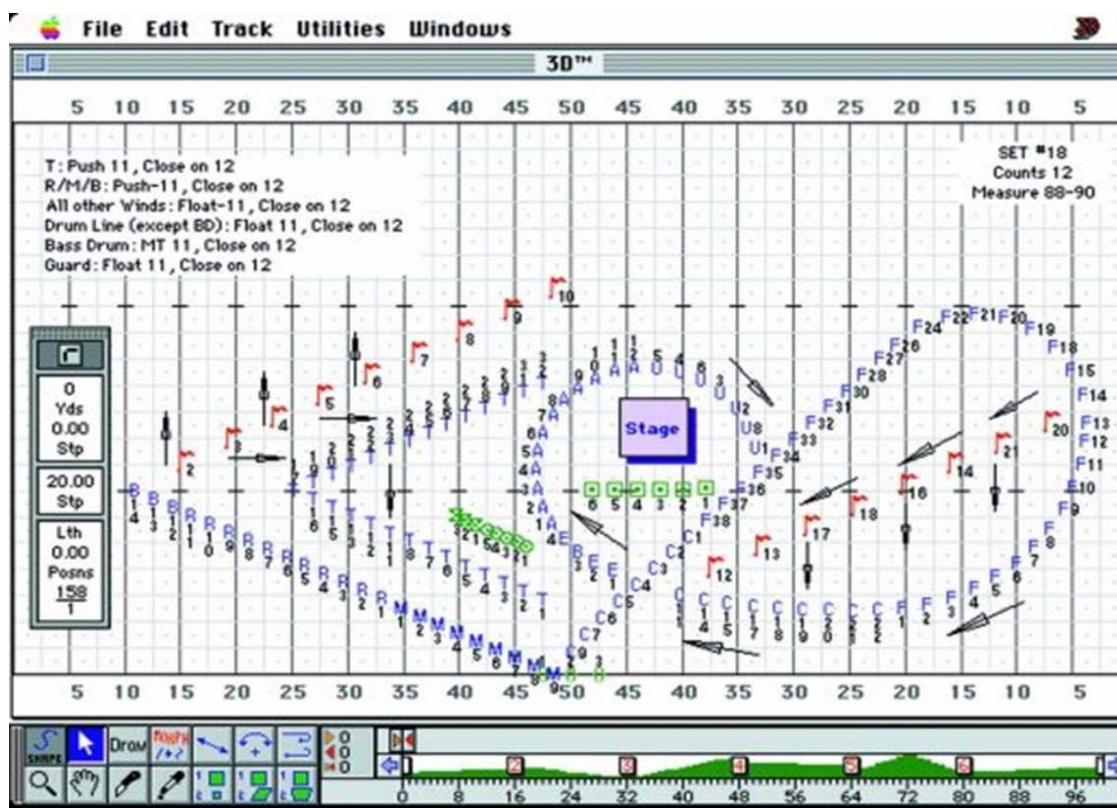


Figure 4 - Screen Snapshot of *Pygraphics 3d Java Drill* Software Program

This figure shows a birds-eye view of a football field with marching band students located in a particular formation for one moment in time in a routine. This screen snapshot comes from the most recent version of the *Marching band 3d Java Drill* and *Charting Aid* available as part of the marching band director curriculum at UNCG.

Pygraphics software is available from twenty-one distribution centers across the United States.

At its inception, *Pygraphics* faced resistance from marching band directors, similar to the concerns that stage directors might have about expressing creativity using technology. *Pygraphics* was used for choreographing the movement of performers during the 1984 Olympic Ceremonies, for all marching band sequences in the hit movie "Drumline", and for the routines during the 2002 season of the Cavaliers Drum and Bugle Corps. One result was that the Cavaliers Drum Corps became the Drum Corps International (DCI) World Champions with the highest score in DCI history.

Here are three testimonials used with permission from the *Pygraphics* website.

The first is from a band director, Jeff Fiedler, who led his Cavaliers to win the 1992 Drum Corps International Championship.

The Pyware Charting Aid System has allowed the Cavalier Visual Staff to realize the potential of some of our effects before we even teach them. It has saved us a terrific amount of teaching and more importantly... re-teaching time.¹⁷

In 2001, Michael Gaines, Designer for the Cavaliers Drum and Bugle Corps wrote.

I began using Pyware for designing my band drills in 1994. I am still using the Pyware 3D for the Cavaliers Drum and Bugle Corps, as well as numerous High School marching bands across the country. There is

¹⁷ Testimonials used with permission from *Pygraphics* website located at www.pyware.com: Internet, accessed on April 23rd, 2004.

nothing you can do by hand that you cannot do with Pyware! The amount of time saved is incredible. The results are excellent. We highly recommend this tool for people designing any kind of drill.¹⁸

The third quote is from a letter sent by Don Mischer, Executive Producer and Director of the 1996 Centennial Olympic Games to the *Pygraphics* company.

I'd like to thank you for your contribution to our production of the Opening and Closing Ceremonies of the Centennial Olympic Games this summer in Atlanta. These Ceremonies were the most aggressive and complicated shows ever attempted. Your 3D drill design software was an extremely useful tool in our planning. Its ability to animate sections of the show proved useful not only in show design, but in efficiently planning rehearsal time and projecting camera coverage.¹⁹

A reduction of rehearsal time, as stated on the *Pygraphics* website, helped band directors a great deal. However, creating more rehearsal time is not the complete reason for *Pygraphics'* success over the years. What band directors do with the extra time is the real reason the program works.

The underlying key to *Pygraphics* success is that it has allowed band directors to have more time to focus on the learning that takes place after the skill-based level of the rehearsal process is complete. If a similar software system were developed for opera and theatre based on the *Pygraphics* model of success there could be rehearsal and planning time saved in theatrical production too.

¹⁸ Ibid., May 25th, 2004.

¹⁹ *Pygraphics*, Ibid., Accessed May 25th, 2004.

CHAPTER VI

ARTISTERENÉ: A DESCRIPTION OF THE CONCEPT

The concept of *Artisterené* is embodied in a software system that can gather, store, and organize theatrical production data while functioning as a virtual prompt script.

This software system is made up of three major, integrated components. The first component synchronizes cues extracted from master lists submitted by each production team (lighting, sound, set design). These color-coded cues are superimposed on the *Überscript* (master script or score) for the current production. The second module is an interactive, three-dimensional animation program for blocking. The third component is a secure online subscription service of theatrical databases (stage dimensions, technical capabilities, scores, scripts, contacts, etc.). The interaction of all three components creates an integrated system that can manage the production process from beginning to end.

A disconcerting technology gap exists between cue management systems in today's entertainment business. For example, within the same productions where hundred channel mixers and amazing digital strand lighting board systems are used, stage managers still call cues from handwritten notes, and read from prompt scripts made up of hundreds of copied, paper pages.

The Critical Significance of Cue Management

Cue management is both the heart and brains of the production process. The director or stage manager uses a manually written system of colors and / or abbreviations to cue (or alert) the actors and support personnel to perform specific activities (such as closing a curtain, turning on a spotlight, or walking to center stage). The cues are recorded in the prompt script. The prompt script is more than just a copy of the script or a record of cues; it is a notebook that contains all the paperwork associated with planning, implementing and archiving a production.

During each full run and performance, the stage manager calls the show by reading aloud the numbered cues from his handwritten notes in the prompt script. Either the color or the cue's abbreviation tells the stage manager which backstage department to alert, so that that department performs some action. The stage manager must be able to serve in all levels of technological sophistication. He varies the way he calls the show depending on whether the venue takes place in a more primitive theatre, one still using hand cranked rope wenchers or a single spotlight, to the quite sophisticated showplace, with automatic hydraulic lifts and digital strand light boards. With modern computer light boards, the stage manager simply says, "Lights, Q13 go," and the light board operator pushes one "go" button to trigger the effect.

Figure 5 shows a primitive cue sequence created for an imaginary play called *John and Mary*, created by Larry Fazio for *Stage Manager: The Professional Experience*. Figure 5 is a page from a prompt script with one line of dialogue spoken on stage. All of the handwritten notes are abbreviations and symbols that indicate the activity that needs

to happen off stage.

In Figure 5, the first cue appears after the dialogue is spoken. Q13, a blackout cue (BO) tells the director that it is the thirteenth light cue for this scene. When the stage manager sees BO, he verbally tells the lighting department, “Ready for Q13, shut off the stage lights including spotlight #1, after Mary says, John, I hate you!”. Q-lite #5 should be turned on (ACTRS CLR) when the actors have left the stage. Q-lite # 5 is the cue for the Stage Right (SR) winches to raise Rail-Q6 with the apartment drop (APT DRP) on it. Q-lites # 2 and 3 indicate that an office drop, Rail-Q7, should be lowered by Stage Left (SL) winches.

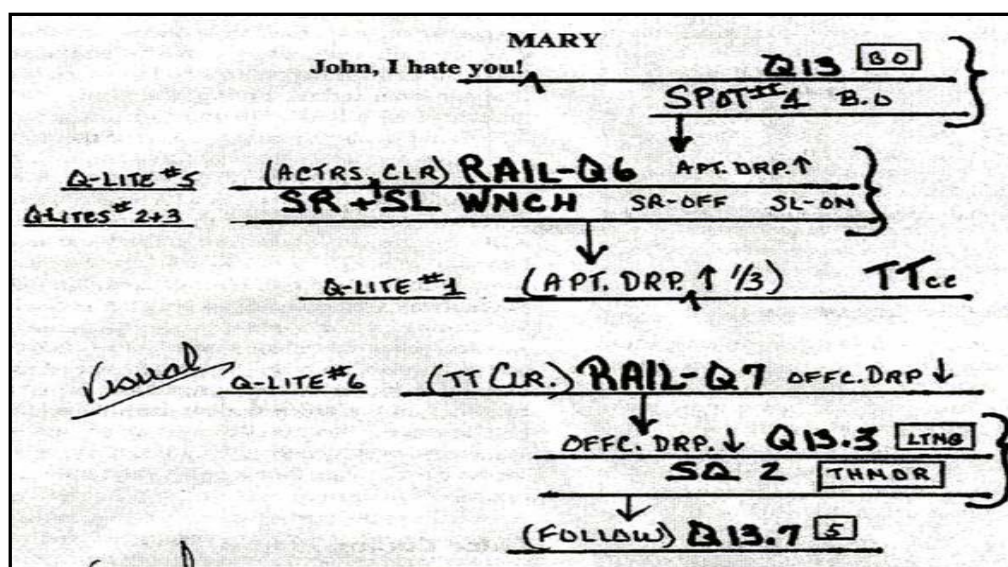


Figure 5 - Cue Sequence Sample Screen²⁰

²⁰ Source: Reprinted, by permission of the publisher. For a full color view, visit Focal Press companions website: www.focalpress.com/companions. Larry Fazio, *Stage Manager: The Professional Experience* (Focal Press an imprint of Butterworth Heinemann, a member of the Reed Elsevier Group, 2000), 188.

Figure 6 – (Cue Notes Sample Screen) shows handwritten cues that do not have corresponding dialogue or script associated with them. In this real example from the musical *The Man of La Mancha*, the opening of the play had so many cues that the stage manager had to cut and paste three separate pages of the prompt script together in order to call the show effectively.²¹

(The LEFT blank page)
Page 2. opening cues for Man of La Mancha

PRDCA'S INTRA. WARN: Q1
PRDCA'S MIC "HOT"
SPOT #1 ↑ PRDCA. ENTRA C
HS. LITES ↓ 1/2

WHEN READY HS. LITES ↓ 1/2 }
PRDCA'S MIC "HOT"
SM CUE PRDCA.
(AS PRDCA. ENTRA CURT) Q1
SPOT #1 ↑ PRDCA.

