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Technical Theatre: Bridging the Gap Between Academic and Vocational Training While Preparing Students for Careers and Life

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TECHNICAL THEATRE: BRIDGING THE GAP BETWEEN ACADEMIC AND VOCATIONAL TRAINING

WHILE PREPARING STUDENTS FOR CAREERS AND LIFE

By

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Washington University in St. Louis
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A thesis submitted in partial fulfillment
of the requirements for the

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ABSTRACT

Most people do not realize that Technical Theatre even exists, and of those who do, not many realize the great potential that Technical Theatre programs have for reforming education. Through an examination of the basic history of education in the United States, as well as of the current trends in student preparation for careers and the workforce, it is clear that Technical Theatre offers an educational model that addresses many of the difficulties experienced in today's educational systems. By integrating the core subjects with hands-on learning, technical skills, 21st century soft skills, and both learner-centered and group-learning methodologies, Technical Theatre bridges the gap between academic and vocational training while also preparing students for jobs, careers, and life.

DEDICATIONS

To my parents, Bruce and Sylvia Morey, who have always provided me with

the necessary tools to succeed in whatever I wanted to do –

from musical instruments, calculators and power tools,

to love, support, and amazing role models,

I could never have done it without you.

To Mike Loui, for getting me into this crazy, beautiful world in the first place,

to the many others who have kept me in it,

and to my boyfriend Pete, for keeping

me sane throughout it.

PREFACE

Learning is a demanding task. It is a mental and physical change, an adjustment of the learner's mind, brain and body to the demands of the environment. In order to learn, a person must seek answers and not infrequently struggle to understand the unknown and unfamiliar. A person must summon forth all his knowledge and experience to understand and comprehend new information; he must relate the new information to what he already knows and reconcile new knowledge with old knowledge; and he must make the knowledge a part of his personality and being, weaving the new knowledge into the fabric of his mental existence. Each individual is, after all, the sum of his experiences and knowledge. Each person is therefore unique, the result of stimuli and happenings that no one else has experienced.

> Paul A. Zoch, *Doomed to Fail, "*Preface: Maybe If You'd Sing and Dance, We'd Learn This Stuff" – p. xiii

I have always been very passionate about learning, but I rarely ever loved school. In grade school and in high school I could not understand why we were learning information while doing nothing with it. Each subject matter was relegated to its distinct timeframe within the day, to be brought out and regurgitated as demanded by the clock, without any consideration for any of the other topics. Education seemed pointless.

For a brief moment near the end of high school I considered attending some sort of vocational or technical training program instead of a traditional liberal arts college, dreading the idea of another four years of monotonous classwork. I had always been a very hands-on learner, interested in crafts and construction, and was talented with picking up technical skills quite easily - translating my abilities and interests into training for a future career only seemed natural. The idea, however, dissipated just as quickly as it appeared, chased away by the thought that without a liberal arts degree I would be limited in my future career choices and ultimate success. So, I applied for college.

I was accepted to the Art School at Washington University in St. Louis, without ever having taken any art classes. On my application, apparently, I had checked all the boxes, and wound up an art major. I took this happenstance as a sign that I could still attain the liberal arts degree (deemed as "necessary for success") while also pursuing a more hands-on career as a fashion designer. Excited at the prospect of focusing on more artistic and technical skills (while hopefully ignoring all my liberal arts classes), I eagerly moved to St. Louis to start my new adventure. As it turns out, though, the real adventure started when I was assigned to the Scene Shop in the Theater as my work-study job – within two weeks of working in the scene shop, I knew that Design and Technical Theatre was what I wanted to do for the rest of my life.

Design and Technical Theatre (heretofore referred to simply as Technical Theatre) turned out to be exactly what I had always hoped education could be: the program integrated various subjects into the culminating project of a production; working on productions fused hands-on and technical skills with academic knowledge; the sheer abundance of knowledge and skills required encouraged me to *want* to learn as much as I could; and the collaborative nature improved my communication, teamwork, and leadership skills, while also providing me with a family of equally motivated and interested students. I was in love.

After graduating, I began working at a private, all-boys Catholic high school in St. Louis. At first my passion was still focused on Technical Theatre and I was solely devoted to training future theatre designers and technicians. Over the course of the four years I worked there, however, I started to realize how beneficial a Technical Theatre program could be for all students, even those not interested in pursuing a career in theatre after graduation. As a prep school, the students were very focused on the memorization of information, especially gearing their studies towards preparation for standardized tests (such as Advanced Placement tests, the SATs, and the ACTs). Even though the students were incredibly bright, they had no idea how to

apply knowledge, how to integrate different subject matters, or even how to recognize situations when what they had learned might actually prove useful. Essentially, they faced the same problems I had in my early education.

The Technical Theatre classes I was teaching offered me an opportunity to help my students out of this dilemma. I began to seek methods for integrating my course content with other subjects such as physics, algebra, geometry, and history. In the four years I worked there, I truly believe that my classes helped students achieve at a higher level both in theatre and in their other classes. I encouraged them to bring outside information to our time together, especially in circumstances where their knowledge surpassed mine. I challenged them to find solutions to technical problems by drawing on what they knew from past experiences integrated with knowledge from traditional coursework. I expected them to come up with answers on their own, rather than simply regurgitate the information I was imparting on them.

I left the position due to a difference of opinion with the new principal regarding education, and moved to Los Angeles, thinking I might pursue a career in TV and film. With the high cost of living and the limited number of jobs available, I was soon in need of a stable position and started applying for office work. I was hired on as a Human Resources Coordinator for an up-and-coming IT staffing and recruiting company. Even though I had no previous experience in Human Resources, my boss believed that I had other skills and qualities that would help me to succeed in the position.

She was right. I learned the details of the position quickly, improved many processes, took on additional work, and overall did a fantastic job. I attribute nearly all of this success to my training in Technical Theatre (for the rest I give complete credit to my amazing boss!). Because of my experience in theatre I was flexible and adaptable, could learn and process new information quickly, worked well with others, could manage my time well, was organized, and

worked hard. This experience reaffirmed my belief that Technical Theatre can help students develop valuable life and career skills that extend way beyond the field of theatre.

Here I will present arguments for the benefits of the integration of Technical Theatre in both high school and college programs. These arguments include how Technical Theatre can bridge the gap between academic and vocational training while also preparing students for careers and life in general. Though I draw upon a great deal of research in the world of education, I realize that I am not an expert on the subject and acknowledge that my understanding in some areas may be limited.

I also acknowledge that not every experience in Technical Theatre is the same as what mine was. I have met many designers and technicians who still lack several of the skills I believe are fostered in Technical Theatre. Likewise, I have met a great deal of talented and successful individuals who have never even heard of Technical Theatre. Furthermore, I believe that Technical Theatre programs in schools could help address many of the problems of our current education system. It adheres to many existing educational theories, while also offering an opportunity to integrate technical training into regular schools. It also prepares students both for further education and for future careers. Technical Theatre has been a unique educational experience for me both as a student and teacher, and I hope to share this experience with the world.

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CHAPTER 1

WHAT IS TECHNICAL THEATRE?

The work required for a theatrical production to materialize starts well before the actors ever take the stage. There are typically many people involved, hundreds of hours put in, and countless meetings held along the way. Though every production and every theater works differently, there is a general progression of steps needed to produce a play. The following descriptions are a brief overview of the multitude of tasks required of each individual working on a production[1]. I provide these descriptions for readers who may not be familiar with Technical Theatre; for those already experienced in Technical Theatre, this chapter may not be as useful.

The Design and Production Teams

The first undertaking when mounting a production is to choose the play (or plays) to be produced. The Artistic Director of a theater company usually leads this process, though input from a variety of individuals is often necessary. There are many factors to consider when choosing a play, including the demographic of the audience, the time, money and staff available, and the type of theater used for the performances. Theater venues vary greatly in size, acoustics, and ability to store or move scenery, all of which must be considered when reading a potential play for a season.

Once a play is chosen, the director for that production must then start thinking about the direction he or she wants to take the play. Although many plays (especially musicals) are rather straightforward, there are just as many that can be interpreted in a multitude of ways. For example, our most current black box production of *5 Women Wearing the Same Dress* takes

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[1] See Appendix A for a basic flow-chart illustrating the various positions and how they interact.

place in a bedroom inside a well-to-do house in Tennessee in the late 1980s. The director, however, decided to update our production and set it in the 2000s. Rather than make the bedroom a realistic interior, the director desired a more abstract, representational set.

Although many directors will come into the production process having already made these decisions, it is just as likely that these choices will be made as a joint effort between the director and the design team. The design team typically consists of a Scenic Designer, a Costume Designer, a Lighting Designer, a Props Designer, and a Sound Designer, with other personnel added as the requirements of the production grow (Projection Design, for example, is an emerging field). Each of these designers must read the script, analyze the themes and symbols within the text, perform research, and then present their ideas to the director and other members of the design team. In order for a production to be cohesive, it is important for the entire design team, along with the director, to be on the same page.

The design process differs greatly from individual to individual, and can even differ depending on the production. When I design scenery, for example, I read the text two or three times to get a feel for the play, then I read it again to find out what logistics are absolutely required by the script. If I feel that a play should be produced with an abstract design, I look for symbols or themes that can translate to a setting. I then like to meet with the director before doing any research so that I know we are already going in the same direction. Though this process can translate easily to the other design areas, there are designers who prefer to work more technically (starting from the logistics and working from there) or who choose to meet with the director before formulating any opinions on the design.

There are no right or wrong methodologies when designing for the theatre, but all processes require a great deal of communication and effort from each individual involved. Design meetings are usually held on a regular basis months before anything goes into

production. The Stage Manager is also usually involved from the beginning of the design process, as he or she organizes meetings, takes detailed notes, distributes meeting notes, and points out any logistics from the script that appear in rehearsal and might be of concern to the design.

Once the designs are established, the entire production team begins meeting in order to plan how to achieve the designs within the time and money allocated. The production team consists of the design team, Director, and Stage Manager, plus the Technical Director, the Costume Shop Manager, the Master Electrician, and any other shop heads who may be involved (such as an Automation Engineer, a Lead Rigger, a Projection Technician, an Audio Engineer, a Paint Charge, a Props Director, a Crafts Shop Manager, or a Painter/Dyer). All of these technical managers are responsible for working out how each design can transpire according to the limitations of money, time, and scheduling in the theater and construction areas. Once production meetings start happening on a regular basis, each of these technical managers can then begin the task of overseeing the materialization of designs in the various shops.

The Scene Shop

The Technical Director (TD) must study the scenic design and decide how each piece will be built (materials used, construction methods, etc.), while considering movement, storage, and safety. He or she then does a budget to determine whether the scenic design is achievable in terms of money and time to produce it. A great deal of creativity must go into this process, as there is rarely enough money allocated to accomplish everything the designers would like. Technical Directors must frequently look into alternate materials and methods, and suggest changes to the designer and director in order to facilitate production. Once the design is determined to be "in budget," he or she then orders materials and creates technical drawings to illustrate to the shop how to build each piece. The Technical Director is also responsible for

scheduling the build period, including coordinating use of the theater between the Carpentry, Electrics, and Paint departments.

The carpentry department, or Scene Shop, typically consists of a Scene Shop Supervisor, one or more Master Carpenters, and shop carpenters. The Scene Shop Supervisor[2] is responsible for keeping the shop moving throughout the day, explaining technical drawings to the carpenters as needed, maintaining and servicing tools, and guiding any problem-solving measures that must take place in the absence of the TD. He or she must be incredibly well-versed in proper construction methods for the materials to be utilized, proper tool usage, and health and safety protocols.

The carpenters working in a scene shop must also have extensive knowledge of these matters, and must be able to continuously draw upon their knowledge of math and physics when building scenery. Even though the TD provides technical drawings for the shop, this does not mean that a carpenter does not need to think while working on a project. Carpenters must be constantly thinking several steps down the line, planning ahead for the entire process. They must also be able to work with extreme precision, as frequently scenery must fit together with very tight tolerances. In addition, they need to be familiar with a variety of materials and tools, as not each one is the "right" one for the job and can react in very different manners.

For example, on our recent production of *Eurydice*, I assigned the task of building a rain-curtain structure to one of our shop employees. The structure was a set of simple rectangles constructed from steel which was to be mounted on top of an arrangement of stud walls. The employee had to plan ahead by drilling holes through the steel prior to welding the structure together (it is much easier and faster to use a drill press on individual pieces, rather than drill the holes by hand later on). She also had to make sure the entire structure was square, as it

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[2] This role may sometimes be absorbed into the duties of an Assistant Technical Director if present within a company or educational setting.

needed to line up with the stud walls below it. In addition, she needed to know which of our welders was the best choice for both her welding style and the relatively thin steel we were using. Though the drawing I gave her for this project included the locations for the holes, the dimensions and notes for how it fit on top of another structure, and directions for which steel to use, it still fell to the individual building the project to know how to use this information correctly.

The Properties Department

The Properties (Props) Director's role is much like that of the Technical Director, but focuses on the more decorative parts of the scenic design such as the set dressing (curtains or slipcovers, for example), as well as on the interactive items on a set, such as furniture. He or she is also responsible for any small or hand-held items that actors interact with, such as weapons, dishes, lanterns, umbrellas, smoking paraphernalia, etc.[3] Although it may sound like a fun and easy task to shop for or find all of these items, there is a strange phenomenon in shopping for props wherein whatever you need is only ever available when you are *not* looking for it. Props Directors, therefore, must spend countless hours driving between thrift stores, shopping online, hunting through estate sales, and finally giving up (in some cases) to just make the item instead (furniture included, which is an entire art form in itself). Sometimes making the item is the only option. For instance, for a production of *Seven Guitars*, the action called for one of the characters to cut the head off a chicken while on stage – cruelty to animals is most definitely not an option, and so the Props Designer constructed a fake chicken whose head was held on in such a way that it could easily detach and spurt out fake blood during a fully-lit scene.

Special effects such as fake blood also usually fall under the Props Director's list of responsibilities. There are many different types of fake blood available for purchase, and even

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[3] An easy way to think about props versus scenery is that the scene shop builds the house, and the props department fills it with *everything* you might ever put in that house.

more recipes for creating your own (especially using laundry detergents). The Props Director must consider skin allergies/reactions and whether or not the blood will dye or stain the costumes or scenery. He or she must also plan for how the blood will be cleaned from both skin and scenery, and work with the Costume Shop to determine how to remove the blood from clothing. And as with the chicken, the Props Director must sometimes even figure out how to make the blood appear to be flowing from a body.

Weapons are also an extensive field within the world of theatre, especially for Shakespearean plays. Though the weapons we use are fake (or modified real versions), the action must still appear to be realistic, creating yet another list of concerns for the Props Director. Swords, rapiers and daggers built for use on the stage are available for purchase and rental throughout the country, but their care and use is extremely detailed since they still present a safety hazard. Many Props Directors take classes and become certified in proper Stage Combat techniques, in which they learn both how to use and care for these weapons. Each of these items must be handled with gloves, de-burred after each use, and stored and locked up properly after each performance. Firearms are also frequently used onstage, either firing blanks or replicating the sound via a nearby speaker to play the effect. Either way, they must be handled, stored and locked up, as well.

