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DIGITAL SHADOWS

1. Scenography in the cultural landscape

The philosopher Socrates presented for debate the allegory of the cave. In this story he hypothesizes a cavern whose occupants have been chained since birth in such a manner that they can see only shadows on the cave wall. For them the shadows represent reality, being the only images they have ever seen. When later they are allowed to turn around and are confronted by the objects that created the shadows and the fire that created the light, they do not immediately accept them as being more real than the shadows. As they are exposed to more and more elements of the real world they must keep adjusting their threshold of belief.

Socrates intended this story to be a metaphor for the pursuit of knowledge and learning, but perhaps we can give it a more literal interpretation. Let us consider the shadows on the cave wall to be theatrical illusion, and the progression to greater perception of reality, the co-evolution of scenography and the audience's facility for embracing a theatrical visual language.

Theatre, like most art forms, reflects the surrounding culture and society. The subject matter of the play will typically reveal current events, contemporary political issues and social mores. Theatre production is commonly used as a forum for discussions of religion, mythology and history. Even when setting a play in a distant period, playwrights cannot help but infuse the piece with their own sensibilities, also shaped by their times. Even works that evoke no recognized period and instead concern themselves with more ageless, universal themes still bear an unmistakable stamp of the playwright's cultural identity.

Scenography also reflects aspects of the surrounding society. Advances in technology that affect other aspects of the prevailing culture show up in theatre practice, keeping it appropriate for the times. As a culture adopts new forms of communications, theatre artists adopt similar methods. Obviously, scenographers can only use the means and materials that are available to them, but moreover, by using contemporary media, they are communicating to their audience through a language that the audience has been conditioned to understand. The informational media of a culture defines the means by which theatre communicates to an audience. If the inhabitants of Socrates' cave have been conditioned since birth to accept the visual language of shadows, then shadows would be a suitable scenographic device for their theatre.

2. A Brief History of the Language of Scene Design.

At the beginning of western theatre, the ancient Greek culture relied heavily on spoken communication. The age is famous for public discourse and debate. The mythological and historical stories were well known, having been orally passed through the culture for ages. It is no surprise then that the Greek theatre relied on declamatory presentation. The innovation of the Greek chorus is an excellent example of how information was delivered in straightforward speech. The Greek Theatre also gave us the beginnings of scenography and some of the first scenic machinery. However, these scenic devices were not intended to communicate a great deal of information, but apparently provided only a general indication of comedy, tragedy or pastoral scenes.

Roman theatre was still based in a spoken tradition. Their scenography deliberately copied that of the Greeks, portraying basic themes of urban and rural landscapes.

During the middle ages, means of public communication and the collection and dissemination of information were largely confined to the activities of the church. Monasteries and cathedrals became libraries and forums for European society. Once again theatre mirrored the media of the time. Secular theatre was often outlawed but theatre depicting liturgical themes could be performed, often inside the cathedrals themselves. The mansion staging and pageant wagons of medieval theatre often closely resembled cathedral architecture. Costumes were patterned on ecclesiastical garb of inspired by the illustrative figures in stain glass windows and cathedral sculpture. Here again, theatre staging was using the visual language of the contemporary society.