WHILE ORDER SPEAK WARN: Q2
CONDUCTOR Q-LITE "ON"
SPOT #2 ↑ FLAG

PRDCA SAYS...
"STAND... NAT. ANIM"
CONDUCTOR Q-LITE "OFF"
(AS MUS. BGN.) Q2
SPOT #2 ↑ FLAG

DURING ANIM. WARN: Q3 3+4
CONDUCTOR Q-LITE "ON" FOR DVERT
SPOTS "OUT"
HS. LITES "OUT"
RAIL - HS. CURT "OUT"

(The RIGHT blank page)
Page 3. opening cues for Man of La Mancha

END OF NAT. ANIM. APPLAUSE (PRDCA EXIT STG) Q3
SPOTS "OUT"
(FOLLOW) HS. LITES "OUT"
(INDARK) RAIL HS. CURT ↑
(HS. CURT 1/2 ↑) CONDUCTOR Q-LITE "OFF"
(AS DVERT. BGN) Q4

DURING DVERT WARN: Q5 STRAU 1.5
SQS 1+2 CHAINS
SPOT #1 ↑ (CAP) TOP-O-STAIRS
SPOT #2 ↑ (CAP) TOP-O-STAIRS
WNCH #2 BDD STAIRS ↓

TOWARDS END OF DVERT
IN MUS. (AS CASTAGNETTS BGN.) Q5 1E1
QUICK JUMP PAGE

(Blank page)
Page 4. opening cues for Man of La Mancha

DVERT. ENDS
(BEN CLAPSHANDS) Q6 1E1
(AS LITES ↑) SQ1 CHAINS
(HEAR CHAINS) WNCH #2
(STAIRS 1/2 ↓) Q7
(STAIRS ALMOST TO FLOOR) SQ2 TO CHAINS
(CAP. AT TOP STEP) SPOT #2 ↑
(CAP) AT TOP STEP SPOT #1 ↑
(CAP) AT BTM. STEP) Q7.3
(CAP) AT BTM. STEP) Q7.5
WARN: Q8
SQS 3+4 CHAINS
WNCH #2 STAIRS ↑
SPOT #2 "OUT" AS (CAP) CLIMB STAIRS
SPOT #2 ↑ ON (SAND) AS FIGHT BGN.

Figure 6 - Cue Notes Sample Screen

²¹ Source: Reprinted, by permission of the publisher. For a full color view, visit Focal Press companions website: www.focalpress.com/companions. Fazio, Ibid., 192.

After viewing Figures 5 and 6, the director might appreciate the obvious need to simplify and standardize the theatrical process. *Artisterené* automates the cueing process by superimposing notes and cues, in a standard format, directly onto a scrolling, virtual prompt script.

Using *Artisterené* as an Integrated Multimedia Prompt Script

Although the *Artisterené* software is in the conceptual stage, this section describes the tasks as if the software already exists. The figures in the rest of the chapter conceptually illustrate the interactive, theatrical production process program. The figures will also serve to provide the basis upon which computer software developers, with little or no theatrical experience, will create this software program. To explain the various sample forms and screens in *Artisterené*, a scenario-type format will be used. Within the scenario are detailed explanations of individual elements of the program. They appear under the heading “DETAILS”, followed by the element to be explained.

A list of useful terms follows to assist in the comprehension of the concepts.

Useful Terminology

BACKDROP – A large piece of cloth on which scenery is painted. It is hung from the back of the stage setting. It is also called a drop because the rail upon which it is hung may be raised or lowered to allow multiple backdrops in one show.

BEAT - A beat in acting is one of nonverbal intention. It may be described as any place in the dialogue that requires a change in a character’s motivation or purpose. A change in beat is often reflected by a change in an actor’s position or stance; hence, tracking the beats outlined by a director in a play is a blocking option.

CLICK – How a user selects an item in a computer program. If the user positions his cursor over an icon, button, or symbol, and then clicks on it (click), the item is selected, causing some action to occur (such as move to a different screen, save a file, or close a window).

CLICK AND DRAG – If a computer user wants to move a piece of information from one place to another, he clicks down on an item to select it, but does not release his mouse button. The user positions the pointer over a specific target area. When the depressed button is released, a copy of original information is transferred to the new position.

DATABASE - A database program, such as Microsoft Excel™, can function as an elaborate, automatic filing system. Therefore, data in the base, or file, can be rearranged and printed out in multiple formats. This feature saves the user time, as he does not have to re-type or input the same information over again for each report or form that is required.

MEASURE NUMBERS - Measure numbers are an organizational tool used in music for rehearsal purposes. The horizontal lines of the musical staff are divided by vertical bar lines for rhythmic purposes. Music is read from left to right, like English, so every song has bar lines that separate the staff into sections of music called measures. These measures are numbered for tracking purposes when more than one musician is expected to be involved.

SET - The scenery or set in a play is whatever defines the time or setting of the play. Great care is taken in creating the proper climate, historical period, cultural conditions, etc. by set designers. Set design may be the placement of simple pieces of furniture on a stage or the complex configuration of tilted (raked) platforms, staircases, balconies, trees and backdrops.

Scenario

A small opera theatre is presenting an original production of Mark Adamo's *Little Women*. It is designing and building all elements of the show. The director has just purchased a new software system called *Artisterené* (pronounced *ar-TEEST-uh-rih-NAY*) on May 1st. Six months of planning, preproduction and rehearsal time remain until opening night on November 15th. The director knows that the costumer hired for his show will be two states away until August, and that his set designer lives in Florida. Recently,

production staff meetings have been held by conference call or through web chat rooms.

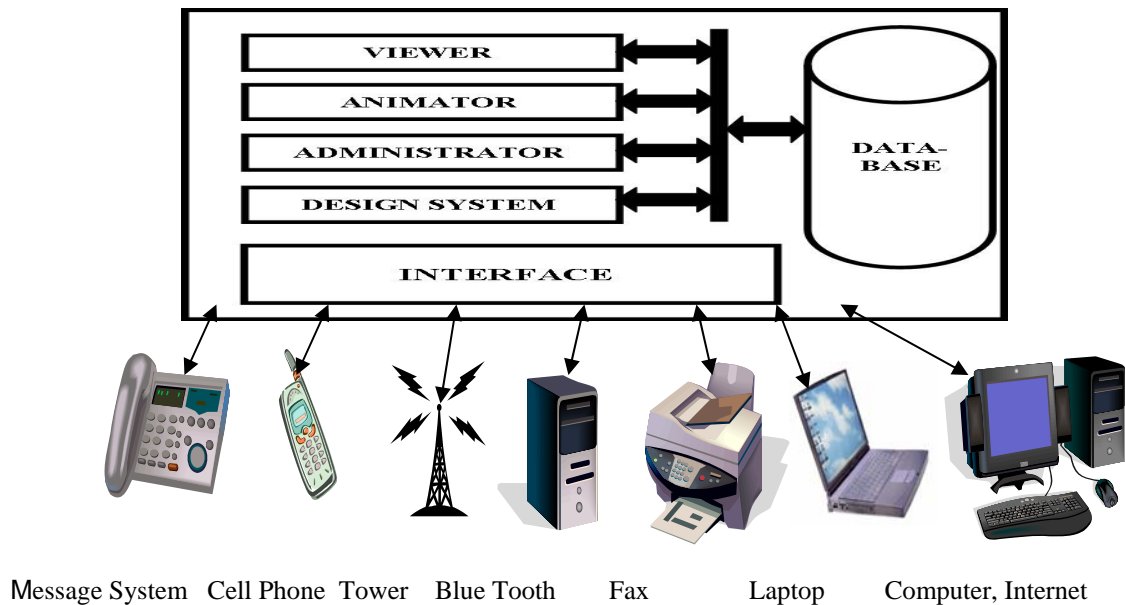


Figure 7 - Theatrical Production System

Figure 7 is a picture from the User's Guidebook that came with the software package. It has icons on the bottom which show that this program is remotely accessible from multiple interfaces, or sources. The vertical black bar with horizontal arrows indicates that all of the components on the left side of the box are linked to the *database* on the right. The arrows in the figure show that information is stored in the *database* (right) and is visible on the computer monitor by a *viewer* component (top left).

An *animation* (left) component interacts with the *database* (right) and is managed by an application tool called an *administrator*. The *Artisterené* show-specific *database* is compatible with, and links to, many preexisting *design* systems (left) that theatre companies currently use (for set design, costume design, lighting or sound). This

compatibility and consolidation allows the production staff to oversee and manage the entire production process from distant locations, through one centralized program. The *Artisterené* system automates elements of manual theatrical practice, while augmenting and working with pre-existing, sophisticated technology already in use.

The director knows that his cast and crew have the Internet, and is relieved that they will be able to communicate through remote access with the new program he bought. He turns the page of the User's Guidebook and looks at Figure 8 - Production Requirements Reference.

- All preliminary design requirements
- Ground Plans (Scale Diagram Where Scenery is Placed on Stage Floor - Also called Floor Plan)
- Scene breakdowns and Sections
- Entrances and Exits
- Pronunciation guides
- Contact Sheets
- Costume Sketches and Plots
- Light Plots (Placement Design Relative to Set)
- Preset Sheets
- Calendars
- Rehearsal and Performance Schedules (4 Components of Rehearsal Schedule)
 - 1 The director's preferred method of rehearsing production
 - 2 Work done on scene breakdowns
 - 3 Agreements governing the working conditions of various employees of the company, the actors and stage managers (See Actor's Equity Association AEA, Stage Manager's Association (SMA), America's Guild of Musical Artists (AGMA), and LORT League of Resident T
 - 4 Overall Schedule indicating start date for rehearsals, technical rehearsals, and performances for show (Master Calendar)
- Due Dates
- Run (Total number of performances for a production)
- Information present in Prompt Script (copy of script, paperwork, blocking and cues)

Figure 8 - Production Requirements Reference

This figure will make sense to a stage director, since it lists the common elements present in traditional and current production practices. *Artisterené* does not change the content or order of theatrical production management; it consolidates, automates and simplifies many aspects for the user. The director does not need to alter the directing or managing method with which he is most familiar in order to use this software program. At this point, the director consults the User's Guidebook and follows the instructions to load the software onto his computer. Figure 9 – Main Menu appears on the viewer, or

monitor and functions as a “touch-sensitive” table of contents for the program (the Main Menu is a central navigational tool in the program and will be mentioned repeatedly throughout the Scenario).

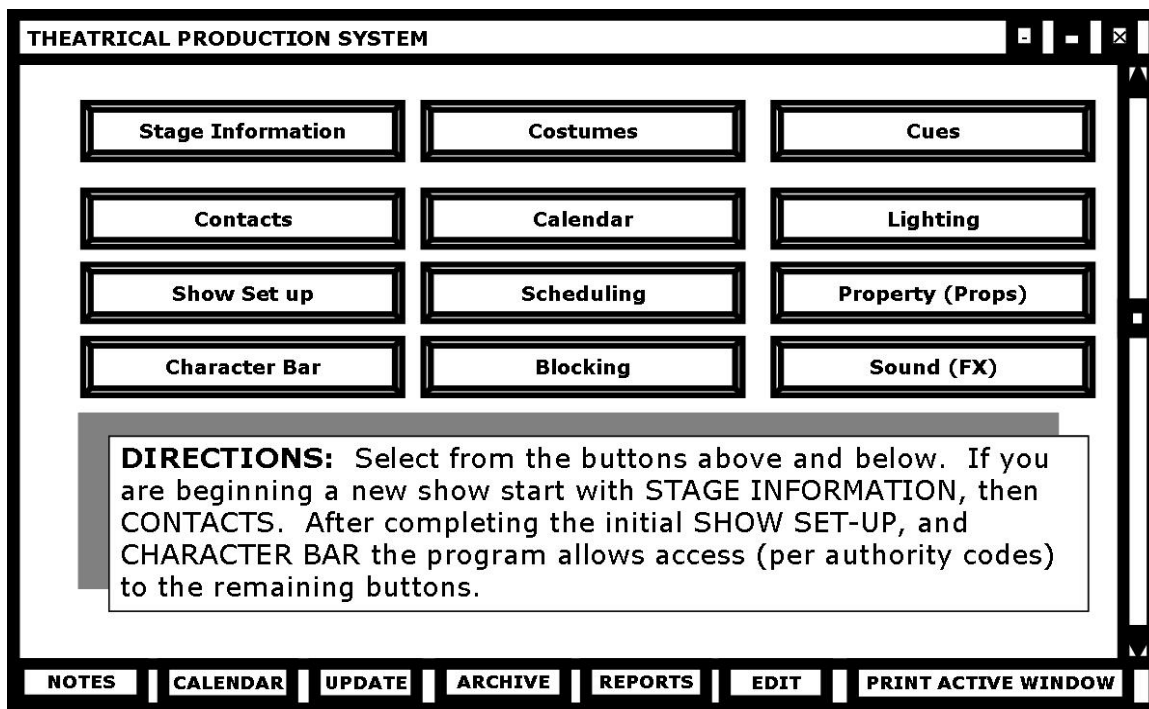


Figure 9 - Main Menu

Figure 9 – Main Menu is a large rectangle with three columns of control buttons. The guidebook says that each of these buttons connects to a different part of the program, like a touch-sensitive table of contents. If the user positions the cursor over one of the buttons and clicks on it (click), the corresponding screen appears. Before clicking anything, the director notices the tabs at the bottom of the screen. They remind him of manila file folder tabs. The guidebook says that the user navigates the program by clicking on either a bottom file-tab, or on a button in one of the three columns. The

DIRECTONS in the information box on the bottom of the screen recommend that new users click on the button on the top left side, STAGE INFORMATION.