As if weapons, blood, and every daily item you can imagine were not enough, anytime food is used onstage the Props Director is responsible for purchasing, storing, and preparing the food. This task is actually quite difficult, as the Props Director must take into account the great expense of food, allergies, safe handling, proper preparation, and how food can affect voices (chocolate, for example, is rarely used, as it has a tendency to make people cough). Alcohol onstage is clearly not a viable option, so the Props Director must devise alternative beverages that look like the alcohol to be consumed but without the real effects.

The Costume Shop

The Costume Shop Manager has a similar role as the Technical Director. He or she will usually lead or guide the decision-making process regarding which costumes will be built (constructed), pulled from stock, borrowed or rented from another theater, or purchased. The Costume Shop Manager must then order materials, arrange to borrow or rent costumes, and create a schedule for the shop. Like the Technical Director, the Costume Shop Manager must also work creatively to suggest alternate solutions to keep the cost of the productions within the allocated budget. He or she must also schedule measurements and fittings with the actors and keep track of all alterations to be made.

The Costume Shop is typically staffed with drapers, first-hands, and stitchers. The role of a draper is to create patterns for costumes by either draping material on dress-forms or creating flat patterns from scratch. Either method requires an extensive understanding of the human form, math, and how they fit together. A draper must also be familiar with an incredible variety of fabrics, as each different type will react in unique ways when draped or pulled around or on a body.

First-hands often assist the drapers with creating these patterns, and then use the patterns to cut the fabric pieces for a costume. Laying patterns out on fabric is a much more difficult task than it might appear; a first-hand must take into account the direction and repeat of patterns on the fabric, the grain of the fabric, and how to get all the pieces cut out with wasting as little fabric as possible. First-hands must also explain to the stitchers how to assemble these pieces – once again, another task that is actually much more difficult than it sounds. Sewing costumes together requires knowledge of an incredible variety of stitches and techniques spanning history and technology by the centuries. Stitchers also use math on a constant basis, keeping in mind the correct seam allowances.

Costume Shop Managers, Drapers, and First-hands must also be incredibly talented at working with people, often employing psychology when necessary. Without meaning any offense whatsoever to actors, they are more likely to interfere with the work of the Costume Shop than with any other department – this is because people interact with clothing more regularly than with any other element of theatrical design, and therefore have more opinions to interject. Though the costume shop must certainly listen to and respond to actors when they have concerns such as comfort and fit, there are the rare occasions when an actor may decide they do not like the design of a piece, particularly when it is not flattering to their body according to current standards. From my own personal experience, this phenomenon occurs almost every time when trying to dress high-school girls in clothing from any period before 1910, and the last minute changes they will help each other make to their costumes before going onstage can definitely upset the overall design.

The Electrics Department

The Master Electrician (ME) is responsible for taking the lighting plot (a drawing produced by the designer indicating where each light is placed, focused, gelled[4], and outfitted with a gobo[5] if needed) and turning it into reality. He or she must decide where each light will be plugged in[6] and how to patch each dimmer[7]. He or she must have an in-depth knowledge of electricity, including awareness of the amperage of each dimmer and the system, the wattage of the lamps in each lighting instrument, and the ability to calculate this draw of power. The ME must also troubleshoot and repair any instruments that are malfunctioning, schedule the

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[4] A colored film that goes in front of the lighting instrument to change the color of the light emitted.
[5] A metallic disc with a shape cut out, which is inserted in a lighting instrument to change the shape of the light emitted.
[6] Theaters typically have a set number of dimmers allocated to lighting instruments – each lighting instrument must be plugged into a dimmer, though using dimmer doublers (directional splitters) and two-fers (which split the power evenly) can increase the number of instruments that can be used.
[7] Patching is the process of assigning a dimmer to a control on a light board. Though in the past patching was done manually through a switchboard, it is now most commonly done electronically through the light board itself.

electrics crew for hang and focus, and is usually responsible for helping the Lighting Designer to program cues in the light board.

The ME and the TD must work closely together throughout the process to ensure that scheduling of time in the theater is efficient for both the Scene Shop and the Electrics crews. The majority of lighting instruments are installed over the stage on battens[8], which means that frequently the ME must make sure the lights are hung prior to installation of large scenery pieces. It also means that creative solutions must be developed between the ME and TD to allow the Electrics crew to safely reach their lighting instruments for focus and troubleshooting. For example, during an NCT production of *Eurydice*, one of the lighting battens was directly above a 6" deep river onstage, filled with water; as the TD for this production, I worked with the ME to problem-solve ways for the Electrics crew to reach this batten by adding a platform spanning over the river on which could rest a sufficiently tall ladder. The Electrics Crew must also thoroughly understand electricity, as they are often responsible for helping to rewire instruments and cables, and must also know which wattage of lamps to replace in different instruments.

The Sound Department

In many theaters (especially in education or in regional theaters), the Sound Designer is also the de facto Audio Engineer. The tasks of the Audio Engineer are similar to that of the ME; he or she must place the speakers according to the Sound Designer's plot, determine how to run cable to each of these speakers, patch the speakers into the system, and program the sound board. Speakers are also often placed on, behind, or within the scenery, meaning that the Audio Engineer must work with the TD to determine schedule, cable pathways, and safety hazards. He

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[8] Battens are pipes that are permanently installed over the stage in a rigging counterweight system. The TD is responsible for creating a lineset schedule, which determines what will be placed on each batten (scenery, masking, lighting instruments, etc.). These rigging systems require knowledge of both physics and math, and can be extremely dangerous when used improperly.

or she must have an in-depth knowledge of both sound and power, as they frequently interfere with each other.

The Sound Department is also responsible for setting up the headsets used by the Stage Manager, Assistant Stage Manager, board operators (lighting and sound), and other crew members backstage. Most Sound Designers will agree that it is ironic for them to be setting up the com (communication) systems, as they are the least likely to use them – Sound Designers must be able to hear voices and music live, and a headset covering their ear definitely impedes this process. Nonetheless, the Sound Department must run the cables and set up all the com stations prior to rehearsals starting onstage. They must also be able to troubleshoot these systems quickly and easily (I have never seen a system that did not have at least one chronic problem). Troubleshooting is usually a process of elimination, testing various combinations of headsets, com packs, cables, and outputs or inputs until the problem area can be identified.

The artistic work of a Sound Designer is also extremely complicated, especially as technology advances. Sound Designers use various computer programs to create, edit, compile, and play back both music and sound effects. They must also understand the acoustics of the room and the psychology of the human listener when directing the sound to the different speakers in the theater. Though it may sound simple to choose a song and play it on a system, the artistry and technology behind a design is a significant amount of work, and this is only speaking for straight plays; musicals incorporating live bands and wireless microphones are an even more complex and demanding job.

Lighting and Sound Design are both areas that often go unnoticed in reviews, as their work is so intangible; many Lighting and Sound Designers will admit, however, that not being mentioned in a review is usually a sign that they've done their job well, as it means their art form fit into the world of the play so well as to be almost taken for granted.

The Paint Department

When a theater or production includes a Paint Charge, that person is responsible for determining what colors of paint to buy and how much, how to mix additional colors, what steps are involved in painting each scenic piece, and how to do any specialty textures. He or she must also work closely with the TD to determine scheduling, as the paint schedule depends greatly upon the build schedule set by the TD. When painting in the theater, the Paint Charge must also coordinate with the Electrics department to ensure that paint has time to dry prior to work being done on or near it.

The Paint Charge is both an artist and a chemist, working quickly to create painted effects using a mixture of paints, sealers, water, brushes, sponges, garden sprayers, feathers, plastic, and countless other tools. Unlike a painter in the Fine Arts, a Paint Charge or Scenic Artist must take into account the relative distance between the audience and the scenery, and paint accordingly. For mainstage productions, the amount of detail an audience member would be able to see is negligible, and therefore a painter's time must be devoted more to the big picture than the small details. Scenic Artists accumulate a vast number of tricks for creating textures and effects quickly that will read correctly from a greater distance.

The Sum of All These Parts

Theaters with more resources may also have additional departments such as Hair and Make-up, Wigs, Crafts, Dyes, Projection, Special Effects, Automation and Video. In smaller departments, these duties still often exist, but typically fall under the Costumes, Lighting, and Sound departments (respectively). The lines between departments are easily blurred in many productions, especially between Props and Scenery, Props and Crafts, and Crafts and Costumes, making organization and communication imperative.

Theatre designers and technicians must collaborate extensively throughout the entire process, which requires excellent communication skills, problem solving abilities, and flexibility. Because productions often happen very quickly, it is imperative for designers and technicians to be able to draw upon these skills at any given moment through the process. Each individual on the production team must contribute their own knowledge, skills, and personal experience, while also acknowledging that the whole production is the sum of its many parts, setting egos aside.

CHAPTER 2

EARLY AMERICAN EDUCATION THEORY THROUGH THE PROGRESSIVE MOVEMENT

Early Aims of Education in America, Leading to the Separation of Academic and Vocational

Training

The oldest known form of vocational training in America is that of the Apprenticeship. Apprentices were bound to an employer for a determinate amount of time, during which he or she would receive training and compensation, usually in the form of food, clothing and shelter. Apprenticeships provided in-depth practical training for arts and trades, allowing masters to share their knowledge and trade-secrets with a future worker in that field (Gordon 4-5).

At the beginning of the 19th century, the American Industrial Revolution brought about a decline in Apprenticeships, while also fueling the creation of public school systems. With the increase of industry came an increase in centralized populations and large groups of labor; one-on-one training in the trades was no longer practical (Gordon 6). However, these new industries still needed workers with a basic education, prompting citizens like Horace Mann to push for a "common school" funded by taxes. Up until this time, schools had been supported by fees paid by parents, leaving the poor with no opportunity for education; Mann and other reformers saw the "common school" as an opportunity that "would transform children into moral, literate, and productive citizens; eliminate poverty and crime; quell class conflict; and unify a population that was becoming more ethnically diverse" (Kober 5).

It was during this time that the divide between vocational and academic training in public education began. As Ken Robinson describes in his book *Out of our Minds: Learning to Be Creative*, "industrialism needed a workforce that was 80 percent manual and 20 percent administrative and professional. This requirement had a deep influence on the structure of

public education systems." He describes this structure as a "pyramid, with a broad base of elementary education funneling to a narrow peak of higher education." Fewer individuals at the top of this pyramid were needed, and therefore higher education became an elite group; this was not because the top of the pyramid was any "better" than the bottom, but because this shape reflected the number of workers needed in each area. It would not be until around the 1960s that this pyramid shape would change, partially to accommodate a growing population of Baby Boomers entering the workforce (Robinson 55-56).

It was not the curriculum of the time that shaped the differences between academic and vocational training, but rather the structure of school itself. Elementary school became compulsory in order to provide children from all backgrounds and social classes with a basic education in reading, writing, and arithmetic (without offering any vocational training). Those who desired and were able to pursue the top 20 percent of Robinson's pyramid could then continue their education at private high schools and eventually at university, whereas the remaining 80 percent entered the work force. Unfortunately, the demise of the Apprenticeship system in America meant that many of these young people lacked the skills or training necessary for these industrial positions, prompting organizations and individuals to advocate for manual training in education (Gordon 9-10).

The Manual Training Movement took hold in 1868 with the establishment of the Hampton Institute, which was "based on the philosophy that there was dignity in all forms of work and that human beings, regardless of race, could only truly appreciate that which they had earned." Many other universities and institutes expanded and/or developed based on these ideals, including Washington University in St. Louis, where Calvin Woodward introduced a shop work class "as a means of providing his applied-mechanics students with a visual representation of the problems they were attempting to solve." Another notable example was the

Massachusetts Institute of Technology – President John Runkle convinced the school to establish laboratory training opportunities in order to help the engineering students develop tool and machinery skills needed in the field (Gordon 10).

Woodward and Runkle, among others, used their success in these programs to push for similar training opportunities at the public school level (particularly in the newly-prevalent public high schools). This was a topic of contention at the 1884 National Education Association convention, where "Educators in favor of including manual training in the public high schools stressed the general nature of the skills developed and the relationship to academic study of the basic sciences. Those opposed stressed that is was a vocationally oriented substitute for apprenticeship and thus should be limited to separate schools" (Gordon 11). This argument continued on and has yet to be resolved; nonetheless, Woodward and Runkle paved the way for the establishment of shop classes in the public high school.

The dual system that is still in place today developed because of those educators who saw the need for an establishment of vocational training programs that were separate from general education settings. David Snedden (faculty member at the Teacher's College at Columbia University) and his student, Charles Prosser, "did not want vocational education to be contaminated by the mistakes or the philosophy of general education" (Gordon 30). They believed that teachers of vocational training should have experience working in the field that they were going to teach, and therefore should be separate from those teaching general education.

John Dewey, one of the most influential education philosophers of the Progressive Movement, was fervently opposed to the dual system model, as well as to vocational education in general. He believed that education should help to eliminate the social class system, and if students were taught trades, it would be adhering to the status quo; students from a lower class

or minority would be pushed towards the same vocation in which their families worked (Gordon 32).

Though many of Dewey's views on education have been adopted and have formed the basis of varying schools of thought, his arguments against the dual system did not prevail; the Smith-Hughes Act of 1917 provided federal funding for vocational training programs. This legislation "contained several specific elements that contributed to the isolation of vocational education from other parts of the comprehensive high school curriculum." For one, states were required to create state boards for vocational education programs, which were often created separately from the State Board of Education. The Act also promoted "a segregated curriculum, with agriculture, homemaking, and trade and industrial education segments separated not only from academic programs, but from all other vocational programs as well" (Gordon 80-81).

In his New York Times bestseller, *Shop Class as Soul Craft,* Matthew Crawford discusses further how the Smith-Hughes Act isolated vocational training institutes. He argues that although the Act created federal funding for both general education and vocational training, only for general education shop classes was there any emphasis of

> learning of aesthetic, mathematical, and physical principles through the manipulation of material things…The nascent two-track educational scheme mirrored the assembly line's severing of the cognitive aspects of manual work from its physical execution. Such a partition of thinking from doing has bequeathed us the dichotomy of white collar versus blue collar, corresponding to mental versus manual (31).

From the moment that vocational training was created as part of a federally funded education system, the division of intelligence was also established. Crawford goes on to explain that this mentality is still prevalent today, but is based upon two fallacies: first, that blue collar work requires little to no thinking or intelligence, and second, that white collar work actually does (31). Whereas this might have appeared to be true in the early 20th century, when the advent of the assembly line created the mental picture wherein manual labor was associated

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with mind-numbing repetition, it could be argued that in today's climate this tedium of non-thinking is often more predominant in many white collar industries. There appears to be a modern trend in the white-collar world of companies looking to downsize employment while streamlining their businesses using technology to simplify processes that once took several employees.

I myself have contributed to this streamlining process, though at the time I saw it as a benefit, both to my position and to the company where I was working. While working as a Human Resources Coordinator, I noticed that many of my daily tasks were extremely repetitive, and decided to create workflows using Microsoft One-Note to make these tasks more automated. Part of my job was processing the paperwork for newly hired contractors – I created a workflow that allowed me simply to click on links, enter a few basic key facts (name, pay rate, start date, etc.), and all the paperwork would be automatically generated. All of my bosses thought that this was brilliant, and I, too, found my job to be more enjoyable when I no longer had to think about such mundane tasks. Looking back now, however, I realize that what I did was to take all of the thought-process away from that job, and now I pity any individual who accepts that mind-numbing position.