During the Italian renaissance, art and science combined to develop a popular visual medium, perspective painting. This technique provided a discernible step forward in the sophistication of visual communication and theatrical illusion. It was as if Socrates' cave dwellers had been introduced to a new form of shadow on the cavern wall. Stage designers such as Serlio and Peruzzi were quick to embrace the new tricks of perception. In fact, by contributing life-size rendering and incorporating some 3-dimensional units to frame the painting, they were able to greatly improve upon the technique. The audiences of the period were able to appreciate and understand the visual language presented on stage because it was consistent with the evolution of drawing and painting evident throughout their culture.
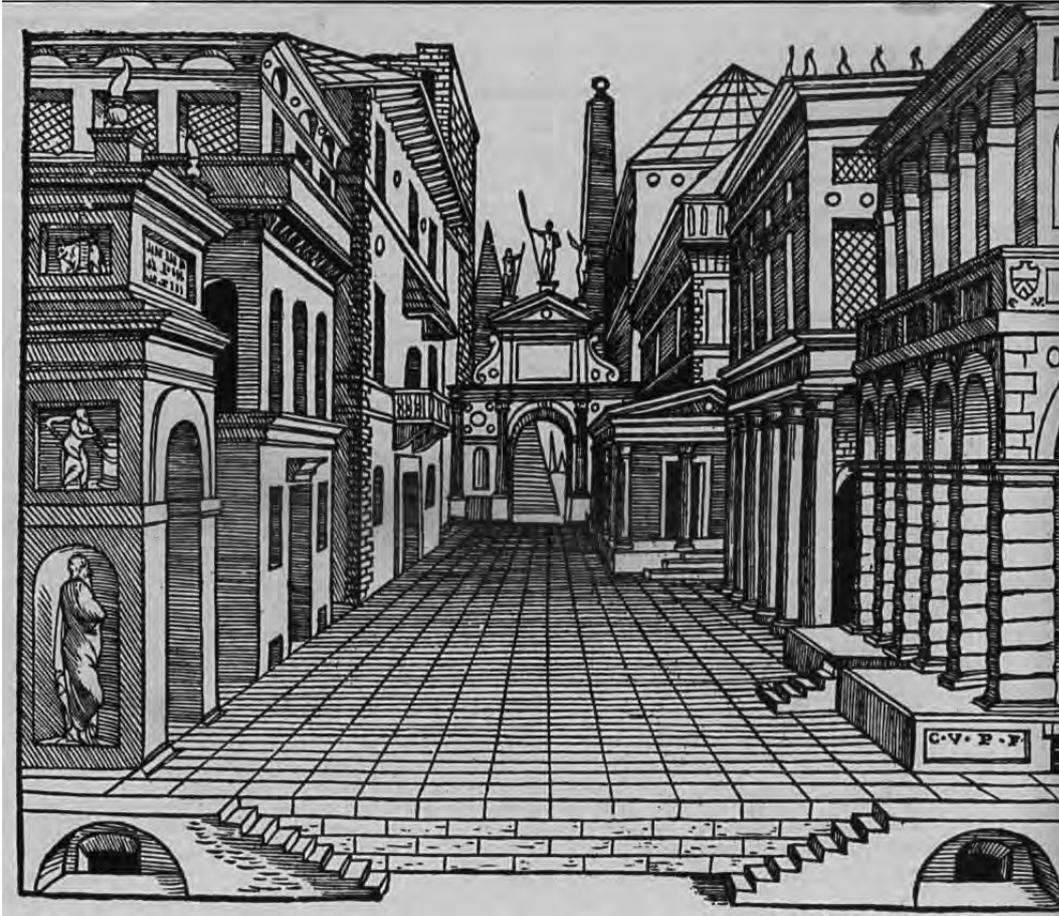
Serlio's tragiedy scene. From Serlio's Architettura, Book 2

In the Elizabethan playhouse of Shakespeare's London, the growth of increase in literacy and printed material may have reduced the influence of visual language. Shakespeare's plays, constructed similarly to the episodic novels of the day, contained to many scenes and changes of locale to be rendered with the available scenography. The outdoor playhouse did not have the scene changing machinery that was imported from Italian and found in many indoor theatres. Instead play production was once again forced to rely on spoken illustration. In the opening lines of Henry V, the audience is asked to use their imagination and rely on the descriptions presented in the text.

…Can this cockpit hold

The vasty fields of France? Or may we cram

Within this wooden O the very casques

That did affright the air at Agincourt?