The user clicks the STAGE INFORMATION button and Figure 10 appears.

THEATRICAL PRODUCTION SYSTEM

NOTES: This input screen is compatible with, and able to interface with, for example, AUTOCAD and WYSIWYG programs (commonly used in set design).

Click Desired Measuring System

USA Standard (Inches and Feet)

Metric System (Centimeters and Meters)

Choose basic stage shape

Import Existing Stage

SHOW SETUP | CALENDAR | UPDATE | ARCHIVE | REPORTS | EDIT | PRINT ACTIVE WINDOW

The screenshot shows a software window titled 'THEATRICAL PRODUCTION SYSTEM'. Inside, there is a 'NOTES' section at the top. Below it, a section titled 'Click Desired Measuring System' contains two radio buttons: 'USA Standard (Inches and Feet)' and 'Metric System (Centimeters and Meters)'. The next section, 'Choose basic stage shape', displays ten different stage shape icons arranged in two rows. The top row includes a trapezoid, a diamond, a pentagon, a U-shaped stage, a rectangle, and a grid-patterned rectangle. The bottom row includes a bowl-shaped stage, a cross-shaped stage, a rounded rectangle, a hexagon, and an oval. To the right of these shapes is a button labeled 'Import Existing Stage'. At the bottom of the window is a menu bar with buttons for 'SHOW SETUP', 'CALENDAR', 'UPDATE', 'ARCHIVE', 'REPORTS', 'EDIT', and 'PRINT ACTIVE WINDOW'. A zoom control with '-' and '+' buttons is visible on the left side of the main content area.

Figure 10 - Stage Shape

Figure 10 shows how many different types of stage shapes there can be. Directors have to know the measurements of any rehearsal or performance space used. They must provide the set designer with accurate measurements that are used for building the set, and for taping off separate spaces on the floor for actor rehearsals. The director selects the appropriate stage shape corresponding to his theatre from Figure 10, and Figure 11 appears. If a stage shape is already on a database, the user can import that stage by clicking on *Import Existing Stage* (right) and skipping to the next section, CONTACTS.


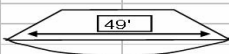
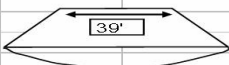
THEATRICAL PRODUCTION SYSTEM			
NOTES: After a stage type is chosen, input the stage measurements per questions below. As measurements are added, the picture of the stage will automatically conform. Once measurements are entered they are stored in a database. Any time this stage is used in the future, the data will already be in the database and will not have to be re-entered, unless alterations are made.			
Measurements of stage			
1. What is the Downstage width (or side closest to the audience)?			
(Sample Filled in)			
49'		Audience	
			
2. What is the Upstage width (or farthest away from audience)?			
39'			
SHOW SETUP CALENDAR UPDATE ARCHIVE REPORTS EDIT PRINT ACTIVE WINDOW			

Figure 11 - Stage Dimensions

The director enters his stage dimensions and scrolls down the screen while answering other questions on: vertical clearance, possible stage entrances, the size and shape of the hall or auditorium (floor rake, seating arrangement), is the system manually, electrically or counter weight based, the dimensions of the apron and wings, storage space, the fly space, height and depth, and the presence of special stage features (teasers, trap doors, cyclorama, turntables, moving belts, or other scenic equipment, etc.). When the director finishes entering his stage dimensions, he opens the guidebook to find out more about the program.

Details: Viewing Perspectives

After answering the questions on stage dimensions, authorized users will be able to view the stage shape in *Artisterené* from multiple perspectives. This virtual stage shape is the foundation of many layers that will eventually be viewable, one on top of the other. The three dimensional or virtual set is created on a software program such as AutoCAD™ or WYSIWYG™. The set designer uses the measurements provided by the director to construct a virtual set that is superimposed on top of the stage shape, so that both may be viewed simultaneously. The third level is a graphics module that allows the actors to become animated characters. The stage director is able to move the animated characters across the set on top of the stage shape.

As the show comes together, the virtual progress of the show is available to see from multiple perspectives to determine whether the overall effect works efficiently or aesthetically. Sightline problems, weight tolerances and artistic concept are made available to the production crew much earlier in the planning process, before the set is actually built. In this way, disagreements or problems can be discovered or prevented before they are physically manifested.

The most important advantage of *Artisterené* is that changes can be made throughout the life of the production from remote locations. A sightline problem with the set, discovered early on, may be changed immediately. Any character blocking affected by the resulting set change can be evaluated and altered overnight by the stage director, who, alerted, can then be ready for rehearsals the next day.

Scenario (Continued)

The director resumes setting up the show. From the MAIN MENU (below) he is instructed to fill in the basic contact information for those affiliated with the show by clicking on CONTACTS.

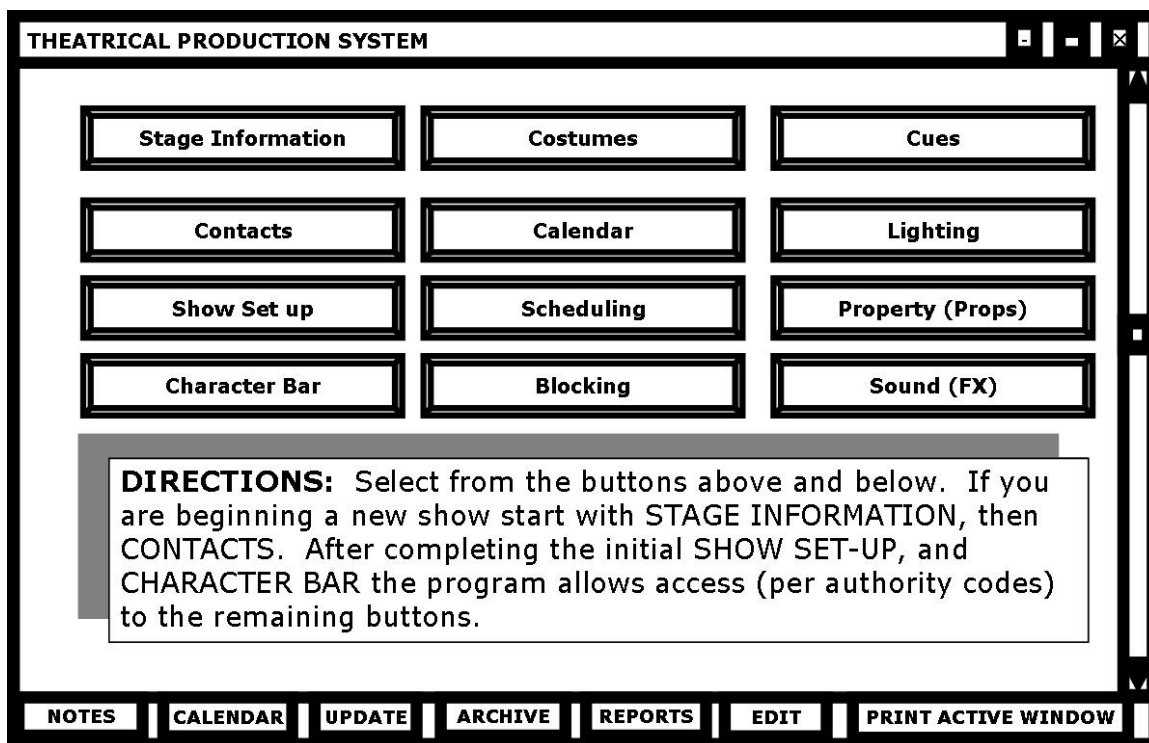


Figure 9 – Main Menu

At this time, the director knows only his production managers and theatre contacts, since the auditions for cast are scheduled next month, in June. The User's Guidebook says that contact information may be added as necessary throughout the life of the show. The director enters his name first.

The entry form for CONTACTS is similar to a computerized job application. The applicant is asked to fill in basic information such as his address, fax, home, and cell numbers. In *Artisterené* he is also asked to enter information such as his title, if he is represented by a manager or an agent, his email address, the character or role he is playing, and if he is a member of a professional union. Several questions do not apply to him and he leaves them blank.

Details: Contacts

Many professional performers want their personal information available to only a limited few. In *Artisterené*, contact information may be blocked from unauthorized users. After a director types his information into CONTACTS, an authority access code is assigned. Authority code settings are then preset, according to title, and are automatically activated when certain boxes are checked or left blank next to the entry. Directors know that performers usually list their managers as a point of contact. Any cast member viewing CONTACTS with an actor's authority code, will see only the manager's name instead. The stage manager and the director will be able to see the performer's private, personal information, due to the higher clearance of the access codes.

Information in CONTACTS may be viewed in multiple formats and printed out in LISTS or FORMS in alphabetical, scene, title, organization or character order. Contact data can be retrieved automatically from the database and printed out in many ways (sign-in sheets, cast lists, or production team meeting notes, etc.).

A CONTACT LIST and / or the CHARACTER BAR may be opened any time and anywhere after program set-up. Users can click on any name and have an email or an alert sent to the person selected from the list, without closing or leaving the program. This instant communication feature is especially helpful during rehearsals when time is of the essence. Figures 12 and 13 show examples of two CONTACT LIST formats.