As boring as that job (and similar positions) may now be for individuals looking to be challenged at work, the job itself is still considered white-collar and therefore more prestigious than blue-collar work. The development of this stigma over time is certainly too complicated to generalize, but it is clear that the idea of vocational *versus* academic training has been present through the history of American public education, and is still prevalent today both in education and the work force.

Technical Theatre programs, however, offer our education system an opportunity to reintegrate technical (or vocational) training back into schools without pushing students directly

towards a career in the trades, therefore blurring the lines between white and blue collar while eliminating the risk of enforcing a class system based on jobs. Students in Technical Theatre are exposed to a variety of hands-on training in carpentry, electricity, welding, and painting, just to name a few, but they must use their academic knowledge from core classes in order to analyze, research, and design productions.

Technical Theatre is actually very similar to the laboratory training established by Woodward and Runkle in the 19th century, as it provides students with the opportunity to physically represent the theoretical problems learned in many of their math and science classes. For example, the idea of forces and direction in physics is often hard for students to grasp on paper, but seeing how a double-purchase counterweight system works is a tangible experience that can clarify this concept for visual or hands-on learners.

One of the most important aspects of Technical Theatre is that it teaches students how to think and apply knowledge, both in their academic and technical studies. Students gain an appreciation for the active thought needed in any career, whether white-collar or blue-collar. Perhaps if we train enough students in Technical Theatre, the stigma of academic versus vocational training will eventually disappear.

Education Theory in America from the Origin of Public Schools through the Progressive Era

One of the most influential educational movements in America was the Progressive Movement, beginning at the end of the 19th century, and continuing in various forms through the present. Though most closely associated with John Dewey, many of the ideals of this movement can also be seen in the philosophies of earlier educators such as Horace Mann and William James, who were influenced in great part by philosophers Rousseau and Pestalozzi.

Throughout the 20th century the term "progressive" has been used in many conflicting ways, creating various camps on what the true goals of progressive education should be. Rather

than analyze these opposing positions, I believe it is more useful to explore how Technical Theatre fits in with the key points that formed the foundation of the Progressive Movement: encouraging learning through inquisition and hands-on activities while building upon basic knowledge and skills; creating fully integrated beings who would become socially responsible citizens of the community; and instilling the ideals of democracy, freedom, and equality among students.

Learning through Doing

A critic of the Progressive Movement for its influence in creating what he deems as the "child-centered cult," Paul A. Zoch, author of *Doomed to Fail: The Built-in Defects of American Education,* admits that "One good thing that came from Progressive education is recognition of the fact that one learns by doing, through one's own experience, and that what students learn should have real, vital connections to their experience instead of being words merely recited and poorly understood" (60). Similar to Woodward and Runkle, educators and philosophers of the Progressive Movement believed that not only was it important to learn through hands-on activity, but that these activities should draw upon students' own experiences and help them relate both their experience and newly acquired knowledge to real life situations. In addition, the process of learning should not be limited solely to the memorization and recitation of facts.

Horace Mann, William James, and John Dewey all believed in an education based on an inductive, versus dogmatic, approach, wherein students progress through experiential learning as opposed to through rote memorization of factual knowledge (Downs 45). James believed that learning was essentially the process of changing "behavior in accordance with the demands of the environment" (Zoch 9), and that this process of learning could only be achieved through taking past experience and relating it to present challenges. To James, the goal of education was "to help students develop their minds in order that they may solve whatever problem life

presents" (Zoch 10). Rather than focus entirely on core subjects, students should be actively engaged in problem solving on a daily basis.

Dewey's philosophy on this subject has been interpreted as much more extreme than James', suggesting that students should not learn at all according to the rigid structure of memorization and recitation. According to Dewey, teachers should throw out traditional curriculums in favor of a more natural learning experience, wherein the students' natural desires to learn should shape their course of study. Dewey believed that "[The teacher's job is] to provide the materials and the conditions by which organic curiosity will be directed into investigations that have an aim and that produce results in the way of increase of knowledge, and by which social inquisitiveness will be converted into ability to find out things known to the others…" (Zoch 67). Rather than present a set curriculum, Dewey believed that the purpose of teachers was to "make sure that students are challenged so that they are led to seek out solutions to various real-life problems" (Dunn 189).

Despite their radical ideas regarding traditional curriculum, James, Dewey and Mann all admitted that a certain amount of basic knowledge and skills must be imparted upon students before their educational goals could be addressed. Dewey stated, for example, that "a beginning artist must know the tools of the trade – canvas, pigments, brushes, technique – before beginning." However, he suggests that these tools and skills "should never be regarded as rigid directives but only as resources at one's disposal when they can fulfill a need" (Dunn 192). Similarly, though Mann considered recitation as important for building a basis of knowledge, he warned "that too much value is ordinarily attached to the recitation. I fear it is often regarded as an object, and not as an instrument; as the goal, and not as the path that leads to it" (Downs 46).

The difficulty in reconciling the teaching of basic knowledge and skills with the idea of allowing children to learn naturally through experience, curiosity and play lies in the absence of instructional methodologies that truly integrate core subjects with hands-on activities. One notable attempt of the Progressive era to achieve this reconciliation was that of William Kilpatrick's "Project Method," demonstrated through his famous sandcastle example:

> Some older boys were making a castle of concrete. Was it art they were studying? Yes, the "project" began with a broad-minded teacher of "art." But was it not also history – and warfare? And was it not also chemistry or physics or whatever be the science or technology that tells us about making concrete? And was it not oral English, since the boys must explain on exhibition day all that they had done? And why not social-morals, since they had to learn how to compose their differences and stick to the job as one failure after another made increasing demands on moral strength? And was it not also a larger social-morals as they studied the significance of the castle in that long warfare when private greed had at length to yield to law and order? (Zoch 68)

As one of Dewey's successors, Kilpatrick favored educational methods such as "cooperative learning, student inquiry and discussion, problem solving, project-based assignments, hands-on activities and an environment of mutual respect between teacher and students." Though many have praised him for the cross-curricular nature of his ideas, Kilpatrick was also criticized for "watering down content and for putting too much emphasis on the child's interests as opposed to emphasizing the transmission of essential knowledge" (Dunn 224).

Technical Theatre offers an excellent opportunity for students to learn this "essential knowledge" while still engaging in all of the methods favored by Kilpatrick and other Progressivists, including problem solving, self-directed learning, and collaboration. Designers, for example, must know how to read and analyze a text before they even begin a design. Once they have drawn out the key themes and motifs of the text, they must study the historical and cultural relevancy of the period in which a play is set. In addition, designers must understand the scientific, mathematical and psychological elements of artistic principles such as color

theory, the elements of design, and perspective. This is not to say that all designers are experts in each of these fields, but rather are continuous learners, constantly researching and absorbing essential knowledge and ideas from every discipline.

Technicians in theatre must also draw upon their scientific and mathematical skills on a daily basis. An electrician, for example, must learn the basic principles of electricity in order to correctly wire lighting instruments and cable them effectively without overloading a system. Carpenters quickly become comfortable with adding and subtracting fractions through constant use of a tape measure. Costume shop employees must understand the physicality and anatomy of the body in order to create costumes that fit well while still allowing the actors to move.

Technicians frequently use research and history to their advantage, as well. For example, if a special effect such as a turntable, a thunder machine, or a rain curtain is needed, theatre technicians usually refer first to what has been done in the past. There are several solutions for each of these technical challenges, and each solution has its own advantage – one may be cheaper, one may use materials that are more readily accessible, or one may be quieter. Each of these advantages could have considerable impact upon the final result of the production. Researching the different techniques used in the past (whether they choose to copy them directly or use them as a jumping-off point for a new solution) can save technicians time, money, and a great deal of headache later on.

The entire process of the design and implementation of a theatrical production is essentially one giant problem-solving task, broken down into many steps achieved by many individuals working on various problems. The designer is presented with the problem of how to portray the physicality of a production while also conveying themes and complementing the style of the play. Would the play best be served, for example, through a literal representation of the space, such as a realistic interior? Or do the themes and action of the play suggest a non-

realistic space, allowing for a more psychological and artistic interpretation? The technicians are then tasked with realizing this production, usually with limited time, resources, staff, and money; working within these constraints requires a great deal of creative problem solving, usually on the part of the Production Manager and Technical Director.

As if the physical limitations of a working theater were not challenging enough, technicians are also faced with creating scenery, costumes and props that are unlike anything used in the "real world." Though scenery built for theatre may sometimes resemble common physical structures, the method in which they are designed and built differs greatly from traditional architecture and engineering. A house on stage, for example, may look the same from the front, but is no longer a house when seen from backstage – if there are two stories to the house, the actors must be able to get upstairs quickly from backstage, while also traversing the various rooms that appear to the audience to be separated. Costumes may look like normal clothes, but frequently they are "rigged" using a variety of fasteners to be easily changed into or out of between scenes (or onstage). Costumes must also be designed to withstand repeated contact with any food, dirt, or fake blood used in a production.

Although all of these challenges can be daunting at times, most students in Technical Theatre find them to be fun. Problem-solving exercises that are unrelated to real life or that have no visible relevancy can be boring and do not actually adhere to the ideals of the Progressive movement. Technical Theatre students learn to consider problem-solving as a daily part of life, a fun and valuable skill that can be utilized in many instances, both in and out of work or school.

With the amount of creativity and critical thinking required from designers and technicians, it is of vital importance that they learn the basic tools of the trade early on in their training. As E.D. Hirsch, founder of the Core Knowledge Foundation, states, "'Basic processes

need to be made unconscious and automatic as early as possible in order to free the mind for critical thinking and problem solving'" (Zoch 11). It is incredibly difficult to come up with and implement a technical solution if the majority of a technician's time is spent learning fractions or geometry.

Students in a traditional curriculum frequently question the value of learning basic literature, science, history and math skills – how many times have educators heard a student complain, "When will I ever need to use this stuff?" Technical Theatre programs teach students the importance of building a foundation of core knowledge through an enjoyable, hands-on application that has tangible value.

Though students are required to learn traditional core subjects, the learning process in Technical Theatre is actually quite self-directed, as would be favored by Dewey and Kilpatrick. The problem-solving nature of theatre requires students to draw upon other knowledge, but it does not necessarily direct them to any specific knowledge. Instead, students follow their own interests and inquisitiveness to pursue solutions; no two designers would be likely to create the exact same design for a set, just as no two technicians would automatically come up with the exact same technical design for constructing a set. Each individual in Technical Theatre follows their own motivation, which is based mainly on personal experiences and interests.

Despite the individualized process of each team member, Technical Theatre ultimately requires collaboration, cooperative learning, and mutual respect among all parties involved (including actors and directors). These other skills lead us to the next key goal of early education theory and the Progressive Movement, that of creating fully integrated citizens who display social responsibility within a community.

Citizens of the Community

One of the main arguments of Horace Mann and other early education reformers was that a public school system would help alleviate many of the social problems of the day through the development of moral, literate, and socially responsible citizens (Kober 9-10). Each citizen, or student, must therefore be educated as a well-rounded individual. "Mann viewed education as a broad functional process, bringing about a harmonious relation of body, intellect, and spirit. He favored, accordingly, an education that would develop the individual in as many functional ways as possible." This included physical and health education, ethical training to create good citizens, and practical training to prepare students for careers in civic duty (Downs 45).

The philosophies of John Dewey and William Kilpatrick also advocated for attention to the development of an individual through education. They strove to create the model of an "integrated" individual, meaning "when all aspects of his existence – his emotional, intellectual, physical, and social beings – are equally and harmoniously developed, when there is no artificial distinction between mind and body", thus creating what Progressives viewed as a "Perfect Citizen, a well-adapted individual who, in service to society and his fellows, does what he wants and wants to do what he does" (Zoch 53).

Though focused on the well-rounded education of the individual, this ideal was ultimately aimed at improving society as a whole through its various "parts." Crucial to this goal was the idea that students must be socialized by "emphasizing traits other than individual intellect" (Zoch 54). Students must understand that their education was meant to benefit the whole community, not each of them individually. Dewey saw education as an opportunity to reform society by teaching students that the "experiences, interests, and aptitudes of individual learners" (Dunn 193) could be of use to society as a whole, but should not be revered for the sake of any one student. He believed that "The subject matter of schools should develop in

learners the ability to see an immediate event, not as something isolated in a single moment of time, but in its connection with the common experience of humans" (Dunn 191).

Paul A. Zoch argues that education cannot and should not focus entirely on this anti-individualism idea, as students inherently want to pursue the "satisfaction of his own desires and the development of his unique abilities and powers[…]'the public good' or 'the collective good' is far too abstract, too distant, too intangible to motivate a student for long" (Zoch 58). Technical Theatre, however, is exactly the kind of tangible experience that *can* teach students how to pursue their individual interests and abilities while still working towards the greater good of the community.

Technical Theatre is an inherently artistic, creative and collaborative process. Even though the director may start the process with a direction in mind in which to take the design, it is rare for a director to dictate exactly what each design will be. The designers and director meet as a group to discuss both the director's vision and the viewpoints of each designer. They must take into account the specific needs required by the text, the limitations of the theater, and the audience they will be playing to, all while juggling the creative input of several individuals.

Technical Theatre teaches designers and technicians how to work together and let go of their own egos for the benefit of the entire production. One designer may have an amazing idea for the production, but if it does not fit in with the overall picture of the entire design team, that designer must let go of the idea (or put it aside for another production in the future). All of the design elements of a production must fit together, both practically and aesthetically, requiring that each member of the team contribute a significant amount of work. The production team is in itself a community, and each person in that community has a vital role to play; if one role is not fulfilled, the entire production can fail.

Technicians also form a community, both in the shop in which they work and with the other departments. A Scene Shop typically consists of several individuals, all from varying backgrounds and with different levels of experience. The carpenters in this shop learn to rely on each other a great deal, whether for assistance with moving materials or scenery, for training on the multitude of different tools available, or for advice on construction methods. Frequently a scenery piece may require assistance from an electrician (lights are often incorporated into a set piece), extending the scope of the community beyond a single shop – technicians must learn to work together across the division of departments in order to successfully mount a production.

Technical Theatre programs also rely greatly on the community in which they exist. The clearest example of this dependency is that theatre would not exist without an audience. Interaction with this audience truly begins well before opening night. The Artistic Director, for example, must take into account the demographic of the audience in order to select the plays for a season. The marketing team (usually led by the Managing Director and box office) must work diligently to advertise productions effectively to reach the audience. Box office personnel interact constantly with the audience, selling tickets and season subscriptions, while members of the development team in not-for-profit organizations spend copious amounts of time and effort doing fund-raising in the community.

