

## **Relating Theater and Systems Engineering: Experiences of a Systems Engineer in Theater Courses**

### **Giulia Palma, University of Alabama in Huntsville**

Giulia Palma is a PhD student at the university of Alabama in Huntsville in the systems engineering program. Some of Her research interests include analyzing case studies using storytelling metrics and developing methods to use theatre as a surrogate for complex systems.

### **Dr. Bryan Mesmer, The University of Alabama in Huntsville**

Dr. Bryan Mesmer is an Assistant Professor in the Department of Industrial and Systems Engineering and Engineering Management at the University of Alabama in Huntsville. Dr. Mesmer was previously a Postdoctoral Research Associate in the Department of Aerospace Engineering at Iowa State University. He completed his Ph.D. in August 2012 at the State University of New York at Buffalo in Mechanical Engineering. Also at the University at Buffalo, he completed his M.S. in Mechanical Engineering (2010) and a dual B.S. in Mechanical and Aerospace Engineering (2007). His research has focused on improving the systems engineering process, particularly for large-scale complex systems. He uses his background in decision analysis, multidisciplinary design analysis and optimization, system/subsystem modeling, design theory, and value-based design to perform research on topics including: interactions in systems and design; incorporation of end-user models and simulations in design; preference representation and communication; the arts in systems engineering; and integration of new system and design processes in government and industry practice. He is currently the University Lead of the NASA Systems Engineering Research Consortium, leading efforts on the development of systems engineering principles and the integration of modelling techniques.

### **Prof. Amy Guerin, University of Alabama in Huntsville**

Amy Guerin is a faculty member in the University of Alabama in Huntsville Theatre Program. She previously taught at Texas A&M University. In 2009, Amy's production of *A Midsummer Night's Dream*, a collaboration with A&M's Department of Computer Science and Engineering showcasing flying fairy robots alongside human actors, was featured in *Wired Magazine*, on *NBCNews.com*, and on the NPR program *Science Friday*. She has also directed the plays *Lend Me a Tenor*, *Les Liaisons Dangereuses*, *The Conduct of Life*, *Bus Stop*, *Measure for Measure*, *An Ideal Husband*, *Tartuffe*, *Machinal*, *I and You*, *Neighborhood 3: Requisition of Doom*, and *Twelfth Night*. She blogs about theater at [discoball-tartuffe.wordpress.com](http://discoball-tartuffe.wordpress.com). Amy received her BFA in Theatre from the University of Oklahoma, and her MFA in Directing from the University of Houston. She co-founded *Nova Arts Project*, a Houston-based theater company, which received the *Houston Press MasterMind Award for Outstanding Creative Contribution* in 2009.

# Relating Theatre and Systems Engineering: Experiences of a Systems Engineer in Theatre Courses

## I. Introduction

Systems engineering is a highly diverse discipline, involving topics on design, decision analysis, requirements documentation, theory development, and many more. Because of this diversity, systems engineering curricula vary greatly by program. One element of systems engineering that is typically not addressed in depth in curricula is the human element. Understanding stakeholder preferences, representing those preferences, and communicating those preferences are key aspects of many systems engineering approaches. Courses focused solely on these topics are lacking. Understanding preferences involves placing oneself in another person's shoes, understanding their perspective and beliefs. In systems engineering courses, the communication of preferences is commonly assumed to be performed by logical, rational actors. The issue with that assumption is that the systems engineer must define rationality, and it is then commonly defined with a focus on mathematical engineering metrics. The human element is strongly present in these aspects of systems engineering, but the depth in which these topics are addressed in traditional systems engineering programs is limited.

A discipline that deeply explores the human element is theatre. Theatre has its own diversity in topics, but the human element is present in almost all. Placing oneself in another person's shoes and communicating desires are key skills taught in Script Analysis, Theatre History, Directing, and Acting. Possible benefits exist if these skills are brought into a systems engineering curriculum. To explore the usefulness of these skills and the challenges in an engineer learning such topics, a systems engineering graduate student participated in numerous theatre courses. This paper discusses the experiences of the student and identifies relationships between systems engineering and theatre. A future is envisioned where an interdisciplinary program is designed that blends engineering's mathematical basis with theatre's human and communication basis.