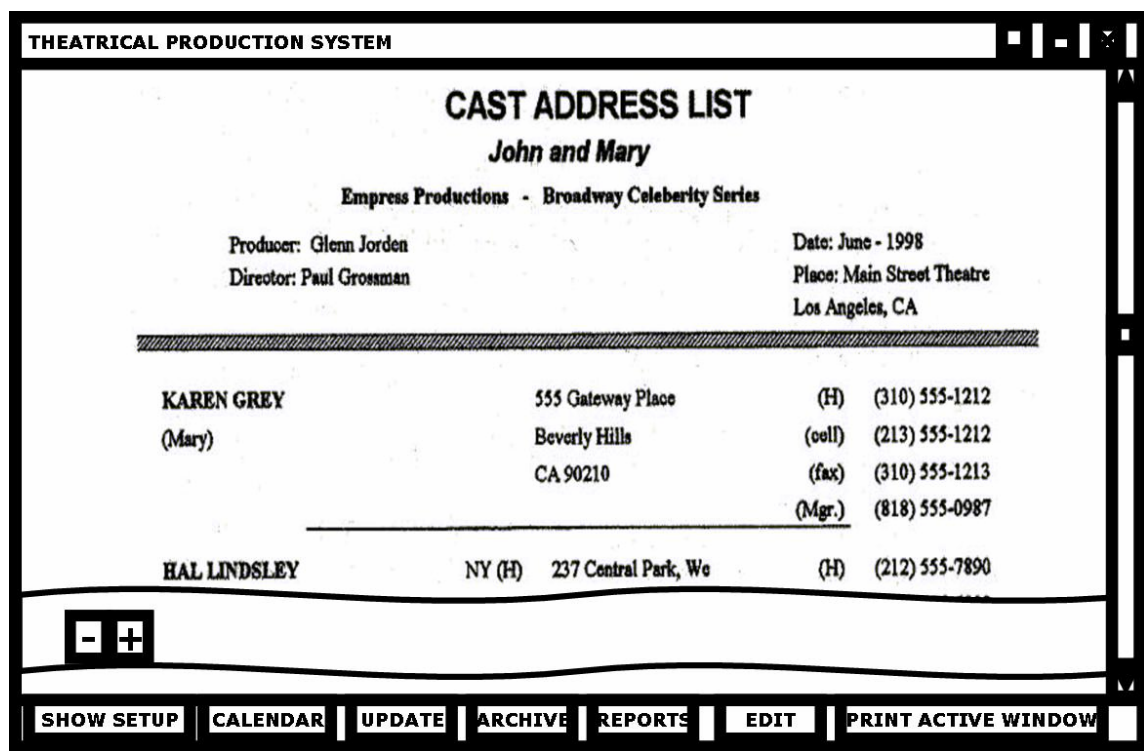


Figure 12 - Contact Data In CAST LIST Format

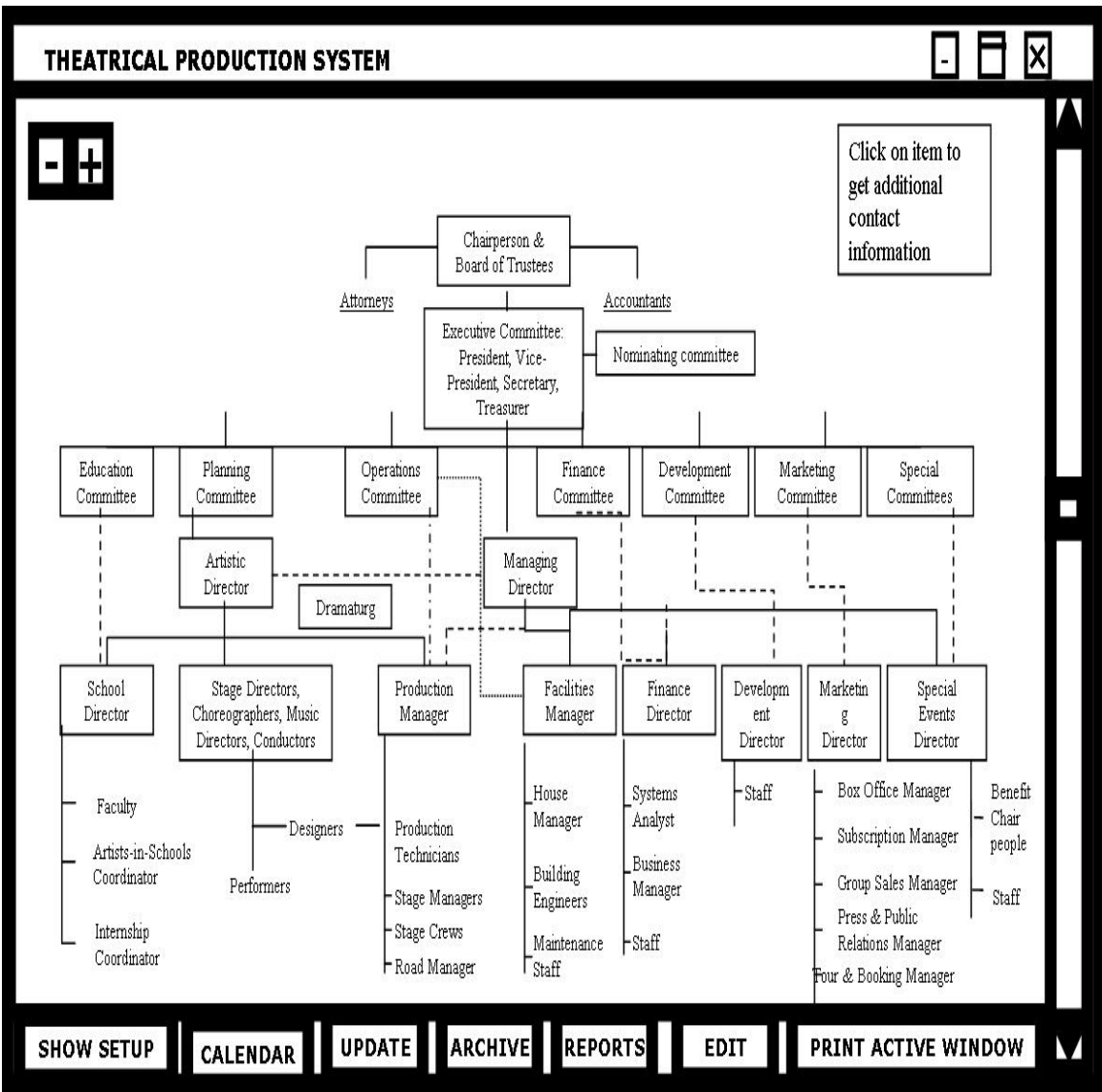


Figure 13 - Contact Data In ORGANIZATIONAL CHART Format

Viewing contact information in an organizational format (Figure 13) enables a director to click on a title or job within his organization and enter contact information about that individual. *Artisterené* allows quick access (email, message, fax, etc.) to administrative, financial, business, and production members with the click of a button. Once the director inputs the organizational contact information for his staff, he has them

in the show-specific database for future shows. Unless a change is made (someone retires or is fired), the director's database is set for multiple shows. Only incoming cast and crew added after auditions will need to be entered after they join the show.

Scenario (Continued)

The director returns to the MAIN MENU when he is prompted (Figure 9 – Main Menu) and clicks on SHOW SET-UP, which brings up Figure 14.

THEATRICAL PRODUCTION SYSTEM				[Icons]	
Contacts List		(Name of Show)		<i>NOTE: (This becomes the Header for other Screens)</i>	
(Name of Company)		Producer:		(Composer / Playwright)	
Director:		Year:			
How many performances?	4	[Down Arrow]	<i>NOTE: (Include Matinees, Children's Shows & Public)</i>		
Performance Dates	Month	Jan	[Down Arrow]		
	Day(s)	4	[Down Arrow]		
		5	[Down Arrow]		
		6	[Down Arrow]		
		7	[Down Arrow]		
Choose Style of Show	<input type="checkbox"/> Opera <input type="checkbox"/> Musical <input type="checkbox"/> Talent Show <input type="checkbox"/> Revue <input type="checkbox"/> Standard Theatre <input type="checkbox"/> Workshop <input type="checkbox"/> Audition <input type="checkbox"/> Other				
Edition / Publisher of Script / Score (Dover, G. Schirmer, Etc...)					
How many Acts in the work?	3	[Down Arrow]	<i>NOTE: (Number determines how many blanks appear)</i>		
*ACT I,	SCENES	7	[Down Arrow]	PAGES	"SCENE TITLE"
	SCENES			1	
				2	
				3	
				4	
				5	
				6	
				7	
*ACT II,	SCENES	5	[Down Arrow]	1	
	SCENES			2	
				3	
				4	
				5	
*ACT III,	SCENES	4	[Down Arrow]	1	
	SCENES			2	
				3	
				4	
Introduction or Prelude?		Yes	[Down Arrow]		
Epilogue or Postlude?		No	[Down Arrow]		
SHOW SETUP		CALENDAR	UPDATE	ARCHIVE	REPORTS
EDIT		PRINT ACTIVE WINDOW			

Figure 14 – Show Set-up, Acts and Scenes

Just as the stage shape for a show needs to be added to the database, so too, do the details of the show need to be entered. When the director is in the “acts and scenes” area of SHOW SET-UP, his first job is to create a *header*, or the title for information that will subsequently appear on the top of every screen and printout for this particular production. He types in the name of the show, the director’s and composer’s names, if applicable, and provides dates for performances. Next, he selects the type of show or venue. *Artisterené* is capable of handling a variety of performance types such as traditional or musical theatre, a review, talent show, wedding, recital or opera. This director selects opera and fills in the *header* or title.

The director chooses *Opera* under *Choose style of show*, and selects G. Schirmer as the publisher. When he chooses the number 3 as the answer for *How many Acts in the work*, three lines appear below the question, labeled Act I, Act II and Act III, respectively. The director is asked how many scenes are in each act. He chooses 7 for Act I, and seven blank, numbered lines appear. With the help of a script or score, this page takes less than an average of ten minutes to interpret and complete. Figure 15 is how Figure 14 will look once it has been completed.

THEATRICAL PRODUCTION SYSTEM

Contacts List
NOTE: (This becomes the Header for other Screens)

Little Women

Gathering Grove Opera By Mark Adamo
 Producer: Jim Gray Year © 1998
 Director: Mark Powell

How many performances? 4 NOTE: (Include Matinees, Children's

Performance Dates

Month	Nov	↓	
Day(s)	13	↓	
	14	↓	
	15	↓	
	16	↓	

Choose Style of Show

Opera

Musical

Talent Show

Revue

Standard Theatre

Workshop

Audition

Other

Edition / Publisher of Script / Score

G. Schirmer (Dover, G. Schirmer, Etc...)

How many Acts in the work? 2 NOTE: (Number determines how many blanks appear below*)

*ACT I,	SCENES	3	↓	PAGES	"SCENE TITLE"	
	SCENES	1		25 - 74	"Barristers? It's quarter past!"	
		2		75 - 138	"Rigamarole?"	
		3		139 - 183	"Aunt! Now I haven't done..."	
*ACT II,	SCENES	5	↓			
	SCENES	1		184 - 210	"Cockling?"	
		2		211 - 243	Nocturne	
		3		244 - 261	"She's asked for you"	
		4		262 - 285	"That's the trouble with solitaire"	
		5		286 - 311	"So the days go by"	
Introduction or Prelude?	Yes	↓		1	1 thru 24	"Introduction"- memory
Epilogue or Postlude?	Yes	↓		1	312 - 317	Postlude

SHOW SETUP

CALENDAR

UPDATE

ARCHIVE

REPORTS

EDIT

PRINT ACTIVE WINDOW

Figure 15 – Show Set-up Completed

After completing the show set-up form, the director returns to MAIN MENU and clicks on CHARACTER BAR to assign an icon for each role or character in his show.

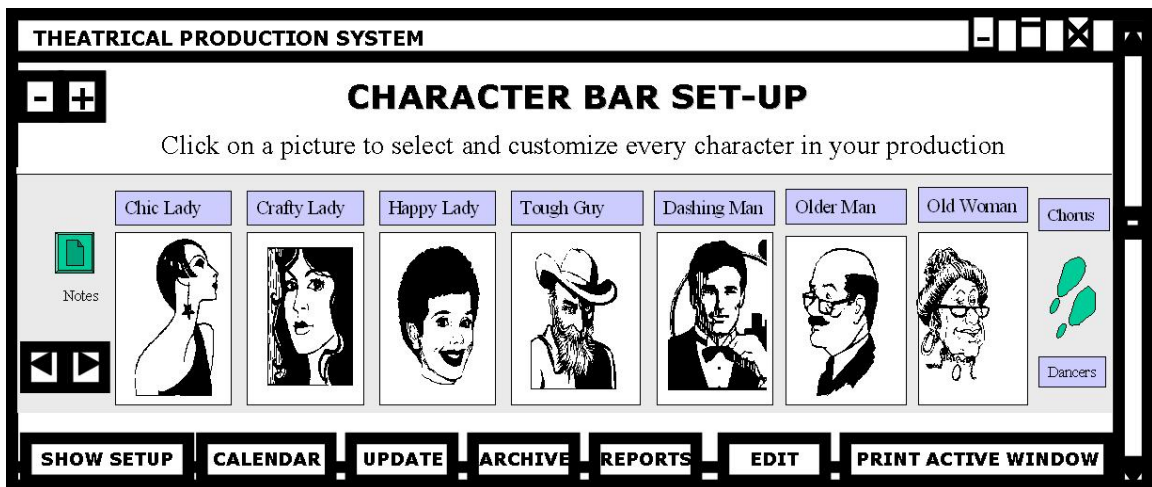



Figure 16 – Character Bar Set-up

After selecting an icon the director will fill in details (measurements, groupings and conflicts) for each character (actor). He consults his opera score; he has ten major characters in his opera. He clicks on the *Older man* icon and sees Figure 17.

THEATRICAL PRODUCTION SYSTEM


CHARACTER BAR



Activated

Grouped

Brief Description



Costume Measurements

Gideon March

LITTLE WOMEN by Mark Adamo

Bass-Baritone: Father of Jo March, husband to Alma. Doubles as Mr. Dashwood. Middle-aged man (Equity)

(Full k) COSTUME CONTACT INFO:
By Authority Access Only

Cast Member's Name: (Last, First)	Height:	Manager:
Phone #:	Weight:	Agent:
Email:		Conflicts:

***GROUP WITH WHOM?**

Spouse -

Child -

Other: Barbershop quartet

WHEN?:

SCENE 1 2 3 4 5 6 7

Act

|

||

|||

Costume Tracking

Rental

Create

NOTE: After Initial Set-up only the characters that are activated will appear in Characterbar later

Figure 17 - Character Bar Details

The director has typed in the name *Gideon March* where the generic name, *Older Man* had been. A red checkmark in the character bar indicates that the picture or icon is activated. Before going further, the director looks up *Grouping* in the User's Guidebook.

Details: Grouping And Costuming

On stage, directors often *group* actors together into family units. Large groups of people on stage are easier to choreograph when they are separated into smaller divisions. These family groupings give a sense of realism to crowd scenes. Musicals often have small groups of people who regularly appear together, such as quartets or trios. *Artisterené* has a special feature that allows a director to group these sets of characters scene-by-scene. This *grouping* feature makes scheduling rehearsals, blocking (choreography) and communicating with cast members faster and easier throughout the production process. The feature is also helpful to the costumer, because it alerts him to

potential costume coordination opportunities. *Artisterené* is compatible with several costume *pattern making* programs. With *Artisterené*, the measurements for each principal character may be entered into the character description section of the CHARACTER BAR after auditions and accessed remotely by the costumer. Long distances will no longer be a hindrance to production practices. Having character details present in the show-specific database is also useful when costumers need to disseminate information to the cast on forms such as Figure 18 - Costumer Actor List for Dressing Rooms, and Figure 19 - Scene Costume Plot.