In addition to relying on community members for support as an audience, Technical Theatre programs rely a great deal on community members and other local theaters for practical support. Most designers and technicians frequently turn to other theaters to borrow or rent props, furniture and costume pieces, as it would be impossible for one theater to possess every item ever needed in their own stock. Secondly, theaters may also turn to members of the community who possess specialized skills or abilities in order to enhance a production; not every set design will call for foam carving, for example, but when this occasion

does arise, a Technical Director may wish to call on a local artist with experience in this skill, such as a sculptor. Finally, theatre designers and technicians are constantly interacting with local vendors throughout the community, often approaching them with unusual questions or requests. For our recent production of *Eurydice,* a river was needed onstage - I spent several hours visiting local pond and pool supply stores, asking employees how different sump pumps worked and explaining the effect that I was trying to achieve. Without turning to the community for this type of help, many of the unusual effects seen in Technical Theatre would be impossible to produce.

The communities present in Technical Theatre are based on collaboration between designers and directors, technicians among the various shops, and theatre members with the surrounding community. The success of a production depends on each of these persons bringing their own knowledge, skills and creativity to a group and then working as a team to bring the production to life. Technical Theatre teaches students to respect one another and work towards a collective good.

Democracy and Equality for All Students

Building upon the respect students learn through working in a collaborative community, Technical Theatre also promotes the ideals of democracy and equality within this community. Both the origination of public schools and the Progressive Movement advocated for teaching democracy and equality through education. Though there is a loose hierarchy involved in Technical Theatre (Appendix A), the overall structure requires equal amounts of dedication and hard work from each individual member of the team. Each person is therefore equally important to contributing to the success of a production, thus creating an environment in which mutual respect is crucial.

Due to the collaborative nature of theatre, individuals rely on each other so heavily that they quickly learn the benefit and importance of forming respectful relationships with coworkers based on equality. Asking these coworkers for help is much easier when a positive working relationship is already established; if the relationship is bad, on the other hand, asking for help can be a humbling experience that also reinforces the importance of being respectful of others. Another possible reason as to why the hierarchy rarely turns into a dictatorship is that roles in Technical Theatre change frequently, especially in educational programs; a student may be a light board operator for one production and a scene designer for another. Working with others in varying capacities makes it impossible to establish long-term roles as superiors and subordinates.

Technical Theatre also enforces the ideals of equality because students in these programs most commonly come from varying backgrounds and with different experience levels and skill sets. It equalizes the playing field for students, eliminating the importance of their other achievements outside the theater; it does not matter if you are the head cheerleader or the best "mathlete" in the school, in the theater it only matters that you work hard, do your job well, and work well with others. Neither athleticism nor academic records are indicators of how well you will perform in Technical Theatre, as many other skills and abilities are required in order to succeed.

Not only does Technical Theatre equalize students based on skills and knowledge, but theatre itself provides an opportunity for students of varying ethnic, racial, and economic backgrounds to explore the social and cultural issues that contribute to modern inequality. In an article entitled "*What Can we Learn from Progressive Education*?" the author Kathleen Weiler states that "The early progressive educators in large part failed to address the deep inequalities of their society" (9). Dewey and other Progressive educators truly believed that an equal

education for students would increase their possibilities in life, neglecting to take into consideration many social factors that still oppressed minorities regardless of their education, knowledge and skills. Without understanding both historical and present societal issues, society has no hope to improve as a truly equal democracy. Theatre not only allows but encourages exploration of these issues through the variety of plays written by and for minorities, acknowledging that these issues still exist and need to be addressed.

Technical Theatre does not profess that people are all the same, but rather it provides equal opportunity for individuals, regardless of race, economic status, academic or athletic ability. It allows students opportunities to explore social issues on an equal playing field, while drawing upon each student's unique experiences and abilities to create a community-based hands-on approach to learning.

When public schools in the United States were first established, the opposing philosophies regarding the integration of hands-on training (whether for vocational purposes or experiential learning) established a long-enduring argument that has divided even further over time. If only Horace Mann and John Dewey had known about Technical Theatre, perhaps all the problems we currently face in our education system today would never have developed to begin with.

CHAPTER 3

20TH CENTURY EDUCATION PHILOSOPHY – LEARNER CENTERED EDUCATION

Though the Progressive Movement truly took hold in the first decades of the 20th Century, it soon split into competing schools of thought. Many educationists and philosophers writing about John Dewey and the Progressive Movement admit that his ideas and his writing were often hard to follow, perhaps contributing to the various stances educators have taken regarding his ideas. These contrasting views have greatly contributed to the controversy surrounding much of 20th Century Education Theory, particularly regarding Child Centered Learning, Learning Styles, and Howard Gardner's Theory of Multiple Intelligences.

Learner-Centered Theories

The basic premise of each of these theories has become second-nature to current and recent students and educators. Child Centered Learning is essentially the idea that each child's own interest and abilities should be the motivating force behind their educational experience. Rather than assume that all students need to learn the same content and are even able to do so, lessons should be personalized for each student. When the ratio of students to teachers is too large to allow for such personalization, students are given more freedom to pursue only what they choose to learn, and must seek out this knowledge on their own.

Learning Styles is a theory explaining that all children learn in different ways, therefore requiring educators to identify each student's style of learning and formulate their lessons accordingly. The different learning styles include aural, visual, physical, logical, and verbal. Students may display a mix of any or all of these styles, and each student is unique in the mix that works best for him or her. Teachers are encouraged to employ a variety of teaching

methods in order to address each learning style, such as with hands-on activities and visual presentations.

Similar to Learning Styles, Howard Gardner's Theory of Multiple Intelligences suggests that not only do students learn in different manners, but they are more likely and able to excel in different subject matters and skills. The eight basic "intelligences" as listed by Gardner are musical/rhythmic, visual/spatial, verbal/linguistic, logical/mathematical, bodily/kinesthetic, interpersonal, intrapersonal, and naturalistic. Each student has a unique mix of intelligences, and none should be expected to succeed in all areas. This theory is not meant to limit students to only pursue endeavors in the intelligences in which they excel, but rather as a tool that students can use to help them learn through methods that work best for them.

Critics of these learner-centered based theories argue that these systems neglect instruction of core material, asking students to "make bricks without supplying the straw, that is, to address problems that trained professionals work at in their daily work, but without the prior formal training" (Zoch 138). Because the focus is more on allowing students to learn according to their own interests and at their own pace rather than on basic knowledge such as the traditional 3 R's (Reading, Writing, Arithmetic), students risk not having the tools and background necessary to solve more advanced problems. At the same time, these theories are viewed as impractical, since teachers would be required to address the various needs of each student individually, an impossibility for teachers with many students. Furthermore, critics suggest that learner-centered education actually removes responsibility from the student, as it becomes the teacher's responsibility to find the right stimuli to promote each child's desire to learn; failing students (and their parents) are more likely now to blame the teacher than the student.

Technical Theatre programs provide a perfect middle ground for the two camps of thought regarding learner-centered education: by drawing upon the core subjects such as math, science, history and literature, Technical Theatre creates a multi-disciplinary project which relates to real-world scenarios; the collaborative nature of Technical Theatre provides students with an opportunity to pursue their own interests and learn through their own research, through working with other students, and through the mentorship of their teachers; and finally, the democratic community formed through Technical Theatre requires students to be accountable for their own actions, work, and education. Each of these ideas will be further discussed throughout Chapter 3.

The Ideal Multi-disciplinary Project

As discussed in Chapter 2, Technical Theatre requires students to build up a store of basic knowledge and skills in order to advance to the critical thinking capabilities necessary for mounting a production. While drawing upon this basic knowledge, students can understand and appreciate the relevancy of learning core subject matters. Through relating these subject matters to other disciplines, students learn how to apply knowledge rather than just memorize it, thus preparing them for real-world challenges.

Educators of the Progressive Movement saw clear advantages to multi-disciplinary projects:

> The advantages of the projects…are obvious: first, the students have a great deal of choice in what topics to study and are thus more likely to be motivated to learn…; second, they are allowed to focus on the learning style or intelligence they find most congenial; and third, projects are "real-world" activities, involving the use of many intelligences and learning styles across domains and subject matters. In short, multi-disciplinary projects are education for the whole child, the Holy Grail of the Progressive Paradigm (Zoch 137-138).

Technical Theatre is the Holy Grail of multi-disciplinary projects, offering all the advantages seen by Progressives, while still being a practical solution for public education systems.

In response to Zoch's first point, Technical Theatre offers students a choice of which particular field or department interests them the most: scenery, costumes, lighting, sound, or stage management (with subdivisions within each department). Students can also choose whether they prefer design or technical work. At no time does the decision to participate in one area of Technical Theatre exclude a student from choosing a different area at a later point (most individuals working in Technical Theatre participated in several disciplines before choosing a focus), which allows students the freedom to change the course of their education in a fluid manner.

Additionally, Technical Theatre is always a unique experience; each designer, director and technician works and thinks differently, meaning that there is no one correct course of action to be taken when working on a production. Students have the choice of pursuing whatever solution they find to be most interesting or most appropriate. For example, a designer has a choice of what inspiration from the text will lead to his or her research, and then a choice of what research to keep and what to discard. Each of these choices leads to a new learning opportunity, individualized to the interests of that student.

In a similar manner, students have the choice of how they prefer to work or learn, according to different learning styles or intelligences. A perfect example of this freedom is the varying ways in which scenic designers begin their process; while some may react kinesthetically or musically to the script through an emotional response (such as a sculpture, a drawing, or a song that inspires them), others favoring a more logical-mathematical or visual-spatial approach may begin by drawing shapes on a ground plan.

Finally, Technical Theatre incorporates both practical and critical thinking skills that are required in the "real world," all while drawing upon and applying knowledge from other disciplines. Though not the specific intent of Technical Theatre, students do learn about

construction, electricity, sewing, and how to use basic tools needed for each of these activities, all of which is useful information for anyone to have later in life. Just as useful is the ability to apply knowledge in practical applications and not be afraid of problem solving. Technical Theatre teaches students to use other knowledge, skills, and people to help them solve problems, rather than rely only on the solutions that they already know.

Though multi-disciplinary projects have been praised for these advantages, as an education method they have been criticized for neglecting to establish a core base of knowledge in students. Paul A. Zoch argues that "The use of projects as a primary learning tool for students increases the risk that they will acquire a haphazard, slipshod education – a little of this, a little of that, without much continuity or depth, with the student never really learning the formal structure and fundamental concepts of a discipline" (Zoch 140). He also criticizes Howard Gardner's approach, wherein students would spend part of the day working in multi-disciplinary group projects and the remainder of the day in an apprenticeship within the community, stating that it throws students into real-life dilemmas without providing them adequate tools or base knowledge to solve these problems.

Technical Theatre programs in public schools offer a plausible solution for implementing multi-disciplinary projects while also instructing the core subjects. Students would still learn the basics of math, science, history, and literature in a classroom setting, but would have the opportunity to apply this knowledge directly later in the day while working in the theater. The work done in the classroom would augment their work in the theater, and vice versa – students might be more attentive in the classroom if they felt that what they were learning was actually useful and relevant to real world applications.

For example, in the Introduction to Technical Theatre class I currently teach, I include a section on Shop Math. The students are mainly juniors and seniors in college, none of them are

math majors, and the last time any of them even took a math class was at least two years ago. In this section, students learn to read a tape measure and how to work with fractions, as the two skills are interrelated. The students in this class are also required to put in time working in the Scene Shop as the lab requirement for the course, and on the day that we worked with fractions in class, one student who was struggling with adding fractions was later working in the shop. I asked her to measure and cut some tiles for one of the sets we were building, and while giving her instruction I also spent some time integrating what we had gone over in class. Being physically able to measure and mark the tiles helped this student understand the math much better, and being accountable for the final length of the tiles made her take her time to make sure she truly understood and could complete the task accurately. I believe that the hands-on application of math, as well as the trust I had in her to put this skill to use increased her ability to understand and work with fractions.

Self-Motivated Learning through Multiple Teachers

The idea behind Child Centered Learning stemmed from John Dewey's philosophy that a student learns best through natural or organic activity and inquisition. He believed that teachers should not instruct using a rigid curriculum, but should instead present materials in a way that leads students to inquisitive learning. In one example, Dewey suggested that students may wonder "where bread comes from; the teacher can then arrange for them to grow grain, which they will grind into flour and bake into loaves. This experience can serve as an introduction to the history of civilization" (Zoch 63). Students' own natural curiosity should motivate them to learn what they want to learn and how they want to learn it.

Because each student is different, each will have a different motivation to learn. Child centered learning seems to suggest that the teacher should, in fact, cater to each different student, which is physically impossible considering the ratio of students to teachers. What

Technical Theatre can offer is an alternative method to catering to each student – not tailoring the same exact lesson to each student, but allowing each student to follow a path that interests and challenges him. As described in the previous section, students in a Technical Theatre program have many options regarding which discipline to pursue as well as how to work within that discipline, making it an ideal opportunity for students to pursue individual paths while still under the guidance and leadership of the teacher(s) involved in the program.

Students in Technical Theatre do not only learn from their teachers, however. Because it is essentially a group project, students are able to learn from other students just as easily (if not more so) than from a teacher. One of the most rewarding experiences in Technical Theatre is being part of the life-path of a creative solution. It is rare that the first proposed idea become the final realized product as is; most final products in theatre are the result of many individuals offering their own knowledge, experience and creativity. During the design process, for example, each designer may have a different interpretation of a theme within the text. Through discussion of these themes, frequently a whole new idea emerges, creating a vision shared by the entire team.

These discussions also help spur interests among the designers, leading to new research and knowledge to be attained. In my role as Sound Designer for a production of *Arcadia*, for example, the Scenic Designer came to a meeting with research he had done on fractals, a very specific mathematical element prevalent throughout the play. His research inspired me to learn about fractal music and other relationships between math and music. Without this group learning environment, I may never have made the connection to this topic.

Technical Theatre is also unique in that no one can know everything, eliminating the traditional hierarchy between teacher and student. Because Technical Theatre draws upon knowledge from multiple subjects, both academic and vocational, it would require an expert in

every field to be present if the students were only supposed to learn from the teachers. The Technical Theatre teacher instead acts as a guide, drawing from their own experience (more extensive than that of the students) and helping direct students towards the information, skills and knowledge they are looking to attain. Even Technical Theatre teachers with extensive experience do not always necessarily know more than their students because of the rapid changes in technology both in and out of theatre.

This flow of knowledge regardless of age and experience is amplified by the fact that theatre designers and technicians often work in various locations throughout the country, especially for seasonal positions, and therefore are continuously exposed to different equipment and processes. Because theaters all have their own methods and materials that they prefer to use (as well as varying levels of funding), working in each theater is a completely unique experience, and one that shapes the employees who work there. For example, I know several incredibly talented Scene Shop Supervisors who know nothing about welding, simply because their theatre program does not own a welder. Theatre designers and technicians know that ignorance is not something to be ashamed of, especially when it comes to technology and equipment.

The technology used in theatre is also unique because up until recently, none of it was created for the intended purpose of using it in a theater. Previously, theatre technicians were continuously looking for innovative ways to use existing technology to create the effects or perform the tasks needed for a production. A representative from RoseBrand once visited our graduate studio class and explained to us that the only looms in existence that were large enough to create the seamless cycloramas we see in most theatres were originally used to make the fabric used to upholster trains. Even a great deal of the terminology we use in theatre was stolen from another industry – the earliest stagehands were actually sailors, as their experience

with knots, ropes, pulleys, etc., made them the obvious choice for operating the developing stage technologies of the time. From these sailors we have the terms "deck" and "rigging," and we even have a superstition about whistling inside the theater[9].