## II. Background

The collaboration between the fields of engineering and theatre can be observed in technically demanding productions, such as shows like Cirque Du Soleil's KA [1], and in college programs, such as theatre engineering. Shows such as KA require engineers to help bring the vision of the show to life through technical features such as lighting, rigging, pulley systems, etc. Theatre engineering programs provide engineers with the education to accomplish those technical feats. Theatre engineering programs are offered at different universities across the United States, such as Purdue University [2], Lafayette College [3], the University of Arizona [4], and Pennsylvania State University [5]. Theatre engineering programs focus on educating students on how to use their engineering skills to help artistic productions, from film to theatre, focusing on the technical aspects.

## III. Methodology

In order to explore what other disciplines have to offer in terms of the human element in systems engineering, a PhD student audited a series of Theatre courses over multiple semesters. These courses included Script Analysis, Theatre History, Directing, and Acting. In addition to auditing these four courses, the student attended rehearsals for two productions, *I & You* and *Neighborhood 3: Requisition of Doom* held at the University of Alabama in Huntsville (UAH), to observe how

the process of crafting a production evolves. The courses and activities the student participated in are presented in the next section in the order the participation occurred.

## Findings from the Specific Theatre Courses/Activities

### IV. Learning About Theatre

#### Script analysis

##### *Description*

The Script Analysis course served as an introduction to theatre productions, exploring how to critically analyze a play's script. This course offered hands-on experience by letting the students analyze several scripts, of different genres, in class and at home, by themselves or in groups. The process of script analysis is lengthy and detailed, accomplished by performing action analysis, identifying given circumstances, studying the structure of the script, and studying the characters in depth, among others. These topics all contribute to understanding the playwright's vision and the story deeply.

##### *Lessons Learned*

Learning how to perform a comprehensive script analysis is a useful skill for theatre practitioners. The process of analyzing the scenes of a play through studying the action gives the practitioners insight on what motivates and drives the characters, and how the plot flows. Action analysis involves the identification of aspects of the play (see Table 1). Each aspect contributes to painting a more comprehensive and detailed picture of the story.

Given circumstances [6] are another important part of performing an exhaustive script analysis. This step focuses on contextualizing the story. Given circumstances describe the time, place, society, politics and law, economic structure, culture and intellect, and religion.

Another useful technique used in script analysis is the decomposition of the script into smaller parts: beat, unit, scenes, and acts [6]. These parts help the theatre practitioners take a closer look at the way the text is structured. The beat refers to lines in the text that are related and that are part

Table 1. Action Analysis Aspects.

| <b>Aspects</b>         | <b>Definition</b>                                  |
|------------------------|--|
| External Events        | Meaningful events that change the character        |
| Internal Events        | Emotional events                                   |
| Seed                   | One thematic word that capture's the play's vision |
| Theme                  | Expanded understanding of the seed                 |
| Super-objective        | Protagonist's overall goal                         |
| Through-action         | Means to accomplish super-objective                |
| Counter-through Action | Challenges to reach super-objective                |
| Climaxes               | Most important events                              |
| Review of Facts        | Who, what, when, where, why, & how                 |

of a conversation topic. The unit is a group of beats and conveys a single idea, such as a character's action. Scenes are a group of units and can be considered to be short plays. Lastly, the act is a group of scenes and is stated by the playwright.

Another topic taught was about understanding the dialogue spoken throughout the play and by each character. This helps set the scene of the plot and understand the characters' background. For example, it is implied that a character that uses a formal language will probably be an educated individual in contrast to someone who uses an informal language.

#### *Application of Findings to Systems Engineering*

Some techniques from Script Analysis can be beneficial to engineers especially when it comes to understanding the stakeholder's true preferences and eliciting them. Script analysis focuses on understanding the context in which the characters act and their motives and personalities. The context, which can be studied through given circumstances, helps create a more comprehensive picture of why the characters act a certain way and why they hold a specific set of preferences. A similar approach could be applied to engineering. Understanding the context in which a stakeholder makes certain decisions can aid in eliciting the stakeholder's true preferences.