O'pardon! Since a crooked figure may

Attest in little place a million,

And let us, ciphers to this great acccompt,

On your imaginary forces work…

Think when we talk of horses, that you see them

Printing their hoofs I' th' receiving earth;

For tis' your thoughts that now must deck our kings,

Carry them here and there, jumping o'er the times,

Turning th' accomplishment of many years

Into an hourglass…

In the centuries that followed, new printing technologies made etchings and color reproductions widely available to the average consumer. Newspapers carried visual reproductions of important events and persons. Simultaneously, scene painting increased in complexity and sophistication. Multiple point perspective and improved materials once again raised the realism of theatrical illusion. Innovations in stage lighting also served to enhance the illusions, making them more believable and emotionally potent.

The latter half of the nineteenth century saw the invention and popularization of photography. Once again a giant step in visual communication paved the way for a new scenography. Scene painting, which had seemed so realistic only years before, now seemed artificial and outdated. To match the realism of photography, the art world soon embraced the movements of realism and naturalism. In the theatre this meant that the stage settings would 3-dimensional and made of the materials of everyday life. Dramatic literature took a corresponding turn and gritty realistic themes and language took the place of poetic verse and declamatory acting. In keeping with the analogy to Socrates' cave, theatre audiences were removed from the shadowy illusions and allowed to confront elements of the real world.

Realistic scenography for Ibsen's *Rosemerholm* at the Norwegian National Theatre, Oslo 1906

In 20th century more great technological leaps led to even greater expansion of our visual vocabulary. With film and television, realistic action was added to photographs and the believability of the illusion was increased again. Later, color was added to the formula. These technologies synthesized most of the visual tools of the past by combining realistic detail, perspective, color and motion.

The most recent development in visual communication is digital technologies. With the aid of computers we can now produce images that rival the realism of photography and cinematography with out the need for corporeal, photographable, subject matter. This means that artists can create images of objects that do not, or can not, exist in our physical universe. This freedom opens new avenues for artists to create representations of fantasy or mythological themes. It also creates a bridge between the clarity of realism and the emotion evident in other artistic movements such as abstract expressionism, symbolism o impressionism.

Digital imagery has become pervasive in the visual language of our culture. Film, television, advertising, print media, theme park attractions, computer entertainment and internet content are all created with similar technologies and techniques. The difference between these various media lies more in the method of delivery than in the means of creation. Now, thanks to advances in processor speed and mass marketing of software, the average computer user has access to the same digital imaging previously available only to Hollywood blockbusters.

3. Training the Suspension of Disbelief.

It is important to remember that the cultural visual language was accepted as being a convincing representation of reality. Historic scenic practices seem quaintly naïve to us from our modern perspective. But, like the shadows on the cave wall, if the current illusion is all the observer has ever known, it will be accepted as reality. Renaissance writers recorded their amazement at seeing what seemed to be an actual street presented on stage. The wood and canvas stage effects of Baroque designer Bernini were allegedly so convincing "diarists recorded how, at Bernini's productions, people in the front row ran away, fearing that they would be drenched by water or burnt by fire, so powerful was the illusion he created."[1]

We can see the evolution of illusion even within our own century. Compared to today's computer generated and composited dinosaurs and space battles, the horror movies of the 1920's and 30s seem incredibly crude. It is hard to imagine anyone suspending their disbelief of Hollywood's original King Kong or Dracula but our grandparents can tell us of the sensation and the nightmares these films produced at the time of their premiers. Now feature film makers are in a race to continually top each other in the illusions they create. It will be interested to see if images in today's films appear as convincing to us in a decade or two.

In spite of the high degree of sophistication in modern visual language, the last century has revealed a disconnection between theatrical scenography and contemporary culture. As the masses embraced film and television, theatre artists saw those forms as competition and intentionally distanced themselves from them. In order to reestablish the unique value of theatre as a form of entertainment, thespians embraced their own history. Live performance was termed "the legitimate theatre" and its practitioners proclaimed it superior to the new media because of its long traditions. The problem with this position is that when theatre began to value history and tradition more than innovation, it lost the connection with the current visual language of the culture.