A huge part of the innovation in theatre (both historically and presently) starts with a task needing to be accomplished and an individual taking a cue from their own experience to devise a solution out of an existing product, just as the sailors did with early rigging systems. Theatre technicians *have* created their own term to explain this process – the verb "to MacGyver" something is universally understood and respected. This process, which typically involves a significant amount of trial and error, is a perfect example of self-motivated learning through doing; an individual is interested in solving a challenge and therefore experiments repeatedly (while drawing upon other knowledge and experience) to find an appropriate solution.

Accountability and Responsibility as a Student and Citizen

A major argument against Learner-Centered Education is that without an enforced curriculum, a student will become a "passive spectator…waiting for the teacher to do what *will make them smart*" (Zoch xvii). Critics such as Zoch believe that these theories have created a system in which it is expected that the teacher will do what is necessary to teach the student, and that the student is responsible only for allowing this process to happen, with no accountability of his or her own. In addition to creating passive students, Zoch believes that Learner-Centered Education negates the idea that a student must work hard to learn and to succeed at school. In support of this argument he offers the criticism from students who were the product of a child-centered educational institute, stating that by their own admission "they

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[9] Sailors would whistle on boats to communicate instructions – if a person were to whistle in the theater, it could be confused as a signal to perform a scene change at the wrong time, thus injuring the cast and/or crew.

did not learn to study and apply themselves, and wandered aimlessly through loosely planned activities" (Zoch 106).

Technical Theatre eliminates this potential occurrence because it is not a passive activity. Because there is no single correct answer[10], students are required to think and provide solutions (whether aesthetic or practical) and cannot just memorize and regurgitate answers provided by the teacher. If students in Technical Theatre give a response such as "I don't know," it does not indicate that the teacher has failed to provide sufficient guidance, information, or stimuli, but rather that the student has not done his or her part of the work. Accountability in Technical Theatre inherently lies with each individual participant; students must drive themselves through the process of design and implementation, while the teacher guides them and prompts them to stay on track.

Another argument against Learner-Centered Education is that students become disengaged from school not only as a result of having too little demanded of them, but also due to the fact that there are no consequences when students do not meet these meager demands (Zoch 189). Students may work harder when there are consequences, especially when those consequences directly impact their friends and coworkers. In Technical Theatre, if one student does not put in the effort on his or her part, it can affect the entire production, resulting in both a poor reflection on that student and the resentment and distrust of others towards that student[11]. Though education should not be aimed towards satisfying others, it can still be a strong motivator for students who lack the drive to work hard for their own fulfillment.

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[10] There are, of course, clear-cut right and wrong ways to do things – for example, there is most certainly a wrong way to use a table saw. When creating a design or a technical solution, however, there is not a sole, pre-determined answer that must be reached by the student; plays are rarely done the same way twice.

[11] A failed attempt that is the result of an honest effort is rarely met with this type of resentment and distrust, as theatre designers and technicians are generally risk-takers, willing to try and fail. In my experience in education (both as a student and as an educator), I have found it absolutely uncanny how

Technical Theatre, therefore, holds students responsible for their own work through their accountability to the rest of the production team. Students are given tasks which they must complete through their own motivation, but the process and direction they choose to utilize are completely up to them. It is a perfect model of Learner-Centered Education in which students have the freedom to pursue their own interests and can build self-confidence while still having to work hard and be accountable for their work.

Like education, Technical Theatre is a struggle to absorb, create, apply, and integrate knowledge. Each production requires all individuals involved to bring their experience, knowledge, skills and motivation to the process and integrate it all together, each time creating a unique experience that is a direct result of the stimuli - the individuals involved.

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students inherently know when a colleague did not put their full efforts; likewise, I have also been truly inspired by the compassion of students towards each other when they know they tried their best.

CHAPTER 4

THE CURRENT TREND IN EDUCATIONAL THEORY – CONTENT VERSUS SKILLS

The premise behind Learner-Centered theories was that students can learn content through hands-on applications and the acquisition of skills. Though Learner-Centered Education theory was at the height of its popularity during the middle of the 20th Century, other competing schools of thought such as Direct Instruction emerged at that time in opposition to the idea of learning through doing, favoring instead a more traditional approach to teaching core subjects[12]. Today these educators of the traditional methodology cite the difference between the American school system and that of other countries like Japan, who consistently outperform Americans on international assessments (such as PISA[13]). Others like Paul A. Zoch, however, still argue that "The American education system is superior to the Japanese method because of its emphasis on thinking rather than simple memorization…" (194).

Both ends of the spectrum on this topic make strong arguments, but moderates see the need for a balance to be struck between the two. In their book *Shift Ed: A Call To Action for Transforming K-12 Education*, authors David Houle and Jeff Cobb argue that "Such polarization is senseless and detracts from finding replicable, effective ways to implement curricula with an appropriate focus on both content *and* skills" (116). The current movement towards this position of the integration of content and skills can be clearly seen in national initiatives such as the Common Core State Standards and the Four C's, as well as in expanded ideas from educators as to what additional skills are important in education. As previously demonstrated in Chapter 2, Technical Theatre already incorporates content and skills in much the same way these initiatives

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[12] Direct Instruction is a teaching model developed by Siegfried Engelmann that is designed for mass replication…(Nadler 1-2)

[13] Programme for International Student Assessment – a survey given every three years to 15-year-old students with the intention of determining efficacy of schools throughout the world.

propose, making it an excellent model for implementing and/or complementing these movements in a practical and effective manner.

The Common Core State Standards

Released in 2010, the Common Core State Standards are the result of collaboration between teachers, parents, administrators and state leaders. The goal of this initiative was to create a list of the basic content and skills that students should develop based on grade range. The standards are voluntary, and 45 states have already adopted them. States are also allowed and encouraged to expand upon the provided standards as needed. While the standards currently only address Math and English language arts, other organizations are leading their own initiative in developing standards for science, world languages, and the arts.

The Mission Statement for the Common Core State Standards Initiative states that "The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy" (National Governors Association Center for Best Practices). Rather than specify content such as vocabulary and mathematical formulas, the standards suggest skills that students should be able to master that demonstrate knowledge of instructed content. For example, rather than provide a list of specific vocabulary words that all students must know, one of the fourth grade language standards states that students should be able to "Choose words and phrases to convey ideas precisely" (National Governors Association Center for Best Practices). The standards are also left open enough that teachers can work with them however they choose; both learning through doing and direct instruction could be equally effective in meeting the standards, depending on the methodology preferred by each teacher.

ArtsBridge

University of Nevada, Las Vegas (UNLV) offers a program called ArtsBridge, which partners with a local grade school with the goal of using art to effectively teach core subjects. As an ArtsBridge Scholar for the Spring 2014 semester, I have been working on developing a curriculum which bridges art and the core subjects through theatrical design and technology. In meeting with the host teacher of the classroom in which I will be teaching, we have found that the Common Core Standards are extremely useful in helping us develop the objectives of the curriculum I am forming. I have chosen the standards that I think my curriculum can best address, and from there the host teacher is also able to integrate this program into her regular course planning. Not only will the students benefit from the integration of arts as a teaching method for core subjects, but the exposure to the arts that the students will receive will be of great benefit in a school that otherwise may not include a great deal of arts education.

Many of my ArtsBridge lessons have focused on integrating math and language skills into a project surrounding theatrical design. For example, one project focused on creating paper kites that could then be decorated as posters to advertise the play they are designing[14]. Folding the paper to create the kites integrated fractions and the different types of angles (obtuse, right, acute), and while decorating the kite I asked the students to draw a scene that represented the rising action of the play, as they had already learned the parts of a story from their normal classwork (exposition, climax, etc.). The final result of their kites demonstrated whether or not the students had mastered understanding of the content.

With its focus on teaching students how to integrate and apply knowledge, Technical Theatre is an excellent complementary program to the Common Core State Standards Initiative. The implementation of Technical Theatre programs in public schools would create opportunities

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[14] The project for the semester is for the students to design a set and build a model for a story in their reader, *The Emperor and the Kite*.

for students to demonstrate their newly acquired knowledge through a practical application, thus developing the skills encouraged by the Common Core State Standards.

The Four C's

The National Education Association (NEA) recently published a guide to what they call the Four C's – critical thinking, communication, collaboration, and creativity. Dennis Van Roekel, President of the NEA, wrote a letter introducing this guide, in which he explains that as a founding member of the Partnership for 21st Century Skills, the NEA is working to "prepare our young people for college, work, and life." While "every child should possess strong content mastery," the Four C's are equally important in helping "our students connect learning with real life and to provide them with the necessary skills to prepare them for success" (Roekel 1).

The Partnership for 21st Century Skills (P21) was established with help from the NEA in 2002, and began by highlighting 18 different skills as part of the "Framework for 21st Century Learning." Eventually these 18 skills were narrowed down to four (the Four C's) that were determined by educators and leaders to be the most important (National Education Association 3). The research and development of the Four C's is based upon the stance that "America's system of education was built for an economy and a society that no longer exists…In the 21st Century, citizenship requires levels of information and technological literacy that go far beyond the basic knowledge that was sufficient in the past" (National Education Association 5).

Despite their advocacy for integrating skills and content, P21 and other proponents of these 21st Century Skills meet opposition from traditionalists who believe the focus in education should be solely on content:

> Criticism from supporters of core knowledge that supposedly twenty-first-century skills like critical thinking, teamwork, and problem solving are nothing new is correct to an extent. Successful people have always needed most of the skills that are often touted now as the path to curing our educational ills. But all hype aside, the broad and collective urgency for mastering these skills has never

been higher...the context in which those skills must be applied and the speed with which that context is changing is simply unparalleled in history (Houle/Cobb 116).

Employers and other educators nationwide are supporting the importance of 21st Century Skills. The Bill and Melinda Gates Foundation supported a study in which University of Oregon professor David T. Conley found that skills such as "'analysis, interpretation, precision and accuracy, problem solving, and reasoning' can be as or more important that content knowledge in determining success in college courses" (National Education Association 8). According to a 2010 study performed by the American Management Association, executives from several major corporations were surveyed regarding their views on the importance of 21st Century Skills; 75 percent of those surveyed believed these skills would gain importance for their companies over the next few years, and 80 percent agreed that "fusing the 'Three Rs' and the 'Four Cs' would ensure that students are better prepared to enter the workforce" (National Education Association 6).

21st Century Skills

Tony Wagner, the co-director of the Change Leadership Group at Harvard Graduate School of Education, is another advocate for the importance of 21st Century Skills. Wagner sees one of the flaws in our current education system in the fact that "Increasingly, there is only one curriculum: test prep." Though he admits that knowing academic content is necessary for students to succeed, he offers seven "survival skills" that would help "teach students to think instead of merely drilling for the test" (Houle/Cobb 123). These seven skills include the Four C's and offer excellent descriptions of their importance in today's workforce; through each of these descriptions, it is clear that Technical Theatre is an excellent model for teaching all of the 21st Century Skills.

#1 - Critical Thinking and Problem Solving

From an employer standpoint, this skill is critical for the success of a company in today's global economy, and according to many executives, "the heart of critical thinking and problem solving is the ability to ask the right questions" (Houle/Cobb 123). The successful theatre designer or technician knows that posing questions - both to others and to themselves – is crucial. For example, a Technical Director must be continuously thinking and asking about the practicalities of a scene design, such as, "How many people need to stand on this unit?" or, "What type of shoes will the actors be wearing?" Failing to ask these questions could result in unsafe situations. The designer, on the other hand, must be asking themselves, the director, and the rest of the design team, "What will the audience take from this? What does it mean if I choose one color over another?" These are only a few of the many questions that occur on a daily basis throughout the production process.

#2 - Collaboration and Leadership

"Teamwork is no longer just about working with others in your building" (Houle/Cobb 123). Thanks to technology, teams are often spread out across the world, and must learn to interact and communicate using this technology (such as conference calls, webcasts, internet meetings). In theatre, this is also true. Many times a director or designer will be working on another production miles away, and the only way to hold a production meeting may be through using web-based video technology such as Skype. Summer Stock theaters also frequently face this problem, as most of their design and production team does not meet in person until the build period starts; all of the pre-planning must be done via email, conference calls, or other technology.

#3 - Agility and Adaptability

Not only do the skills and technology change, but even the jobs or job descriptions change in this day and age. Clay Parker of BOC Edwards states, "I can guarantee the job I hire someone to do will change or may not exist in the future…" (Houle/Cobb 124). The ability to adapt and learn new skills now goes beyond one dedicated skill set. Students in a Technical Theatre program are adaptable in a way that would easily prepare them for this new mindset; since every production is a new experience, even when a student consistently performs the same role within a production, that job may be completely different from one production to another. Additionally, theatre students are normally expected (if not required) to perform more than one job at some point during their education – most students have experience in at least two or three different roles.

#4 - Initiative and Entrepreneurialism

Mark Chandler of Cisco describes this skill set as the ability to overcome risk aversion. "I say to my employees, if you try five things and get all five of them right, you may be failing. If you try 10 things, and get eight of them right, you're a hero. You'll never be blamed for failing to reach a stretch goal, but you will be blamed for not trying" (Houle/Cobb 124). Technical Theatre is grounded in trying new things and letting our failures guide our future success. Because of the ever-changing nature of the field, designers and technicians are habitually coming up with new, creative solutions to design or technical challenges, and not all of them work.

#5 - Effective Oral and Written Communication

Effective Communication is not just limited to an ability to spell and punctuate. Wagner states that in interviewing various executives, "the complaints I heard most frequently were about fuzzy thinking and young people not knowing how to write with a real voice" (Houle/Cobb

124). Students may understand and be able to employ the technical skills required with speaking and writing, but without a focus of what they are trying so say, their communication skills are still lacking. Technical Theatre requires students to learn to express themselves and clearly convey their ideas on a daily basis. Designers in particular develop this skillset through necessity, as design ideas are often intangible or difficult to express in words. Finding ways to communicate these abstract ideas to the director, other designers and technicians implementing the designs is a crucial skill learned in Technical Theatre.

#6 - Accessing and Analyzing Information

Thanks again to technology, the amount of information that is accessible today is overwhelming, and much of it is still changing - Wagner gives the example of how many planets there are in the Solar System, a number that has changed even as recently as the last decade (Houle/Cobb 124). Students need to learn not only how to access the information, but also how to pick out what is pertinent and valid. Theatre students learn in an environment where the information and technology is in a constant state of change, and are therefore already accustomed to this condition and able to adjust with it. The amount of research that is required of both designers and technicians also makes these students even more prepared; they may even have the upper hand by still knowing how to use books and libraries for this research.

#7 - Curiosity and Imagination

In a world strife with mass production, individuals are constantly looking for means to define themselves as unique. "Daniel Pink, the author of *A Whole New Mind*, observes that with increasing abundance, people want unique products and services: 'For businesses it's no longer enough to create a product that's reasonably priced and adequately functional. It must also be beautiful, unique, and meaningful'" (Houle/Cobb 124). This is the quintessential description of the end-goal of a theatrical production. Audiences generally do not want to see the same

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production done the same way twice, nor do designers often choose to reuse old designs. Theatre communities and their audiences want new, innovative, and interesting designs that also function both technically and metaphorically. Theatre artists have been adhering to this idea for years.