ACTOR'S NAME #12			
Act/Scene #	Character	Items	
DRESSING ROOM:			
I-1	Crowd	Yellow print dress Yellow sweater White pumps Hose Wig - black shoulder length Purse	
SR VOM:			
I-2a	Press	Add:	Green coat Grey Beads Green feather hat Wig into pony tail
STAGE RIGHT:			
II-2	Maid Two	Lose:	All but hose
		Add:	White dress White shoes White head band

Figure 18 – Costume Actor List for Dressing Rooms

This form helps the backstage crew track the distribution and retrieval of costumes by dressing room order. The Costume Actor List for Dressing Rooms is utilized before and after dress rehearsals as well as during performances.

COSTUME PLOT				
COSTUME PLOT				
Act One, Scene 4				
HARRY:				
Maroon, solid-colored smoking jacket				
Dark gray flannel slacks				
White negligee shirt - no tie				
Plain brown socks				
Dark brown loafers				
TOM:				
Brown tweed suit				
White shirt, button down collar - bow tie				
Argyle socks				
Dark brown oxfords				
DICK:				
Dark blue worsted suit				
Light blue shirt - white line				
Black and crimson striped four-in-hand				
Dark socks				
Black oxfords				
Char- acters	ACT I		ACT II	ACT III
	Scene 1 Living Room	Scene 2 Bedroom	Hunting Lodge	Living Room
JOHN	Dinner Jacket	1. Pajamas 2. Suit	Tweeds	1. Dinner Jacket 2. Smoking "
MARY	Evening Gown	Nightgown & Robe	1. Traveling Suit 2. Slacks, Jacket	Evening Gown (Blue)
ANN (Maid)	Uniform (Black)	Uniform (Same?)	XXXXXX	Uniform?
JEEVES (Butler)	Uniform	XXXXXX	XXXXXX	Uniform

Figure 19 - Costume Actor Plot

In the planning stages of production, a Costume Actor Plot Form is necessary for costumers making or gathering costume pieces for each character.

Scenario (Continued)

Once the director designates and / or groups his characters in the CHARACTER BAR SET-UP (Figure 16), he has created virtual characters. Henceforth, the director can contact, block, or schedule cast members by clicking on their character icon in the CHARACTER BAR.

The show selected has music in it (opera), and the director is asked to enter the measure numbers from each page of the score. For each corresponding SCENE, PAGE, or MEASURE, the director can click and drag an icon to where that character is supposed to enter or exit the stage (ENTRANCES & EXITS).

LITTLE WOMEN

Gathering Grove Opera
Producer: Jim Gray
Director: Mark Powell

Click on Character Bar to select Characters. Only active, designated characters appear here. Select image and place where he / she is on stage.

PROLOGUE

Scene names, Pages and Characters are already in database.

Sop 1

Sop 2

Alto 1

Alto 2

Jo March

Laurie

Gideon

Celia

CHARACTER BAR

SCENE	PAGES	MEASURES	ENTRANCES & EXITS				
<i>"Quartet Dream"</i>	1	1 - 4	S1	S2	A1	A2	(Jo Enters)
	2	5 - 8					
	3	9 - 12	↓	↓	↓	↓	(Laurie Enters)
	4	13 - 14	↓	↓	↓	↓	↓
	5	15 - 17	↓	↓	↓	↓	↓
	6	18 - 26	↓	↓	↓	↓	(Quartet Exits)

Figure 20 – Show Set-up Pages and Entrances

The director is ready to begin the show calendar after creating the entrances for each character. He clicks on CALENDAR from the MAIN MENU.

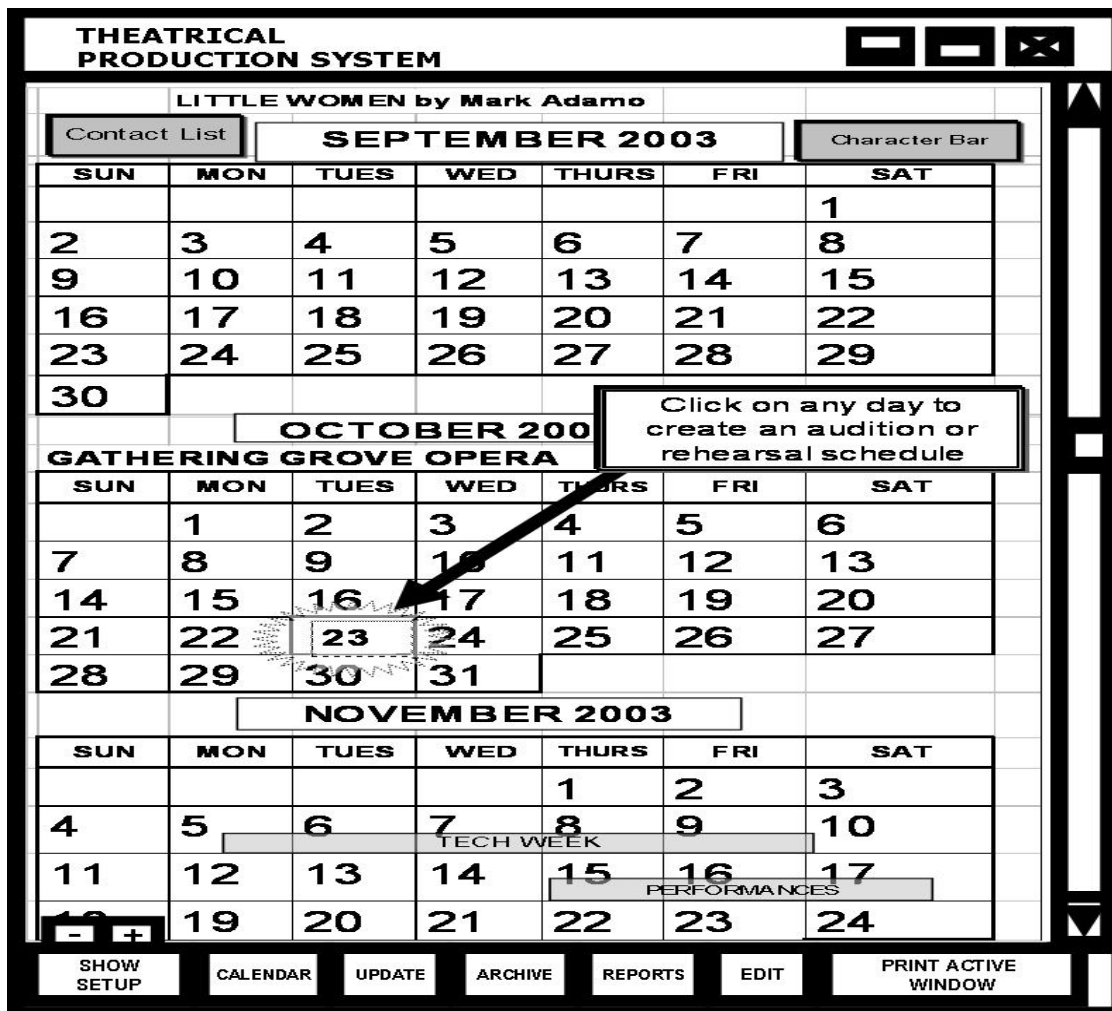


Figure 21 – Calendar

Calendar formats are available in monthly, weekly, or daily views ordered by either character, theatre, act, scene, rehearsal or performance hall. The director clicks on a day in the CALENDAR, (Oct. 23rd) to schedule or to view the details of a rehearsal or a meeting for that day.

Once a day is selected from the calendar, Figure 22 – Scheduling Rehearsals appears.

REHEARSAL SCHEDULE FOR LITTLE WOMEN		
TIMES	NOTES	PEOPLE
7:00 - 7:15	Set-up stage	Dir. Stage Mgr.
7:30 - 7:45		MEG MARCH
8:00 - 8:15	ACT I, Scenes 1 & 2	Laurie Jo March
8:30 - 8:45		Conflict flagged! Scheduling can't occur
9:00 - 9:15		
9:30 - 9:45		

CONFLICTS PAGE		FLAG!!
PERSON:	Renee Sokol	Time(s) unavailable
CHARACTER:	MEG MARCH	October 23rd, 2003
CAUSE:	Family Reunion	7:00 - 8:00 PM

Sop 1	Sop 2	Alto 1	Alto 2	Jo March	Laurie	Gideon	Celia

CHARACTER BAR

Figure 22 – Scheduling Rehearsals

The director selects the fifteen minute time increment option for his rehearsal by clicking on the icon in the top left corner (TIMES). Under NOTES (beside TIMES), the director clicks which scenes to rehearse from the show database. He has the option of choosing his attendees from the CHARACTER BAR (bottom of Figure 22), or the CONTACT LIST (Figure 23). Figure 22 shows the open CHARACTER BAR to create a schedule. When the director tries to schedule Meg March, a red flag and a CONFLICTS PAGE appear. The program will not add Meg at 7:30 due to a pre-existing conflict added

in the CHARACTER BAR earlier.

If a character is *grouped* a prompt box will ask if the rest of the group needs to follow. If the director selects YES, all members of that group will automatically be scheduled together at one time. Cast and crew may view schedules in multiple formats. They can also print or send notes, replies, or calendar pages to a few or everyone on that schedule. Changes can be made, revised, or emailed with the click of a button. Figure 23 shows a pop-up view of a CONTACT LIST that the director uses to schedule non-performers for rehearsals or meetings (see Figure 22 on previous page).

CONTACT LIST		(NOTE: Format for Contact List selected is "Name / Title View")
Group?	<div style="border: 1px dashed black; padding: 2px; display: inline-block;"> MEG MARCH - </div>	<p>By selecting a name in the Contact List or a picture in the Character Bar you can simply drag and drop onto rehearsal schedule above to create your own accurate, customized rehearsal & calendar schedule.</p>
ADMIN	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> REHEARSAL ACCOMPANIST 1 </div>	
STAGE DIRECTOR - Mark Powell	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> REHEARSAL ACCOMPANIST 2 </div>	
PRODUCER - Jim Gray	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> LAURIE </div>	
CAST		
JO MARCH -		

Figure 23 – Scheduling Contact List

Once the STAGE SHAPE, CHARACTER BAR, SHOW SET-UP, CONTACTS and basic CALENDAR sections have been entered, the animation part of *Artisterené* is available. Users will ultimately spend most of their time in the animation portion of the program. Mark Powell clicks on BLOCKING from the MAIN MENU.

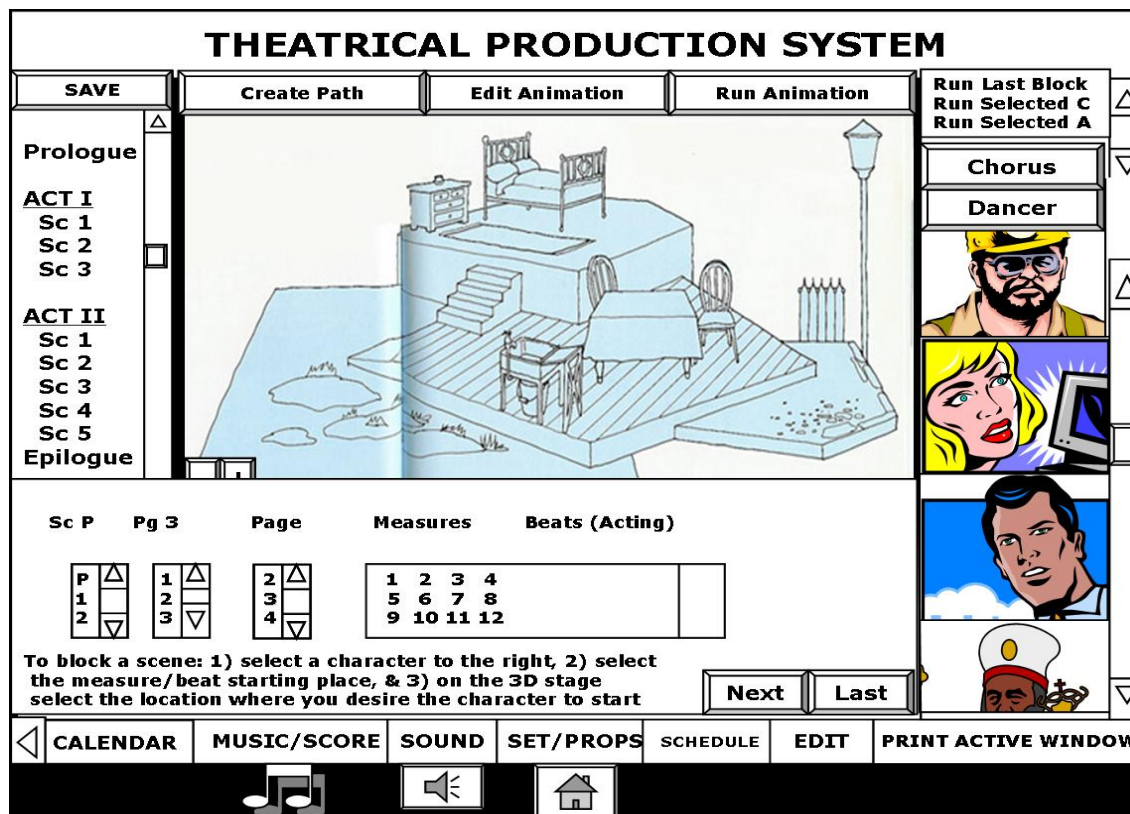


Figure 24 – Main Animation Screen

The show-specific information (such as acts and scenes) is already available (left side), revealing one of the benefits of having a centralized database. The animation controls for blocking movement are on the top of the screen.