Modern audiences have been conditioned to accept information through electronic media, even to the point of discounting traditional media. People now get more news of the outside world through electronic media than from newspapers. Recent studies show that the American people watch approximately 3hours and 45 minutes 30 of television each day. This figure has dropped slightly in the past few years only because Americans are spending an additional 10 hours per week surfing the internet[2]. In addition, $6.7 billion dollars per year are spent on movie admissions[3] and an additional $6 billion is spent on computer games[4]. Several significant studies have shown that modern media-savvy consumers have shorter attention spans but are more capable of processing and understanding multiple streams of information at one time than their counterparts from earlier centuries. Television watchers are accustomed to having a narrative interrupted by unrelated information and then resumed. Most are capable of monitoring several channels at one time. Computer

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[1] Clark, Kenneth, *Civilization: A Personal View*, Harper & Row, New York,1969
[2] University of California, Los Angeles, Center for Communication Policy
[3] Hollywoodreporter.com
[4] Damuth Robert, *Economic Impacts of the Demand for Computer and Video Games*, Nathan Associates Inc

users utilize hypertext documents such as pages on the internet's world-wide web that promote the idea of linking a variety of information sources in a loose, non-linear manner. New digital novels exploit this idea to create stories with plot lines that can be reshaped at will.

To present such an audience with traditional scenography is to speak to them in a visual language they no longer use. Compared to the visual design of modern digital media it appears impoverished and simple-minded. People who have spent most of their day processing thousands of pieces of visual information are numbed by the prospect of being confronted by a few static images during 2-3 hours of theatrical performance. To justify the experience as part of a valuable historic tradition turns it into a museum piece created for a public long since gone. Furthermore, this argument is no longer valid. The majority of today's audience cannot remember a time when film and television did not exist. Film and television history are now fields of study in themselves. To them theatre history is no more intrinsically valuable than film history. Given that, the two fields can only compete on their production values. The new media wins the comparison by speaking to the audience in a language they find current and exciting. Socrates continued his allegory to theorize that once a cave dweller had been shown elements of reality he would lose any appreciation he once had for the shadows. Furthermore he would pity his former fellow-prisoners and "endure anything rather than think as they do and live after their manner."

4. A New Scenography

Fortunately, new theatre artists are stepping forward who also do not accept the premise that theatre must be inextricably tied to its historic roots. Almost 50 years ago, the noted stage designer, Robert Edmund Jones, wrote and lectured on the topic of a new scenography that would merge elements of film and live performance. As he put it; "The business of workers in the theatre is, as I see it, is to express timeless themes by means of the tools of one's own time."[5] His proposed technology would use cinematic elements to reveal the inner, emotional life of characters and other expressionistic functions.

Famed Czech designer Joseph Svaboda actually incorporated photographic and cinematic projections in his stage designs. His work inspired many designers to begin their own experiment with new media. The Prague theatre Laterna Magica has regularized the new stagecraft and made themselves a mainstay of the Czech cultural landscape.

In the past 20 years, new productions that used modern visual media were remarkable in their uniqueness. Because each experiment was created in isolation and with no established conventions to act as guide, any one production bore little resemblance to another. Eventually enough work was done to build a significant body of work. Groups have formed to document and archive new media productions. New journals have sprung up to disseminate information and the same

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[5] Jones, Robert Edmund, *Towards A New Theatre: The Lectures of Robert Edmund Jones*, Ed. Delbert Unruh, Limelight Editions, New York, 1992

digital technologies at the core of these experimental productions are providing new means of publishing the resulting data.

At the University of Kansas' University Theatre we have concentrated our efforts in the field of virtual reality. Virtual reality or VR is the practice of using computer generated models that can be manipulated in real-time. Unlike video or computer animations it is not prerecorded and so is unique to every performance. We are interested in this technology because it allows us to communicate to a modern audience and retain important characteristics that make live performance special and distinctive.