The trend towards integrating these skills into a traditional curriculum has established itself in current educational theory. Now it is up to educators to find ways of achieving this goal. Though there already exist several models that attempt this integration (as will be discussed in Chapter 5), it is clear that Technical Theatre programs inherently build crucial life and work-related skills into an academic curriculum through encouraging focus on both content *and* skills.

CHAPTER 5

MODERN ACADEMIC MODELS BRIDGING THE GAP

Despite modern trends towards using education as a way to train students for future jobs and careers, there are very few advocates encouraging students towards strictly vocational training. Opponents of vocational training argue that all high school students must receive enough training to be eligible for postsecondary education, even if they are attending a vocational program (Graubard 13). Attending college and attaining academic degrees is still considered by many to be the only road to success. Therefore any modern attempt at teaching skills needed for the workforce must be accomplished by integrating these skills into an academic program.

Several different types of programs have developed over the last century that attempt to bridge this gap between vocational training and academia. For example, "Tech prep, career academies, industry majors, youth apprenticeships, and other innovations have demonstrated the possibility of combining preparation for both college and careers" (Gordon 15). Other less vocationally-aimed programs and institutions, such as Progressive schools and A+ Programs, attempt to integrate skills and knowledge through experiential and hands-on learning, as well as through the arts. These innovations have all demonstrated both advantages and challenges in their approaches; through a brief examination of each of these programs, it is clear that Technical Theatre offers a different solution that can help achieve the same goals in public schools.

Progressive Schools

The Chicago Laboratory School, founded in 1896 by John Dewey, is one of the oldest institutions attempting to reform education through hands-on learning. It began as an

experimental elementary school through the University of Chicago where Dewey was teaching. Today the school admits students from Nursery School through High School, and offers a curriculum based on hands-on learning that is described as ever-changing and fluid, allowing students to pursue academic excellence through their own interests (Lab's Curriculum).

While there is little data to demonstrate whether students from this school (or other progressive private schools) fare any better than their counterparts at other institutions, what is clear challenge with this option for offering hands-on learning is that it is extremely expensive to send your child to the Lab School. Tuition for Nursery School is over $17,000 per year, and is in the higher $20k range for middle and high school. Though financial aid and scholarships do exist, it is often up to the parents to apply for funding, leaving many students without an opportunity to attend this or other private/progressive schools (Tuition).

Though most modern schools that follow the Progressive ideals are private, the John Dewey High School in New York City was founded in 1969 as a public school "where students would take increased responsibility for their own education" (John Dewey High School). However, according to InsideSchools.com, a website dedicated to providing statistics, descriptions, and analyses of New York City schools, the John Dewey High School has been having a difficult time. The analysis given on this website suggests that the Progressive aims that started the school have fallen by the wayside, due to budget cuts, staff turnover, and a new student population that is no longer attending the school by their own volition. The problems suffered by the John Dewey High School are not unique; budget cuts and staff turnover are prevalent throughout the public education system, making it difficult to sustain any type of experimental program (John Dewey High School).

Technical Theatre programs, however, offer an excellent progressive and experimental model that does not necessarily require a great deal of money or many more staff members,

making it ideal for either private or public schools. As a Technical Director I have built productions for as little as 200 dollars and have supervised students working with even less. One of the most useful skills learned in Technical Theatre is resourcefulness; designers and technicians learn how to creatively work with what is available, how to procure donated materials or discounts, and how to find and use alternative materials for interesting effects. For example, I worked on one student thesis production while at Washington University in St. Louis in which the designer decided to use window screen to create scrim-like walls[15]. I purchased one hundred dollars' worth of window screen from a hardware store and sewed it together in my dorm room, creating a unique and beautiful effect for a full-scale black box production.

Technical Theatre programs can also be spearheaded by very few individuals, with additional staff and resources needed if and when the scope of productions grows. While teaching at St. University High School, I was not only the Faculty Technical Director, but also designed and built the scenery, costumes and props, and also did most of the painting. As a private school with excellent funding, there were very generous budgets for the four plays we produced ach year, but with only two full-time faculty/staff members to run everything. Theatre technicians and designers commonly have backgrounds in several disciplines, making it fairly easy to find individuals to teach and work in a program that can only afford one or two staff members.

Rather than reform or create an entirely progressive school, or send children to progressive private schools, Technical Theatre programs in public schools can afford the same opportunities for experimental and integrated learning at a lower cost, both for the school and for the parents. The creation and/or renewed support of such programs would not require

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[15] A scrim is a large drop made from a fabric with a large, open weave. When lit from the front, it appears opaque, but when lit from behind it becomes translucent, allowing the audience to see action happening behind the scrim.

much more than for schools to dust off their old woodshop equipment and hire one staff or faculty member with a background in Design and Technical Theatre. While a program may require a small capital of funding initially, once created the program could sustain itself with very little money by using stock scenery items[16] repeatedly and in various ways. Different schools within a community could also easily work together to develop a stock of items needed (such as platforms, flats, costumes and props).

A+ School Programs

School reform generally faces more difficulty than just the funding. It requires the commitment of the entire faculty and administration, as well as additional training in many cases. One of the most successful attempts at school reforms in the last few decades has been that of the A+ School Programs, originally established in 1995 by the Kenan Institute for the Arts, in North Carolina. As their website describes, "In A+ Schools, teaching the state's mandated curriculum involves a collaborative, many-disciplined approach, with the arts continuously woven into every aspect of a child's learning" (About A+ Schools). Cores subjects are still taught in these programs, but students are given the option of several arts-based electives to take each quarter that tie directly into the curriculum being taught in the core classes. Because of the required relationship between the core and elective classes, A+ Schools must commit to creating an entirely new curriculum that links various subjects together through an arts-based approach, while still adhering to state and federal standards.

In order for an institution to become an A+ School, 85 percent of the faculty must vote in agreement to do so. The faculty must then attend whole-school training sessions, including several summer sessions and conferences over the first five years (Become A+). Additional

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[16] Stock scenery typically includes flats (lightweight fake walls), platforms (used to create flooring), stairs, doors, windows, etc., which can then be arranged in different fashions and painted to change the look for each production.

teachers with backgrounds in the arts are often hired, to instruct both students and other teachers, who often have little artistic training. Though the commitment demanded of teachers is considerably more in an A+ School, analyses of these schools have indicated that both students and teachers benefit from the integrative arts-based approach, creating a positive environment in which all members were engaged. Not only did the students and teachers find instruction to be more interesting and enjoyable, but parents and community members have noticed considerable improvements throughout the communities and school systems (Noblit et al 168).

A+ Schools offer most of the same benefits that Technical Theatre programs can. However, the time, money, and commitment required for these programs can be prohibitive. Although the programs have grown and spread over the past decade throughout North Carolina (and also adopted in Oklahoma), it is not likely to see the establishment of these programs throughout the United States in the near future. Because the demands are much fewer, Technical Theatre programs could be a more plausible reform movement for many schools. Ideally, Technical Theatre could be a stepping stone for schools wishing to join the A+ reform movement.

Career Academies

Though Progressive schools and A+ School Programs endeavor to teach core subjects through hands-on skill-based learning, their purpose is still to promote academic understanding and achievement rather than to train students for any particular career path. On the other end of the spectrum are more vocational-based training programs such as Career Academies. "Established more than 30 years ago, Career Academies have become a widely used high school reform initiative that aims to keep students engaged in school and prepare them for successful transitions to postsecondary education and employment" (Kemple 1).

Proponents of Career Academies explain that the value of these institutions is increasingly important today as careers and jobs require more training, skills, and/or academic credentials for recent graduates entering the workforce. The objective of Career Academies is to provide students with traditional academic training necessary for advancing to postsecondary education, while also teaching them the skills and knowledge necessary for specific career paths chosen by the students. These programs also integrate education with on-the-job training, often offering apprenticeships or internships with private companies (Smith 1-2).

Students entering a Career Academy must do so voluntarily, selecting the academy based on an interest in broad categories such as technology, health care, hospitality and finance, with more specific tracks offered in each. In addition to this benefit of providing more extensive training in a certain interest, students also benefit from an environment in which everyone chooses to be there (unlike in public schools). In describing the Engineering Academy at Oakland Tech, Allen Graubard explains:

> Student's having chosen to join is an important source of their commitment – a traditional principle, this, of progressive education. As one student told me, explaining his sense of how students work together and help each other do things before asking the teacher, 'everyone who is here *wants* to be here' (Graubard 15-16).

One downfall to relying on Career Academies for bridging the gap between vocational and academic training, however, is that this level of commitment on the part of students does not often exist. Most high school students, and even many college students, have no idea what they want to do for a future career. There seems to be a trend in the past decade toward the idea of the "full-time student," college students who continuously return for multiple degrees in varying fields without pursuing a career (or even a job) in any one of them. With this indecision

so prevalent among students in secondary and postsecondary education, it does not seem practical to assume that Career Academies offer the correct solution for all students in need of vocational or technical training. Technical Theatre, on the other hand, provides students exposure to and training in a variety of technical areas without asking them to commit to anything more than a class, after-school club, or a production timeframe.

Perhaps another reason that not many students are able to make the commitment required by enrolling in a Career Academy is prompted by the stigma associated with vocational training in general. From my own experience as a student, I was advised to continue to my education in a liberal arts program before even considering pursuing technical training. Once a student leaves academia for the technical world, it seems, the possibility of returning is almost non-existent. Though in reality it is perfectly feasible to return to academia at a later time, this stigma still persists: "many persons reject vocational education for their children not because of a snobbish prejudice but because they fear that when their children enroll in a vocational curriculum they will be cut off from further education and deprived of future educational and career opportunities" (Gordon 31-32).

Parents, students and academic advisors are all potentially affected by this stigma, making it incredibly difficult for students to receive exposure and encouragement towards technical or vocational training. Rather than separate this training from mainstream schools completely, one solution might be to work towards the incorporation of specific technical skills in the regular classroom. The addition of Technical Theatre extra-curricular programs to already existing drama programs in public high schools, for example, would expose students to basic carpentry, mechanics, and computer-related technical skills (just to name a few). In addition, these after-school clubs would experience the same benefit observed in Career Academies –

because students would be choosing to be there, they would have a greater investment in their own educational experience.

Shop Classes

A recent article from Scotland entitled "Creativity Through Practical Woodworking" discusses the benefits that a woodworking class can have when implemented at the high school level. These benefits include an increase in the ability to use and understand technical vocabulary, a clear development of numeracy skills, and an awareness of health and well-being through safety concerns when working in a woodshop. The article also addresses what it refers to as the "big issues," lessons that students can learn to help them as citizens: working with a natural resource encourages students to think about sustainability and environmental responsibility regarding conservation and recycling; the skills they learn can apply directly to volunteering opportunities, such as building a playground; and the problem-solving skills learned through woodworking can increase a student's entrepreneurship and "enterprising ways of thinking and acting" (National Education Curriculum Support).

Boston educators have recently incorporated more woodworking classes into public schools, including one middle school where the principal made it a required class. In an article entitled "Drills and Skills," author Linda Matchan quotes several educators who whole-heartedly believe that students need the experience of working with their hands, not only to increase their "manual competence," but to reinforce other core subjects. While the author states that "There's no research to support the idea that learning woodworking can help students in other areas", she does quote two studies within the past decade that indicated a correlation between hands-on learning in technology and the success rate of students[17] (Matchan 1).

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[17] "a 2009 Purdue University study funded by the National Science Foundation showed that eighth-graders using hands-on techniques in engineering and technology learned more than students who were taught with books and lectures. And in 2007 the Little Hoover Commission, a

One of these experimental programs recently launched in Boston involves middle-school students spending one class period per week learning "carpentry, furniture making, and other manual arts…under the guidance of master craftsmen." The principal of one of the schools partnering in this endeavor explains that "The program got started because we see people coming to our school without having had hand-skill training in the lower grades. They lack three-dimensional abilities and even curiosity about how things work. I'm constantly aware of people here who floundered in traditional academic schools but are truly gifted spatially." Considering the popularity of Howard Gardner's Theory of Multiple Intelligences over the past three decades, it seems odd that educators have not previously recognized the value of woodworking classes for developing these kinesthetic skills.

Fortunately there are clear examples of educators trending towards incorporating technical skills in the public school system. However, it is still a difficult topic to sell to those who believe education should be purely academic. Technical Theatre programs offer a method for introducing technical skills to students without sacrificing any of the academic content traditional to public schools.

California state agency, concluded that vocational and shop programs had a positive effect on students: They stayed in school and graduated at rates higher than their peers, and were more likely to pass the high school exit exam and pursue post-secondary education" (Matchan 1).

CHAPTER 6

THE FUTURE OF CAREERS AND JOBS

The Changing Workforce

Today's workforce is vastly different from that of the early 20th century; whereas

vocational schools were created during that time period to train individuals for a specific career

that they would remain with for their entire adult life, employees today rarely stay with the

same employer for such long extents. "The average person born in the latter years of the baby

boom held 11 jobs between the ages of 18 and 44, according to the U.S. Bureau of Labor

Statistics" (Bureau of Labor Statistics 1). It is no longer reasonable to train students for a specific

career; instead, students need to acquire the skills that will make them flexible, adaptable, and

creative employees.

Though the idea of jumping from one job to another throughout one's adult life might

seem strange to older generations, this is currently the norm and does not necessarily indicate

economic failure. Success is no longer measured by or correlated to stability in a career. In an

article entitled "Liberal Arts II: The Economy Requires Them," author Richard A. Greenwald

describes how this phenomenon is often by choice on the part of younger generations, who "are

hustling from gig to gig, too" (2). Greenwald explains that the traditional career ladder from

decades ago is now very rare, "And narrow sets of skills may not be the ticket they once were"

(2).

Greenwald's argument in this discussion is that liberal arts programs in colleges prepare

students better for this new economy by providing them with the "breadth, cultural knowledge

and sensitivity, flexibility, the ability to continually learn, grow and reinvent, technical skills, as

well as drive and passion" necessary for success in the variety of jobs they may hold in their

lifetime (2). The difficulty with Greenwald's argument, however, is that his support of the liberal

arts may be too broad, provoking opposition from those who cite the large group of liberal arts graduates still looking for jobs without any clear objectives. From my own experience in a liberal arts program, I saw many of my fellow students struggling to find the connection between what they were learning and the skills they were developing in doing so.

Technical Theatre programs provide these same benefits cited by Greenwald, and have the added advantage of integrating many of the subjects included in liberal arts programs, while also incorporating STEM[18] subjects. Working in Technical Theatre provides a tangible opportunity for students to appreciate the usefulness of liberal arts studies, as they are able to see the direct application of what they learn in their coursework to the physical realization of a production.

Greenwald is not the only advocate for the relevance of liberal arts programs in the current economy; after SUNY Albany decided to close several departments within its humanities program, Gregory Petsko, Professor of Biochemistry and Chemistry at Brandeis University wrote a letter to the President of SUNY Albany in which he discusses many reasons as to why the liberal arts are still important. Petsko was himself a classics major, and argues that the courses he took in the humanities benefited him the most in his career – "These courses didn't just give me a much better appreciation for my own culture; they taught me how to think, to analyze, and to write clearly. None of my sciences courses did that" (138).