The director clicks on the Prologue (left) and a three dimensional picture of the set design for the Prologue appears in the center of the screen. This graphic model was uploaded from an AutoCAD program into *Artisterené* by the Set Designer in Florida. The CHARACTER BAR is open (right) and reveals only the characters that appear on stage during the Prologue. Mark selects a measure number for a movement to begin, (bottom center) and then clicks CREATE PATH on the Toolbar at the top. With the mouse

(cursor) he traces the path he wants the character to take, and then he selects the measure number by which the character should arrive. He clicks SAVE (top left).

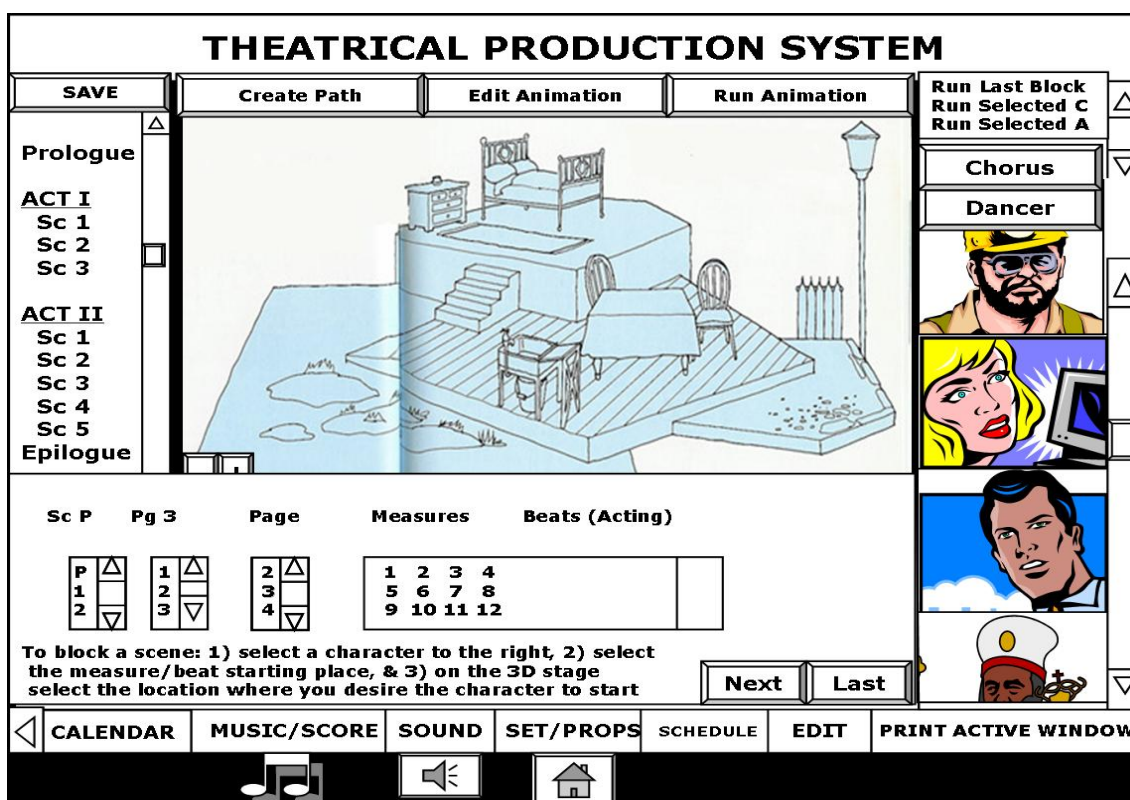


Figure 25 – Main Animation Screen

To replay the blocking, Mark clicks RUN LAST BLOCK (top right) and an animated, color-coded character moves across the virtual set in the path described. He reviews animations in two ways: according to the tempo or the viewing angle he selects. Once a scene has been blocked, animations may be played back from multiple perspectives, from the audience floor, the theatre's balcony, the side aisles or from directly above. The director chooses a bird's eye view (Figure 26).

Details: Master Lists and Plots

Every production department must provide lists of what materials and/ or actions are required for a show. These master lists are given to the stage manager to add to the master prompt script. In *Artisterené* cues may be taken from the Master Cue Lists by clicking on the CUE INSERT FROM MASTER PLOT button (see Figure 26). This function will work only if the Master Plot or Master Cue List has already been completed by the appropriate production team. Cues can linked to the Master Cue Lists and overlaid directly onto the script or musical score for calling the show. Figures 27, 28 and 29 are examples of three partial Master Sound Lists: Requirements, Plot, and Cues, respectively, from a 1997 show, *It Had to Be You* which will help to explain the process.

SOUND REQUIREMENTS LIST	It Had To Be You	So. West & West Coast Tour 1997
GFI Production		
Producer/Director: Paul Blake (213) 555-1212 PSM: Sarah Johnston (818) 555 -4321		
(2) BODY MICS Mics & (1) SPARE - There are only two actors in the show		
REEL to REEL TAPE PLAYER or CD PLAYER - For playback of sound cues. We have cues recorded on both mediums.		
"Hot" MIC at SM's Consol.. w/ "ON" and "OFF" SWITCH (To be controlled by SM). As part of the play, the SM does dialogue with the actress on stage.		
<u>SPEAKERS</u> -The house speakers you use in your theatre. In addition:		
-ON STAGE SPEAKERS		
(1) speaker off stage left for dog barking cue.		
(1) speaker up stage right, behind set.		
(1) small speaker placed on set, stage right, for radio SFX and music cue.		
All speakers must work separate of each other, but must also be able to work in combination. In addition, sound played through house speakers must have ability to cross fade or dissolve into speakers on stage.		
PHONE RINGS through PHONE ON STAGE - There will be two phones on stage. The one placed on the desk at stage right will be the phone which rings. (See set floor plan included with this packet of information.)		
STAGE MANAGER'S COMMUNICATION from CONSOLE. - SM must have two-way communication with all technical departments and/or		

Figure 27 – Master Sound Requirements List Sample

The Master Requirements List (Figure 27) shows what is needed for the entire show. The Master Plot List (Figure 28) shows what is needed for each scene.

		It Had To Be You	
		SOUND SFX and Recording Reel to Reel & CD	So. West & West Coast Tour-1996 GFI Productions Producer & Director: Paul Blake
<hr/>			
ACT I		Scn. 1 (Limbo - on apron, front of house curtain)	
1.	p.7	Played during opening monologue On SM's cues	Record w/pianist, (3) versions of "Had 2 B U" theme - FULL version (16 bars) - CUT-OFF version (8 bars) - MULTIPLE version a. Fast tempo (4 bars) b. Jazzy (4 bars) c. Sweet (4 bars)
2.	p.7	End of opening monologue	TAO Music (See director, he has music on CD)
Scn. 1a (TV audition studio)			
3.	p.12	Theda meets Vito	"Had 2 B U" piano theme FULL version (16 bars), same as above
4.	p.14	Transition music from TV studio into Theda's apartment	"Had 2 B U" piano theme (4 bars), blending into.... Busy N.Y.C. Street (traffic horns, etc.) dissolve into....

Figure 28 – Master Sound Plot Sample

After a Master Plot has been created, production departments can get a feel for how intricate or involved each scene will be. Production managers provide a copy of the Master Plots to the director and stage manager. Once parties know *what* is involved, they organize *when* each thing will occur (see Cue Management, page 39). The backstage timing of a production can be an art form in itself. Usually the director establishes the overall placement of cues and rehearses their execution for flow and artistic effect. The stage manager coordinates the implementation of cues, once they have been set, by *calling the show* to the various production departments who have designed, gathered, or created the materials necessary. Master Cue Lists are carefully developed by each

production team (lighting, sound, props) from their Master Plot Lists (see Figure 28 for sound and Figure 30 for lights). Before *Artisterené*, cue lists were also given to the stage manager, but they could not be added permanently to the prompt script because they had not been tested for feasibility and effect during technical rehearsals.

SOUND CUES LIST		It Had To Be You	So. West & West Coast Tour - 1991
		GFI Productions	
		Producer /Director: Paul Blake, (213) 555 -1212	PSM: Sarah Johnston, (818) 555-4321
<hr/> <i>All CUES listed below are called by Stage Manager. Sound man responsible for controlling "on", "off", and "gain" for actor's mics and mics on stage.</i> <hr/>			
	ACT I, Scn. 1 (Limbo), Opening Monologue		NOTES
p.7	SQ 1 (3) Versions of PIANO THEME, "It Had 2 B U"		<i>(Continuous Play) !! NO STOPS !!</i>
p.7	SQ 2 TAG MUSIC at the end of monologue		<i>Short (15. sec.)</i>
	Scn. 1a (TV Audition Studio), Theda meets Vito		
p.12	SQ 3 "It Had To B U" piano theme		<i>Full version, (16 bars)</i>
	Scn. 2 (Transition into Theda's Apartment)		
p.14	SQ 4 (4 bars) of piano theme, "It Had To B U", blending into... NYC traffic SFX, dissolving into... "Deck The Halls w/Holly"		<i>Continuous play of cue, but on SM's cue, sound from house speakers X-fade to on stage speakers</i>
p.36	SQ 5 RUSSIAN DANCE (22 sec.)		<i>Next cue !! VERY QUICK !!</i>

Figure 29 – Master Cue List Sample

Figure 29 shows a Master Cue List created by a Sound Department. Consecutive cues are shown for Act I beside the appropriate page number of the score (left). They are named by department and order of occurrence, such as SQ1 for the first cue by the sound department.

With *Artisterené*, the user needs only to click and drag cues from the Master Cue List to the script or score. If a change is made to the original Master Cue List, it will be reflected on the script or score overlay as all cues stay linked. Figure 30 is another example of a Master Plot, from a lighting department instead of a sound department (Figure 28 – Master Sound Plot).

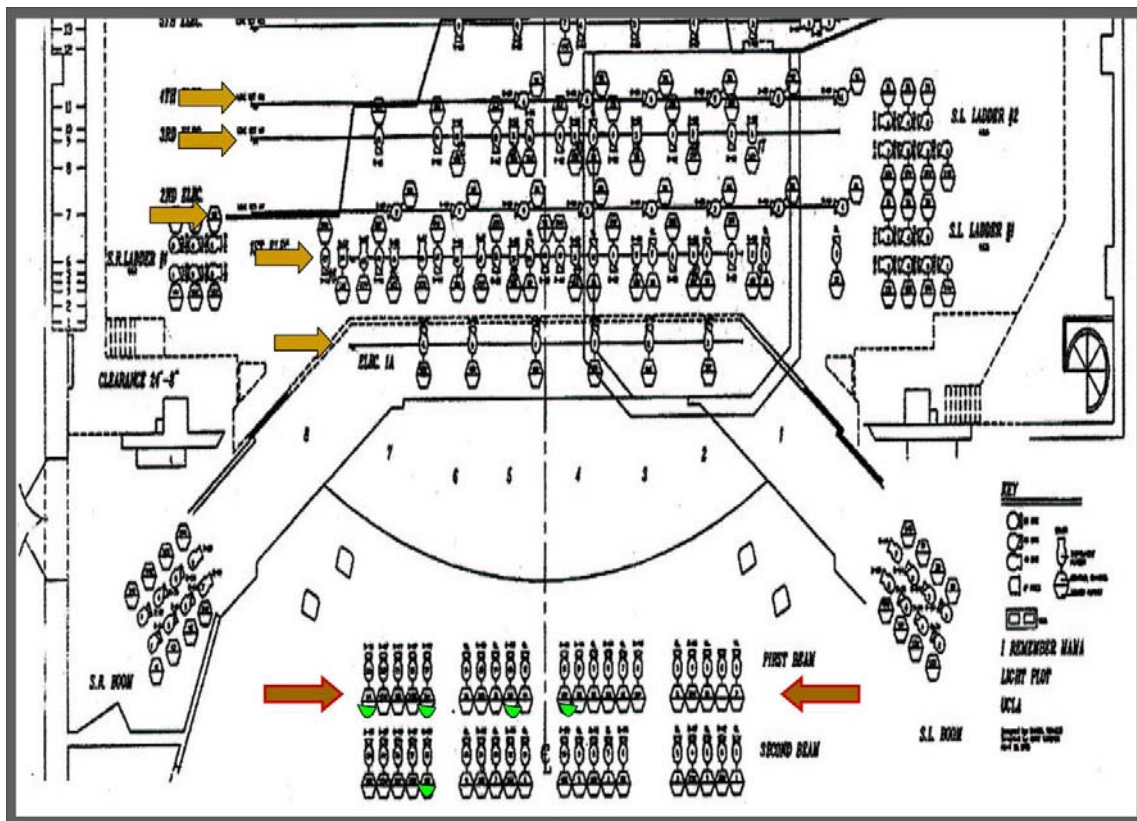


Figure 30 – Master Light Plot Sample

Figure 30 is a Master Light Plot created by a lighting software program (AutoCAD), which shows the stage from above with the front of the stage on the bottom. The top arrows point to five rails that are suspended above the stage with light fixtures

attached. These rails can be raised or lowered for access, but will stay in place for the entire show. Extra lighting can be created offstage from specials, side light poles (bottom left and right), or those shone from a booth or lift. All sizes and types of lights used in a show must appear on the Master Light Plot.