Our first VR enhanced production was a new treatment of ElmerRice's expressionist classic, *The Adding Machine*. In 1995 our tools and techniques were undeveloped, but the show represented a good start. We did make some significant advances in the use of stereoscopic projection, a technique that has remained an important part of all our following productions. Using seemingly 3-dimensional, computer generated, stereoscopic images allowed us to merge sophisticated computer technology with essential ingredients of theatre.

Our next experiment was Arthur Kopit's *Wings*. In this production we extended the scenographic illusion by presenting the CGI images in head-mounted displays worn by each member of the audience. 3-D images in the HMDs were superimposed over the audience's view of the live actors on stage. Wings represented an attempt to not only present a work in the current visual language of our culture but to help advance that language to a new level of sophistication.

In *Tesla Electric* by David Fraser we switched from VR, real-time animation to still images in order to achieve a higher level of detail and realism. Theses CGI images were also stereographic but lacked the motion and therefore was a reduction in the visual vocabulary that we had established in our earlier shows. While the show was generally successful, the increase in realistic detail was not great enough to justify the lack of interactivity.

Computer generated scenery in *Tesla Electric*, University of Kansas 1998.

Sophie Treadwell's *Machinal* and *A Midsummer Night's Dream* by William Shakespeare became our next productions. In each, new software and advances in computational power made it possible to increase the detail in the computer graphics while retaining real-time VR interaction. At this point, our visual languae has grown enormously and includes most elements curently availble to modern, digital, visual media. In Midsummer we began some preliminary steps in designing and using virtual characters. The 2001 production of *Dinosaurus* continued this experimentation with an entire cast made up of highbred characters. Human actors worked on stage and contributed voices while their dinosaur alter-egos filled the large projection screen behind them.
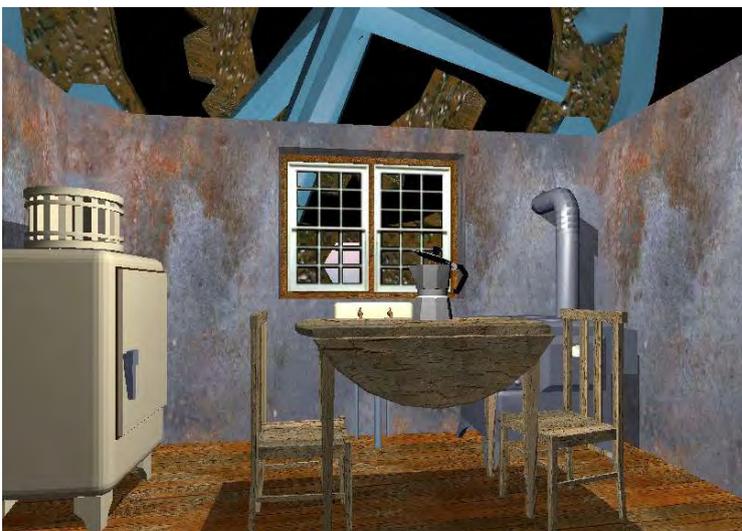
Virtual reality scenery for scene 2 of *Machinal*, University of Kansas 1999

Show photo from *Machinal*, University of Kansas, 1999

A computer generated sketch for *A Midsummer Night's Dream*, University of Kent at Canterbury, 2000

Our current project is a VR enhanced treatment of Mozart's *The Magic Flute*. This production is scheduled to be performed sometime in 2003. We hope to combine elements of virtual scenery and characters. The freedom of virtual scenography should be a wonderful media for representing the fantasy elements of this opera. This work is, of course, not new. But we will be attempting, to paraphrase Robert Edmund Jones, express a timeless theme by means of the digital tools of our time. We will be speaking to a modern audience in a modern visual language, creating the digital shadows for the cave wall that they have been conditioned to understand.