Taking the argument a step further than simply advocating for the skills taught in liberal arts, Petsko also points out how quickly our world is changing, leaving those with too narrow of a focus without a competitive edge in the work force. For example, he discusses how only a few universities sustained their Middle Eastern Studies programs in the last century when enrollment was declining; with the events of September 11, 2001, it was suddenly clear that "we

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[18] STEM – A popular anagram describing the general field of Science/Technology/Engineering/Math

needed a lot more people who understood something about that part of the world" (2). He continues to explain that "The best way for people to be prepared for the inevitable shock of change is to be as broadly educated as possible, because today's backwater is often tomorrow's hot field. And interdisciplinary research, which is all the rage these days, is only possible if people aren't too narrowly trained" (2).

Technical Theatre programs excel at creating students who are "broadly educated" versus "narrowly trained." Technical Theatre students are exposed to a variety of knowledge that exceeds most other fields, as it incorporates nearly every subject matter in some capacity. Whereas the saying "jack of all trades, master of none" used to be considered a negative trait, in today's ever-changing world and economy, the ability to understand a little about a lot has become a very desirable quality.

The Moving Workforce

Today's economy is not only changing, but moving – it is no secret that many jobs are being outsourced to offshore companies and individuals, leaving many Americans unemployed. Economists Alan Blinder and Frank Levy discuss the idea of what jobs can be done electronically (and therefore are "offshorable") versus those that "require face-to-face contact or are inherently tied to a specific site" (Crawford 34). For example, physicians treating patients must do so in person, whereas the radiologist reviewing an x-ray could do so from miles away. Blinder predicts that 30 to 40 million jobs in the U.S. have the potential to be performed from other locations (i.e. NOT in the United States), creating "a massive economic disruption that is only just beginning, affecting people who went to college and assumed their education prepared them for high-paying careers with lots of opportunity" (Crawford 34).

Matthew Crawford explains that the difference between which jobs can be outsourced and which cannot lies in the "human element." This human element describes the fact that in

many cases decisions and solutions must be reached that cannot be prescribed by a formula or a workflow. Crawford offers the example (quoted from economist Frank Levy) of a car mechanic who must use his/her own intuition, knowledge, skill and training to fix a transmission even when the "computerized test equipment says the car's transmission is fine" (Crawford 35).

Technical Theatre programs include this human element in a variety of ways, one of which is that art and designs are not created electronically by a predetermined formula. Working with actors, directors, and the design team also requires a great deal of the human element, as there is psychology involved in working with others creatively. Even if there were no designers involved and the production elements were built by an offshore company, once the scenery arrived there would still need to be technicians capable of assembling it – anyone who has bought furniture from IKEA knows that the instructions included in the package usually require a significant amount of creativity and problem solving to interpret.

In addition to being a career choice that is less likely to be moved offshore, Technical Theatre teaches the skills that can help students incorporate this "human element" in any career they may choose, especially through the ability to problem solve. According to Crawford, one reason that problem solving skills taught in traditional courses do not necessarily help students achieve the "human element" is due to the fact that they are taught in a predetermined setting, allowing students to already have an idea of where they are supposed to look to find the answer. For example, "When you do math problems at the back of a chapter in an algebra textbook, you are problem solving. If the chapter is entitled 'Systems of two equations with two unknowns,' you know exactly which methods to use…But in the real world, problems don't present themselves in this predigested way…" (35).

Students do not necessarily need to limit their career goals to jobs that are impossible to outsource. Instead, students should focus on learning the skills (such as problem solving

without a predetermined set of steps to follow) that make them indispensable to whichever career path they pursue. Participation in Technical Theatre programs can enable students to develop these skills while exposing them to a variety of possible career choices.

Preparation for the Workforce

Even testing has begun to reflect this shift in what skills are needed for graduating students entering the workforce. The College and Work Readiness Assessment test (CWRA) is a new method of testing that may be competing with the SAT. According to Dr. Roger Benjamin, the President of the Council for Aid to Education, "The CWRA measures high school students' critical thinking, analytical and quantitative reasoning skills, problem solving, writing mechanics and writing persuasiveness skills that educators and employers believe high school graduates need to have to succeed in college and work" (Rubin). He goes on to say, "The CWRA is more congruent with the requirements of today's "Knowledge Economy" in which it is more important to be able to access, structure and use information than to only accumulate facts."

The problem with using a test like the CWRA versus the SAT, however, is that multiple choice tests (such as the SAT) are much easier to grade, and also easier to teach to. The CWRA is not based on right or wrong answers, making it a much more difficult process to grade and assess students' answers. Benjamin believes that "There are important soft skills such as creativity and collaboration, but the challenge is how to measure them at the same level of scientific reliability as the skills that we are currently measuring reliably." However, in recognizing the new trend towards the processing versus the accumulation of knowledge, he concludes that "content is important but when you can google for facts you've got to be able to think about what it is you're going to be googling for" (Rubin).

Because research is such an integral part of both the design and technical process, Technical Theatre students know the importance of processing knowledge rather than simply memorizing facts. As a teacher of Technical Theatre, I believe it is incredibly important to teach students how to research, as it does seem to be becoming a lost art thanks to the advent of "googling." In my Intro to Tech Theatre class, for example, I assign each student a topic related to the parts of a theater and common scenic elements, and then ask them to each present for 10 minutes on their topic. It is truly amazing to see how many students either give up or present the wrong information simply because Google does not know the difference between a knife track and a Swedish Pop Band. It is in fact quite difficult to find much good information related to Technical Theatre on the internet, forcing students to turn to that scary building filled with books – the library. Because of the obscurity of information, Technical Theatre students eventually (we hope) become experts both at research and at processing content.

Could Vocational Training Make a Come-back?

Due to the changing and moving workforce, as well as the new set of skills deemed as desirable, "white collar" jobs are becoming increasingly more difficult to acquire and hold on to for long periods of time. However, it appears that "blue collar" jobs are still experiencing a shortage of employees, perhaps because of the traditional belief that only office or corporate jobs can lead to economic success.   This belief is entirely incorrect, and recent proponents of vocational training are exposing the myth. Mike Rowe of the popular television show "Dirty Jobs," for example, wrote an article in 2013 entitled "The Worst Advice in the World – Work Smart, Not Hard – What a Stupid Idea That Was," in which he tells about a Caterpillar dealership in Las Vegas that was recently hiring. "They had more than 20 openings for heavy-equipment

technicians…A heavy-equipment technician with real-world experience can earn upward of six figures. And the training program is free!" (Rowe 2).

It is hard to believe that with all the talk of soaring unemployment in recent years that there are actually "3 million jobs…available that either no one can do, or no one seems to want" (Rowe 1). Mike Rowe is not the only one pointing out the irony of the current stigma against jobs in the trades. Matthew Crawford based his entire book off the premise that for some people, working in the trades can be both more rewarding and more lucrative than corporate or office jobs. In fact, office work is actually against our human nature: "It is a rare person who is naturally inclined to sit still for sixteen years in school, and then indefinitely at work, yet with the dismantling of high school shop programs this has become the one-size-fits-all norm…" (Crawford 73).

Crawford believes that schools would do better to train future creative minds if students were pushed more towards the manual trades, but acknowledges that "This would take courage. Any high school principal who doesn't claim as his goal "one hundred percent college attendance" is likely to be accused of harboring "low expectations" and run out of town by indignant parents" (Crawford 32). Technical Theatre can provide an excellent manner in which to expose students to manual training through a program that still fits into the college-bound curriculum, making it a strong step towards the reestablishment of vocational training without requiring as much of this courage on the part of educators.

Based on recent developments such as the reintegration of woodworking classes into public schools and the well-spoken outcry for the support of the trades, it is plausible that vocational training could slowly be making a come-back. Crawford advises readers to "learn a trade in the summers" even if they do decide to go in for a four-year liberal arts degree, encouraging them to reject "a life course mapped out by others as obligatory and inevitable"

(Crawford 53). My advice to a student, on the other hand, is to go into Technical Theatre, wherein he or she can learn manual skills while still receiving and applying a liberal arts education. From there, the student has options that go in either direction, and he or she might actually have fun along the way.

CHAPTER 7

CONCLUSION

At the USITT Conference in March of 2014, one of the sessions entitled "Project Management as an Approach to Technical Direction" suggested that the role of a Technical Director is actually quite similar to that of a Project Manager. The session provided detailed descriptions of the job duties of a Project Manager and the different steps involved in Project Management, and then compared these descriptions to the equivalencies in Technical Direction (Phillips et al). Though the rest of the audience members were thoroughly convinced by the end of the session, I didn't have to be – I had already discovered this similarity three years ago when working frequently with Project Managers at Prosum.

Most of the similarities between Project Management and Technical Direction are not unique to either field; both careers require strong communication and leadership skills, an ability to keep a project organized at both a big-picture and small-detail level, and a temperament inclined to working with others. I am quite certain that thousands of professionals in every field imaginable would argue that these skills are also of value to them in their work. Does this mean that all of these professionals experienced the same type of training to develop these skills? Probably not. However, each of these skills does require development and nurturing, which are typically provided by some type of structured training.

Through informal discussions with colleagues and friends over the years, I have heard of many different sources from which these skills were cultivated – boy scouts, church groups, swim team, military training, and participation in band or choir, just to name a few. Though I absolutely agree that there are benefits in all of these various groups and programs, I still truly believe that Technical Theatre is unique for its additional advantages. Not only does it teach important 21st century skills while integrating the fundamentals of core knowledge, but it

includes a "wow" factor that sparks a student's curiosity and keeps it ignited for the rest of his or her life.

Another presenter at the most recent USITT Conference was Dana Taylor, a high-school and undergraduate Technical Theatre professor who won this year's Education Award. Dana teaches in a very small town, and mentioned at one point how even he will ask himself from time to time, why do we do all this work for the arts? He answered his own question by showing a photo from a recent production and explaining the reaction of the audience, including himself: "It was just…cool!" Theatre is filled with these "cool" moments, these unexpected instances where you shiver or cry or laugh so hard you cry, which Dana acknowledged as important because they "make (the students) feel as if they're part of something larger" (Taylor).

Technical Theatre provides a home for its students, and anyone can belong. In our family we support each other, rely on each other, and help each other grow. We aren't afraid of learning, of being wrong, of having to think for ourselves, of trying something and failing, or of being overwhelmed, both by work and by emotion. We are open-minded, welcoming of others and new ideas, always ready for a challenge, and only scared of being bored. We are like those eight-year-olds with their first chemistry set, excited to see what will happen with our next experiment (though hopefully we can exercise a little more control…)

Just as Paul Zoch said about learning[19], *theatre* is a demanding task. Theatre is a mental and physical change, an adjustment of the theatre designer/technician/audience member's mind, brain and body to the demands of the environment. In order to learn, these individuals involved in theatre must seek answers and not infrequently struggle to understand the unknown and unfamiliar. They must summon forth all their knowledge and experience to understand and

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[19] See quote in the Preface, page vi.

comprehend new information; they must relate the new information to what they already know and reconcile new knowledge with old knowledge; and they must make the knowledge a part of their personalities and beings, weaving the new knowledge into the fabric of their mental existence. Each play is, after all, the sum of their experiences and knowledge. Each play is therefore unique, the result of stimuli and happenings that no other production has experienced. Theatre is learning. And what a fun lesson it is.

APPENDIX A

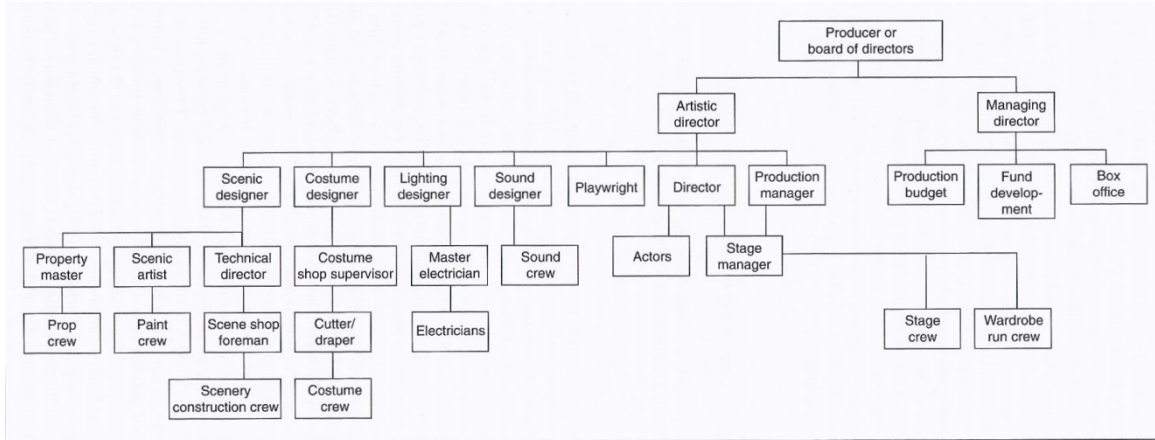Theatre Personnel - Hierarchy Flow Chart (Gillette 7)

FIGURE 1.6
The organizational structure chart of a typical theatrical production company.

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Education

Education

University of Nevada, Las Vegas   *May 2014*
MFA, Technical Direction *(In Progress)*

Washington University in St. Louis   May 2005
Bachelor of Arts, **Design/Technical Theatre**
- Emphasis in Scene Design and Costume Design
- 3.68 GPA

Sentinel High School, Missoula, MT   June 2001
High School Diploma
- 4.0 GPA

Lycée Marceau, Chartres, France   June 2000
BAC de Français
- Exit Exam for high school – French portion only is taken at the end of the Junior year of high school
- An average of 10/20 on all the exams is required for graduation
    - 12/20 Oral Exam
    - 6/20 Written Exam

Teaching Experience

University of Nevada, Las Vegas, Las Vegas, NV   August 2011 – May 2014
- **ArtsBridge Scholar (Spring 2014):** "*UNLV ArtsBridge is an outreach program of the UNLV College of Fine Arts which partners UNLV students majoring in art, architecture, dance, film, music and theatre with local at-risk elementary and middle school classrooms to teach biology, math, and a variety of other topics using the arts.*" As an ArtsBridge Scholar, I will be using Design & Technical Theatre to develop a curriculum aimed at increasing students' reading, analytical and problem solving skills, while drawing upon what they are learning in other core subjects such as math and history. I will be teaching one hour per week throughout the spring semester.

- **Graduate Assistantship:** As a Graduate Assistant assigned to the Scene Shop, I am responsible for training and teaching undergraduate students as needed. Training includes proper tool usage, construction procedures, and health and safety protocol.

- ***Theatre Technology I (THTR 204):*** A required course for all undergraduate students in the Theatre Department. I have designed a curriculum focused on training students on tools, safety protocol, and construction techniques, while also introducing them to the basics of rigging, sound, electrics, costumes, painting, and stage management. Students are required to undergo health and safety training as well as tool training, and must complete a minimum of 30 lab hours working in the scene shop. Class size is limited to 12 students per semester.