It is important for users to understand that *Artisterené* is not a design program. There are already plenty of sophisticated sound, set design, and lighting software programs available for theatre. The key to *Artisterené* is that it is capable of linking with pre-existing design programs so that information may be shared.

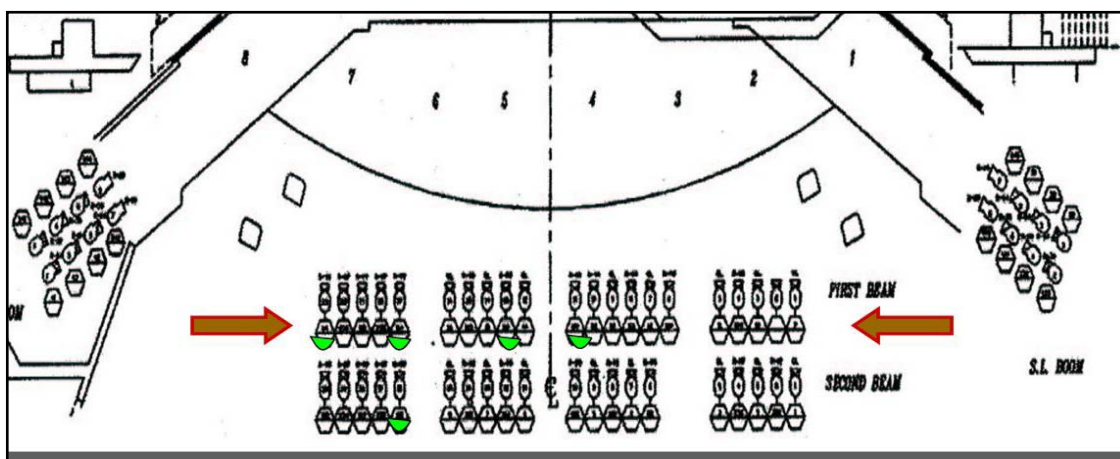


Figure 31 – Setting a Cue from a Master Light Plot

Figure 31 is a close-up of the bottom of Figure 30. The light fixtures shown in Figure 31 are in the order they appear on the first and second beams above the stage. Five lights have been selected on Figure 31 (with half-circles) for the opening of a scene in a play, *I Remember Mama*. The proper intensity and mood for this scene has been achieved with these five lights, and the lighting engineer is told to make this setting the

first cue. The lighting engineer needs to click SAVE and assign a cue number. Once a number is assigned on a digital strand light board, only one “GO” button on a light console needs to be clicked to trigger each preset, whether it be five lights or fifty. *Artisterené* can take this technology one step further. The director can click selected settings from the Master Plot List (Figure 30 and Figure 31) and transfer the information to a master cue sheet maker within the *Artisterené* database. Once a master cue sheet is created, the director may open the Main Animation Screen (Figure 25) while the master cue list is open. By clicking and dragging cues, he may insert cues directly onto a scrolling script or score without having to hand write anything (see Figure 32).

LIGHT CUES		I REMEMBER MAMA Instrument Schedule				GEL	
NO	POSITION	CHANNEL	DIMMER	CIRCUIT	TYPE	COLOR	FOCUS
1	2ND BEAM	1	17		20ERS	CL	AREA 1 COOL
	2ND BEAM	231	18		20ERS	R-07	LEAF GOBO 1 & 2
	2ND BEAM	2	19		20ERS	CL	AREA 2 COOL
	2ND BEAM	232	20		20ERS	R-07	LEAF GOBO 3 & 4
	2ND BEAM	3	22		20ERS	CL	AREA 3 COOL
	2ND BEAM	101	23		20ERS	R-99	AREA 1 WARM
	2ND BEAM	4	24		20ERS	CL	AREA 4 COOL

Figure 32 – Creating a Master Cue List

Figure 32 shows the first part of a cue list that was generated from a Master Light Plot List (Figure 30 and Figure 31). Since the Master Light Plot List must include every type and model of light fixture, gel color and shape, using it to generate an automated cue list that can be superimposed onto a script or score makes sense. *Artisterené’s* quick cue creation replaces the hand written prompt script and speeds up the production process.

Details: Note Taking and Reports

Clear note taking during rehearsals is important. During a rehearsal the director might decide that the down stage, left, sound speaker needs to be removed before the next rehearsal. From the Main Animation Screen (Figure 33) he should click on an icon (bottom) for the department affected by the note, in this case, the Sound Department.

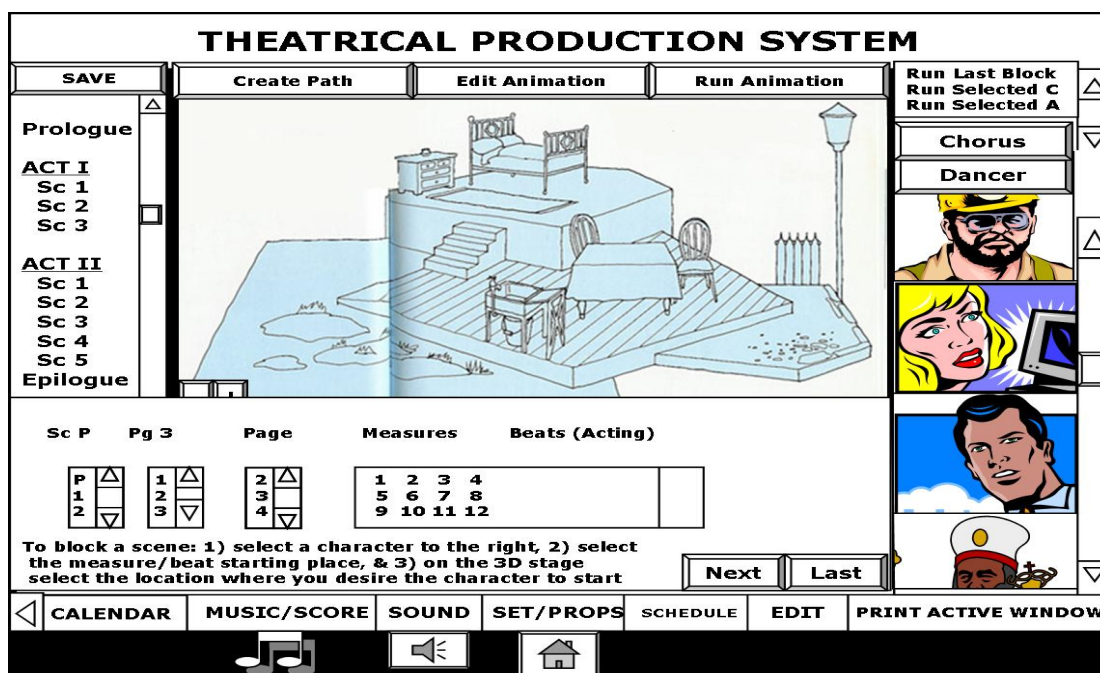


Figure 33 – Main Animation Screen, Rehearsals

Once the musical notes (for Sound) button has been clicked, a pop up box for notes appears and reminder notes may be typed without closing the program. An hour later, another note needs to be written to add another hand mirror for the character, Max.

Set / Props/ Scenery notes can be added by clicking on the house icon (bottom).

Notes are categorized and saved in the show-specific database and can be retrieved in multiple formats. Figure 34 is a sample rehearsal report created by *Artisterené* showing notes that have been accumulated for a week of rehearsals. This report is automatically generated and can be edited for production meetings.

PRODUCTION: CANDIDE		Day: WED.
Rehearsal # 37		Date: 5/15/91
Location: PLAYHOUSE STAGE		
Stage Manager: V.K. for C.K.		
Rehearsal Start	7:30	Costumes: Cunegonde needs scarf for "Glitter & Be Gay". Old Woman's fruit hat needs adjustment.
Rehearsal Break	11:00	
Rehearsal Start	:	
Rehearsal Break	:	
Total Rehearsal Time	3:30	
Rehearsal Notes: 1st Tech – Act I Will continue Act I tomorrow		Lights: Dress electrical cables S.L.
		Properties: Body bag needs repair. Need new hand mirror for Max.
		Scenery: Fix axle on large cart. Cut projection screen. Raise casters on cash register.
Fittings, etc:		Sound: Speaker hanging from D.L. platform needs to be removed.

Figure 34 – Rehearsal Report

Details: Handheld Devices

Production managers are able to interact with *Artisterené* through the use of hand held interactive devices, such as Personal Desk Assistants (PDA's). During rehearsals the director may use a portable hand-held unit to enter and edit his blocking and notes. The

set designer may use a portable unit to make changes. At the end of the day, all hand held devices can be uploaded to the main system and any changes made can be available to all production personnel by the next day.

Details: Subscription Services

The *Artisterené* system is made up of a software package that is able to link to a monthly, online subscription service. The regular package assigns access codes to users granting them limited rights to online scripts or scores database (per show subscription fee included). The regular package is sold as a self contained unit with hand-held units available separately. The deluxe model of *Artisterené* is for larger institutions, universities or professional companies. The deluxe software program is sold once, while an Internet subscription service fee is billed monthly. Having a monthly subscription service enables users to access current, theatrical databases specifically created to help with the planning, rehearsing, performing, and / or archiving of a theatrical or operatic production.

The *Artisterené* software company creates and maintains multiple databases related to theatre and opera that are updated regularly. Links to the *Artisterené* homepage can be accessed from the major service organizations for theatre and opera on the Internet.

Each bullet listed below is a separate database.

- Rentals (availability, cost, delivery, cleaning of costumes, props or sets)
- Scripts - digital versions (text) or Scores (music)
- Advice and technical support for novice directors or stage managers
- Historical, educational or background notes on theatres, plays or operas

- Suppliers
- Contacts (professional database of performers, directors, producers, crew)
- Agents / managers (Who represents whom)
- Crews (equity, non-equity)
- Venue, theatres across the country (audience, geographic, legal)
- Touring show (Storage or technical characteristics of theatres)
- Service databases (food, restaurants, boarding, rental, health, transportation)

End Of Scenario

In review, this SCENARIO revealed a software system made up of three major, integrated components. The first component synchronizes cues that have been extracted from master lists and superimposed onto the master script or score. The second module is an interactive, three-dimensional animation program for blocking. The third component is a secure online subscription service of theatrical databases (stage dimensions, technical capabilities, scores, scripts, contacts, etc.). The interaction of all three components creates an integrated system that manages the production process from beginning to end.

This software system could standardize the production process and reduce planning and rehearsal time. *Artisterené* could emerge as the universal format for sharing production data and could become the definitive teaching tool used to train directors and stage managers.