<u>Great River Shakespeare Festival</u>, Winona, MN   Summers 2012 & 2013

- ***Shakespeare for Young Designers:*** A new program developed in 2013 through the Education department. I assisted the Education Coordinator with planning the curriculum, purchasing supplies, and teaching the 9 day program to students whose ages ranged from 11 to 17. The program exposed the students to the design process for both costume and scenic design, and taught students the skills to complete their first design (including research, sketching, rendering, swatching, and model-building). On the final day of the program, students displayed their work (including finished designs) to members of the company and community during an open-invitation portfolio presentation.

- **Technical Advisor:** Each season the interns hired to work in the various shops are invited to participate in the Acting Apprentice Production (a full-scale black box production) as designer and technicians. As a staff member for two seasons, I have been able to mentor these interns, advising them on budgeting, purchasing, scheduling, construction techniques, painting techniques, and creative problem solving.

<u>St. Louis University High School</u>, St. Louis, MO   August 2007 – June 2009

- ***Introduction to Technical Theatre:*** An elective course for juniors and seniors. Classes met twice a week for two semesters. Curriculum covered carpentry, scene painting, make-up design and application, lighting, sound, rigging, sewing, and welding. Students were required to design an independent project for the fourth quarter, relating to any of the elements taught. Class size was between 5 and 16 students.

- ***Advanced Technical Theatre:*** An elective class for seniors. Classes met twice a week for two semesters. Only open to students who had already completed two semesters of *Introduction to Technical Theatre.* Students were asked to design an independent project each semester relating to skills learned in the previous year. Projects relating to other classes, or fulfilling requirements for other classes, were encouraged. Students wishing to design for school productions were expected to take this class to work on their design. Class size was 1-2 students.

- **Tech Theatre Club (Moderator):** An after school club – not for class credit. Open to all St. Louis University High School Students, as well as female high

school students from the surrounding areas. Students were trained in carpentry, lighting, sound, painting, props, and some sewing. Students also participated in running all productions as deck crew, light and sound board operators, follow spot operators, and wardrobe crew. Club met between 15 and 30 hours each week – each student's level of participation varied, based on schedules and other commitments.

<u>Washington University in St. Louis</u>, St. Louis MO
Substitute Teacher
- ***Make-up Design and Application***: Required class for all Theatre Majors. Substitute taught for 3 classes.
- ***Millinery***: Elective class for Theatre and Fashion Majors. Substitute taught for 2 classes.

Continuing Education

Graduate Assistant Teaching Workshops (UNLV Graduate College) (Fall 2013) - A series of one-hour presentations on various topics, presented by UNLV faculty members, and designed to offer professional development opportunities to graduate students. This is a new series which will be part of a Teaching Certificate Program, to be launched in the spring of 2014. **Attended two workshops:** *Teaching Large Classes, Working with Diverse Student Populations*

CM Basic Lodestar Maintenance (Spring 2013) - A one-day course in which participants learn how to disassemble and reassemble a CM Chain Hoist in order to perform basic maintenance tasks

Digico Masters Series (Fall 2013) - A two-day training session in which participants learn how to use and program various Digico Sound Boards.

Awards & Grants

Graduate & Professional Student Association (GPSA) Grant (Spring 2012) – The GPSA grant is awarded to Graduate Students who plan to (or who have already) participated in conferences or research. Students must submit an Abstract describing the conference or research, as well as an estimate budget of costs associated with the project. I applied for this grant to partially fund my conference registration and travel costs for the USITT 2012 Conference.

ArtsBridge Scholar (Spring 2014) **–** The ArtsBridge Program, through the College of Fine Arts, selects four students (from both undergraduate and graduate levels) each semester to teach one hour per week at a local at-risk elementary school. The purpose

of this program is to use Fine Arts to bridge core subjects in a regular public-school setting. I will be developing a curriculum using Design & Technical Theatre to bridge core subjects such as Reading, History, Math and Science.

Presentations

Behind the Scenes at GRSF: How the Scenery is Built (Summer 2013) **–** A one-hour long presentation to a group of Road Scholars through the Educational Outreach program at the Great River Shakespeare Festival. Presentation outlined the process of building scenery for GRSF, including: initial design conversations; white models and initial drawings; budgeting; revisions of designs; planning, drawing, and scheduling construction and paint; final product and challenges overcome throughout the build period.

Graduate & Professional Student Association Research Forum (Spring 2012) – As a recipient of a Graduate & Professional Student Association Grant, I was invited to participate in this forum by giving a ten minute presentation. Since the grant I received was for a future event (the USITT 2012 Conference), I chose to present on what a Technical Director does. I created a PowerPoint that included examples of the work I did for the NCT Production of *The Seagull*, as well as photos of the finished production.

Professional Experience

<u>Great River Shakespeare Festival</u>, Winona, MN   May – August 2012
Technical Director (May – August, 2013)
- Responsible for budgeting, drafting, and purchasing for two main stage productions, performed in repertory, with a budget of $6000, a five-week total build period, and 8 full days of technical rehearsals
- Supervised a shop staff consisting of an ATD, a Master Carpenter, four interns, and acting apprentices
- Coordinated production and load-in scheduling between the Scene Shop, Electrics and paint
- Developed a change-over plan for the repertory season in coordination with Electrics, Sound and Props
- Assisted the Education Coordinator with the implementation of the Shakespeare for Young Designers program
- Mentored interns working on technical aspects of the Acting Apprentice Production

Master Carpenter (May – June, 2012)/ Asst. Technical Director (July – August, 2012)
- Responsible for building the majority of three main stage productions (both wood and steel construction)
- Worked with the ATD and TD to problem solve construction challenges pertaining to the season requirements of 2-hour change-overs

- Supervised and mentored three interns as well as the acting apprentices working in the shop
- Worked with the TD to establish change-over procedures
- Refined the change-overs from 2 hours to 1 hour
- Advised interns designing for the Acting Apprentice Production as needed

UNLV – Nevada Conservatory Theatre, Las Vegas, NV   August 2011 – Present
Graduate Assistant – Carpenter/Welder
- Work twenty hours per week during the academic year as a carpenter and welder
- Responsible for supervising undergraduate students as needed, including training them on correct tool usage, construction procedures, and health and safety protocol

UNLV – School of Music, Opera Department, Las Vegas, NV   March 2012
Technical Director
- Responsible for budgeting, drawing, and constructing a main stage production using the UNLV scene shop after hours with a crew of three additional carpenters
- Coordinated scheduling and labor availability with the Performing Arts Center
- Shopped for all materials and successfully came in under the $7000 budget (including labor)
- Designed the construction of the scenery to meet the requirements of a one-day (8 hour) load-in
- Supervised painting done by undergraduate designer

Prosum Technology Services, El Segundo, CA   October 2009 – July 2011
Human Resources Coordinator
- Performed onboarding for all new employees, including all new-hire paperwork and payroll
- Responsible for several special projects such as deployment of an Online On-boarding module, a Performance Management module, and a laptop tracking database (using Microsoft Access)
- Participated in the hiring process by reviewing resumes, performing phone screens, and conducting in-person interviews
- Created monthly company newsletters using Microsoft Publisher
- Developed an interactive job manual for the position using Microsoft OneNote

St. Louis University High School, St. Louis, MO
Technical Director/Tech Theatre Club Moderator   July 2007- June 2009
- Drafted all scenery on AutoCAD, including some 3D models
- Scheduled and trained students on all aspects of production
- Supervised budget for all technical needs
- Created and maintained a working production schedule
- Researched and purchased all materials needed for production
- Worked with students 3+ hours a day and weekends on productions

- Oversaw organization of storage for props, furniture, platforms, sound and lighting equipment
- Maintained and operated single-purchase fly system (20 line sets)

Facilities Operations Manager   July 2007 – July 2009

- Scheduled and ran events in the Theatre and Gymnasium (sound, lights, projection) while coordinating with in-house events and productions
- Coordinated with clients for their technical needs and facility tours
- Scheduled student employees and supervised their timecards
- Prioritized maintenance and improvement needs
- Wrote annual proposals for capital improvements based on extensive research
- Purchased new tools, equipment, and risers
- Built new storage spaces
- Repaired stage curtains as needed
- Maintained and cleaned the stage, house (300 seats), and loge (310 seats)
- Changed lights in ceiling beams of house

Technical Theatre Teacher   July 2007 – June 2009

- Taught two sections of Intro to Tech Theatre, 16 students
- Taught one section of Advanced Tech Theatre, 2 students
- Prepared lesson plans, assignments and quizzes for the year covering all aspects of production
- Worked with students outside of class on individual projects
- Attended faculty meetings, faculty retreats, and department meetings
- Worked year-round on my own professional development plan

Resident Set Designer/Master Carpenter   October 2005 – June 2009

- Designed up to 2 main stage productions and 2 studio productions each year
- Shopped for materials
- Supervised and performed all set decoration, including soft goods and painting
- Pulled, purchased and created props and furniture
- Worked with students on design of individual pieces

Resident Costumer   October 2004 – June 2009

- Coordinated costumes for up to 4 productions a year, including one musical each spring with a cast of 75-85
- Measured and fit students for their costumes
- Organized and maintained costume shop and costume storage
- Shopped for materials and costume pieces
- Laundered costumes
- Built several major costume pieces each year
- Cut and styled hair, taught and applied make-up
- Oversaw all special effects, including blood
- Oversaw all wardrobe tasks, including quick-changes

ATD/Tech Theatre Club Moderator   July 2006 – June 2007

- Drafted all scenery on AutoCAD
- Researched and purchased all materials needed for production

- Worked with students 3+ hours a day and weekends on productions
- Supervised organization of storage for props, furniture, platforms
- Scheduled student employees and supervised their payroll
- Repaired stage curtains as needed
- Maintained and cleaned the stage, house (350 seats), and loge (250 seats)
- Changed lights in ceiling beams of house
- Assisted Technical Director with maintenance, repairs and improvements
- Worked with Technical Director to create working production schedule

Spirit Halloween Store, St. Louis, MO

Assistant Store Manager   August – November 2005
- Assisted in hiring and scheduling of employees
- Handled till counts and deposits
- Assisted in setting up and packing up the store
- Assisted in display and merchandising of products
- Received and inventoried shipments

Opera Theatre of St. Louis, St. Louis, MO

Costume Shop – First Hand (Cutter)   May – June 2006
- Cut costumes from patterns created by the draper
- Served as go-between for draper and stitchers
- Assisted draper during fittings
- Taught stitchers a variety of skills
- Performed extensive sewing tasks

Costume Shop – Stitcher   May – June 2006
- Sewed for a season of four major productions

Deck Crew   May – July, 2002-2004
- Performed load-in and minimal carpentry for four major productions
- Performed change-overs between productions
- Assisted in strike for productions
- Assisted in moving between warehouses
- Rigging Intern for 2004 season

Union Avenue Opera, St. Louis, MO

Carpenter   June – August 2003
- Worked with Technical Director to build two major productions

Washington University in St. Louis, St. Louis, MO

Costume Shop Crew   October 2003-May 2005
- Assisted in producing costumes for five major productions each year
- Learned draping, pattern-making, dyeing, crafts, millinery
- Aided in organization of costume storage and costume shop
- Assisted in teaching younger students

Scene Shop Crew   August 2001-October 2003
- Assisted in building sets for five major productions each year
- Learned carpentry, rigging, painting

IATSE Local 6, St. Louis, MO
Overhire Carpenter   2002-2003
- Worked with local Stagehands for load-in and load-out for concerts and other large productions requiring staging, lighting, and sound
- Sporadic calls only (as needed)

Professional Affiliations

United States Institute for Theatre Technology (USITT)
- Student memberships in 2005, 2012, and 2014

Conferences

United States Institute for Theatre Technology (USITT)
- Toronto (2005)
- Long Beach (2012)
- Fort Worth (2014)

Society for Human Resource Management (SHRM)
- San Diego (2010)

Selected Production Experience

Nevada Conservatory Theatre (NCT) at the University of Nevada, Las Vegas (UNLV)
Fall 2011 – Present
Technical Director
- *Eurydice*
- *A Christmas Carol* (2013)
- *The Learned Ladies*
- *Gemini*
- *Romeo and Juliet*
- *The Seagull*

Assistant Technical Director
- *Urinetown*
- *A Christmas Carol* (2011)
- *A Streetcar Named Desire*

Scenic Designer
- *Five Women Wearing the Same Dress*

Sound Designer
- *Brighton Beach Memoirs*
- *The Learned Ladies*
- *Gemini*
- *Arcadia*
- *Sylvia*

Great River Shakespeare Festival Winona, MN   Summers 2012 & 2013
    Technical Director
- *Twelfth Night*
- *King Henry V*

    Master Carpenter (build period)/ATD (repertory season)
- *Two Gentlemen of Verona*
- *King Lear*
- *The Complete Works of William Shakespeare (Abridged)*

    Technical Advisor (Intern/Apprentice Project)
- *All's Well that Ends Well*
- *Macbeth*

UNLV School of Music (Opera Department) Las Vegas, NV   March 2012
    Technical Director
- *Carmen*

St. Louis University High School St. Louis, MO   November 2004 – April 2009
    Technical Director, Scenic Designer, Costume Designer, Charge Artist
- *The Boys Next Door*
- *The Foreigner*
- *Child's Play*
- *Room Service*
- *The American Dream & The Zoo Story*
- *Hello, Dolly!*
- *Amadeus*
- *See How They Run*
- *Bus Stop*

    Technical Director, Costume Designer
- *Guys and Dolls*
- *42nd Street*
- *Ah, Wilderness!*

    Costume Designer, Charge Artist
- *The Imaginary Invalid*

    Costume Designer
- *Fiddler on the Roof*
- *Rosencrantz and Guildenstern are Dead*

The Orange Girls St. Louis, MO   October 2005
    Costume Designer - *Going to See the Elephant*

Washington University in St. Louis – Performing Arts Department   August 2002 - April 2005
    Costume Designer – *Into the Woods*
    Assistant Costume Designer – *Cloud Nine*
    Assistant Stage Manager/Assistant Costume Designer – *Shooting Magda*
    Make-up Designer – *Good Person of Szechwan*

Washington University in St. Louis – Student Organizations/Theses Projects
April 2002-April 2004
    Technical Director/Costume Designer – *Dumbwaiter*
    Master Carpenter – *The Queens*
    Costume Designer – *Pippin, Cabaret*
    Assistant Costume Designer – *Once Upon a Mattress*
    Costume Designer/Stage Manager - *Downsize*

Related Skills

- *Technical Theatre:* AutoCAD, Knowledge of Vectorworks, MIG Welding, Rigging, Lighting and Electrics, Sound Design, SFX, QLab, Audacity, Scenic Carpentry, Scenic Painting, Stage Management Experience, Draping, Pattern Making, Sewing, Hair/Make-up Design and Application, Mask Making, Millinery, Crafts, Dyeing, Costume Design, Set Design, Props Design and Construction, Comfortable with heights, Able to operate a Genie Lift and a Scissor Lift, Able to operate both single- and double-purchase fly systems

- *Management/Office Skills:* Budgeting, Scheduling, Purchasing, Microsoft Office Suite (Word, Excel, Access, Publisher, PowerPoint, Outlook, OneNote), Typing (60 w.p.m.), Proficient on both Macs and PCs, Excellent time management and communication skills, Excellent organizational skills, Inventory Management, Maintenance Management