The *Artisterené* program links designers, engineers and directors (lighting, scenery, artistic, and sound) to each other, as well as to the cast and crew, regardless of physical distance. Versions of *Artisterené* could be available to lease or to buy. Theatres owning or leasing the program would be able to use the *Artisterené* system as an additional draw for marketing purposes.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Summary

Opera and theatre companies have many similarities with other businesses across the world. Each seeks ways to increase quality output with minimum expense, resulting in a profit. If a tool could be developed that would help opera or theatre directors communicate more quickly with other production designers as well as allow them to complete their staging and rehearsals in less time, they could focus on larger cohesion issues sooner. Technology is a tool that should be able to serve the production needs of an opera or theatre company: by increasing the speed and efficiency of the rehearsal process, by centralizing communication, and by the quality of long distance relationships between artistic design and creative performance venues.

Conclusions

PyGraphics, Inc. is as an example of a software company that has already paved the way by proving that a reduction in excessive paperwork and rehearsal time is enough to justify the use of their software in educational programs across America. Based on the success of *PyGraphics, Inc.* marching band software, directors using *Artisterené* will save planning and rehearsal time for artistic and aesthetic exploration.(see Chapter V).

The creation of a new, uniform, computerized theatrical production system will address the weaknesses in the present system and potentially standardize directing and stage management curricula in education. Handwritten blocking notation will be replaced with graphic animation, synchronized to the score or script and edited or played back on PDA's during the rehearsal process. Performers accessing *Artisterené* will be able to view animations of their potential blocking on a virtual stage before and during rehearsals as a quick reference or as an alternate learning tool. Status printouts and reports can be accessible to designers, cast and crew after changes are downloaded nightly from hand held PDA's for quick review and planning purposes.

With efficient communication and more available time, higher levels of performance and artistic achievement could be reached in theatre. Multiple databases linked into *Artisterené* per a subscription service would provide a network of income for many service-oriented companies while benefiting theatre. In art and business, higher standards of production attract a larger talent base (employees) and raise the reputation of an overall performance program (the company itself). Quality management and production raises profits and sales. A tool that can help raise the reputation of a theatre, draw higher levels of talent, standardize the production process, reduce the wasting of its resources, and pique the public's interest is worth investment.

Plays, operas and live shows (musicals, revues, talent shows or pageants) can be staged and directed more efficiently with *Artisterené* by small theatres or non-profit groups overwhelmed with the organization and paperwork of the present system. Potential home versions of the software program can let stage directing become more

easily accessible to the public as an art form. This software will easily function as an interactive directing program. *Artisterené* can advance theatre one step into the future by altering the entire paradigm for theatrical production by blurring reality and fantasy in a “3-D staging game.”

Competitions could be held at festivals for the best virtually staged versions of plays, operas or musicals. Entrants would actively participate in creative theatre production. Entries could come from anywhere on the planet with access to the Internet, and access to a version of the *Artisterené* software program. Winning versions would be produced in the physical, real world with a large production company as a reward, which would establish incentive to use the program. Besides efficiency, one of the goals of the *Artisterené* system is to inspire the public to participate more actively in the performing arts. More accessibility and active participation engender appreciation and interest. If *Artisterené* became a standard for theatrical production, instructors could challenge students of all ages to create virtual productions. One assignment might ask students to digitally place famous actors or singers into historic plays for educational re-creation purposes.

Time is of the essence for this project. Advances in technology are sweeping across the country, practically overnight. The cinema and film industries are focusing on amazing three dimensional animation technologies (*Shrek2* and *Polar Express*), and digital video game programs are so commonplace they even appear on cell phones. The keys to success lie in the ability to produce the first blocking module swiftly. The creation of a virtual software program would set a standard for the stage production

process from beginning to end and would have the potential to revolutionize current staging and directing methods. Finally, the author is proud to note that The University of North Carolina at Greensboro supports the concept of *Artisterené* to the point that it purchased the provisional patent for the *Artisterené* system. At present, investment and management backing is being sought to put the software creation process in motion. This software program could serve as a foundation upon which technology may be used to advance stagecraft in opera and theatre in the twenty-first century.

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APPENDIX A
CONFIDENTIALITY AND NONDISCLOSURE AGREEMENT

Before a provisional patent was acquired, anyone who was told about the software concept that is now referred to as *Artisterené*, was asked to sign a nondisclosure agreement. Over a two-year period the software program went by several code names: Opera Palm Pilot, Opera Hand Held, Virtual Stageware Manager, and ITP3 (Integrated Theatrical Production Process Program).

A copy of the blank form that was used to preserve intellectual copyright is followed by five, signed, nondisclosure agreements. Pre-patent, disclosure occurred on a very limited basis. The professional advice received by the potential investors, computer programmers (databases and animation graphics), technology consultants, and marketing professionals who helped to confirmed the feasibility of *Artisterené* in its planning stages, were instrumental in helping the author shape the final core concept.

CONFIDENTIALITY AND NONDISCLOSURE AGREEMENT FORM

WHEREAS, Renee Janette Sokol agrees to furnish _____ certain confidential information relating to ideas, inventions or products for the purposes of determining an interest in developing, manufacturing, selling and/or joint venturing;

WHEREAS, _____ agrees to review, examine, inspect or obtain such confidential information only for the purposes described above, and to otherwise hold such information confidential pursuant to the terms of this Agreement.

BE IT KNOWN, that Renee Janette Sokol has or shall furnish to _____ certain confidential information and may further allow _____ the right to discuss or interview representatives of Opera Hand Held (Virtual Stageware Manager) on the following conditions:

1. _____ agree to hold confidential or proprietary information or trade secrets ("confidential information") in trust and confidence and agree that it shall be used only for the contemplated purposes, shall not be used for any other purpose, or disclosed to any third party.
2. No copies will be made or retained of any written information or prototypes supplied without the permission of Renee Janette Sokol.
3. At the conclusion of any discussions, or upon demand by Renee Janette Sokol, all confidential information, including prototypes, written notes, photographs, sketches, models, memoranda or notes taken shall be returned to Renee Janette Sokol.
4. Confidential information shall not be disclosed to any employee, consultant or third party unless they agree to execute and be bound by the terms of this Agreement, and have been approved by Renee Janette Sokol.
5. This Agreement and its validity, construction and effect shall be governed by the laws of North Carolina.

AGREED AND ACCEPTED BY:

Date: _____

By _____ Witness: _____

Title: _____

APPENDIX B

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<u>Figures in Dissertation</u>		<u>Page from <i>Stage Manager</i></u>
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ELSEVIER

09 August 2005

Our ref: HG/HDN/AUG05/B011



Ms Renee J Sokol
49 Foxfire Drive
Bracey, VA 23919
USA

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USA

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APPENDIX C

STATEMENT OF RESEARCH PLANS

This stage management software concept has been shown under disclosure copyright law to three programmers, two music software inventors, and two technical writers. Based on the advice received from these professionals, the development process should occur in three stages or main modules. Proceeding in stages is beneficial to the potential investor in two ways. If module one is funded in good faith, less money is involved up front and the project can begin quickly. As each respective goal is met (the completion of module one, then two, etc.), investors would be more likely to feel that worthwhile progress is being made. With this strategy in place a WIN / WIN situation is made. Investors feel better about releasing consecutive monies because they will see progressively successful goals met at each stage of development.

THREE STAGES OF PROGRAM DEVELOPMENT

1. The first module / **blocking** (Animation - Gaming Programmer required)
2. The second module / **data** (Database Programmer required)
3. The third module / **workflow** (Program the Logic or flow of information)

The blocking module is the core of the stage managing software program. It may be created independently of the other two modules. After module one exists, three options are available for the remaining two elements.

First, the blocking module may be presented under disclosure to a commercial software company with ready-made database forms. These companies could see module one and be given the option to purchase or lease the patent. Second, companies could be given the option to form some sort of agreement for the subsequent development of modules two and three. The third option is open only if money is available through grants or private funding. If fiscally possible, modules two and three can be created from scratch, allowing potential profits to stay nearer to the source.

While the first module can be created independently and shown to investors or prospective developers, the second module or database design needs to be in place before the first module can be properly developed. The second and third modules go hand-in-hand, and need to be evolved together with one programmer on each module. Total estimated development time is one programmer per module for one year or 50 weeks of 40 hours a week, equaling 2000 hours each. The modules are divided between different types of programmers, so the cost information has been broken down into three segments with one programmer per module.

Developmental costs are estimated on the next page and include software, hardware and any networking costs that should be required to create the three modules. The project should last one year, assuming one programmer works on each module. Estimates from three regions have been taken for comparison purposes. The first region is the Triad area of Greensboro, Winston-Salem and High Point, North Carolina. The second comparison is taken from an average of rates for programmers from larger metropolitan areas such as New York or California, within the United States. The third

region comparison comes from Ram Sethuraman, president of *VirtuosoWorks* a company based in Chennai, India. He has worked as a high-level programming consultant in both the United States and in India for the past seven years. His team of programmers has just created a symphonic, composing music software program (released early 2005) subcontracted out of Greensboro, North Carolina.

It is assumed that properly skilled personnel in each area of programming can be hired at the rates estimated by the experts interviewed. The actual availability of qualified programmers is an unknown factor, but the figures provided are to be seen as a baseline comparison.

For a three person team in the United States, the lowest computer programming rates are \$30/hr for 2000 hours with a total cost equaling \$180,000 a year. However, expecting \$30/hr for a database (DB - module two) programmer is quite unrealistic. Going rates for DB programmers in the Triad area are often \$45/hr and typically closer to \$60/hr. In larger metropolitan areas DB rates begin at \$60/hr and frequently go up to \$100/hr. In a large city three programmers hired for 2000 hours, or one year, could easily charge \$600,000. Estimated rates for a Game programmer (module one) in the Triad begin around \$62/hr and go up to \$75/hr. For our purposes, however, the low rates of about \$45 hr/ for two programmers (modules two and three) and \$62 hr/ for a Game programmer (module one) brings the total to \$304,000. If the Game programmer charges \$75 hr. the total cost would rise from \$26,000 to \$330,000.

BREAKDOWN OF COST ESTIMATES

In Triad (United States):

Cost for the blocking module	(\$62/hr) =	\$ 124,000	
Cost for the data module	(\$45/hr) =	\$ 90,000	
Cost for the workflow module	(\$45/hr) =	\$ 90,000	
1x per month drive/ 130 Mi \$25	@ 12 trips =	\$ 300	Triad
Utilities \$250 a month	@ 12	\$ 3,000	
Office rental \$.07-.12 per sq. ft.	@ 12	\$ 12,000	
Phone/ Internet \$150	@ 12	\$ 1,800	
	Total	\$ 321,100	

In Metropolitan Area (United States):

Cost for the blocking module	(\$75/hr) =	\$150,000	
Cost for the data module	(\$75/hr) =	\$150,000	
Cost for the workflow module	(\$75/hr) =	\$150,000	
Travel 4 round trip tickets	@ \$460 ea.	\$ 1,840	
3 wks. Hotel / Expenses; 21	@ \$175 ea.	\$ 3,675	Metropolitan Area
Utilities \$350 a month	@ 12	\$ 4,200	
Office rental \$.10-.25 sq. ft. 2000	@ 12	\$ 24,000	
Phone/ Internet \$220	@ 12	\$ 2,640	
	Total	\$ 486,355	

A three person team in India:

Cost for the blocking module	(\$26/hr) =	\$52,000	
Cost for the data module	(\$31/hr) =	\$62,000	
Cost for the workflow module	(\$12/hr) =	\$20,000	
Travel 4 round-trips to India	@ \$2,500 =	\$10,000	
3 wks. Hotel / Expenses; 21	@ \$175 ea. =	\$ 3,675	India
Misc Expenses		\$ 2,300	
	Total	\$ 149,975	

COST COMPARISON AND SAVINGS OPTIONS

Conservative cost comparison for the three modules are:

\$ 321,100 if subcontracted through the Triad (North Carolina)
\$ 486,355 if subcontracted through a larger metropolis (NY, DC, or CA)
\$ 149,975 if subcontracted through programmers in Chennai, India.

Cost saving options:

- 1 with an extremely unrealistic estimate and no inclusions for software, hardware, network and office space: \$49,000
- 2 with an extremely conservative estimate and no inclusions for software, hardware, network and office space: \$109,000
- 3 with very conservative additions of software, hardware, network and office space of \$12,000 the savings is around: \$124,000

According to the comparison data the best option for the development of *Artisterené* is the company in India already familiar with music software development. A significant advantage for using *VirtuosoWorks, Inc.* in Chennai, India is that the infrastructure, facility and contacts are already in place. No additional start-up time or expense is necessary, so work may begin as soon as research funding is available. Contracting overseas would save approximately \$171,125 (more than half) from the equivalent potential costs if the same job were done in the Triad, North Carolina in the United States. The differences are more apparent (over three times) if compared to a larger city with total savings of \$ 336,380.