Another topic learned in Script Analysis that could be beneficial to engineers is the decomposition of the script in to smaller parts. In theatre, this analysis is conducted to study how the script is structured. In engineering, a similar decomposition of systems is performed. It might be interesting to compare the way that beats, units, scenes, and acts relate to engineering systems and subsystems. By analyzing this parallelism more could be learned about system decomposition.

## **Theatre History II**

### *Description*

This course focused on the history of theatre from the years 1600s to the modern era. The impact that society had on the evolution of theatre is presented. The main factors that impacted how society shaped theatre were both time and place. The culture dictated the prominence of types of plays, acting styles and techniques, what kind of stage was used, and types of technical effects, among others. For example, during the English restoration theatre period, between the years 1660-1700, comedy was the most popular genre [7]. This was dictated by the fact that the people sought laughter as they needed to escape the reality of a substantial change in England after the glorious revolution.

### *Lessons Learned*

This course aimed at teaching students how and why the evolution of theatre happened. Societal standards dictated who could write plays and who could star in them. English women, for example, started writing and acting part time in the 1660 [7]. Politics played a major role in what playwrights and plays were acceptable. For example, Konstantin Stanislavski, a Russian theatre practitioner from the late 1800s, who is considered to be the originator of theatre as it is known today, was put under house arrest by authorities because his ideas were considered to be dangerous [7].

### *How can it be applied to engineering?*

Theatre has been heavily impacted by the culture it is found in. Similarly, in engineering, the approaches used have evolved alongside engineering culture. Furthermore, a similarity can be

found in the longstanding predominance of men in both fields until recent years. Another comparison can be found in the heavy involvement of the government and politics. The moon landing was heavily influenced by the space race between the United States and the Soviet Union. Engineers had to push their boundaries to reach the goal set by president John F. Kennedy of landing a man on the moon by the end of the 1960s [8, p. 25]. Societal context played a major part in the evolution of both theatre and engineering. Studying parallelisms between the evolution of both disciplines could yield interesting findings that might help relate the two disciplines even further.

## Directing

### *Description*

The Directing course focused on the practical application of directing and acting techniques. The course culminated in a short performance at the course’s end. Theatre forms and styles were taught, and the responsibilities of a director were presented. Skills learned from previous theatre course, such as Script Analysis, were heavily used.

### *Lessons Learned*

This course was both theoretical, teaching several theoretical approaches to directing a play, and practical, with acting and directing short scenes (see Table 2). Some theoretical topics that were covered in this course include: vocabulary [9], directing tips [9], and phases of rehearsals. Learning vocabulary will ease communication in theatre and help communication be more straightforward and precise. For example, “transitions” in theatre connect two ideas together and it symbolizes how an actor moves on from one idea to the next. Another example, “overlapping”, refers to parts of the play when two or more actors speak simultaneously.

One of the most important topics that was discussed during the Directing course is how to approach directing a play. Directing starts with learning about what the play is about. It is necessary to know what kind of play is being directed in order to use the right tools. Different genres will be carried out differently. For example, musicals require different techniques compared to a drama play. The choreographies found in musicals add another level of complexities that need a specific set of techniques. Trust in the play and the playwright’s vision was also stressed in the course. A director should try to do the playwright’s work justice by respecting the play. Lastly, having passion in the project will change the way a production turns out. The passion a director puts in the project will shine through and it will likely increase the play’s success.

Table 2. Directing Theoretical and Practical Topics.

| <b>DIRECTING</b>               |                              |
|--------------------------------|------------------------------|
| <b>Theory</b>                  | <b>Practice</b>              |
| Vocabulary                     | Improvisation and creativity |
| What it takes to direct a play | Viewpoints                   |

Besides learning about what it takes to be a good director in theory, students participated in group exercises on several occasions. These exercises aimed at letting the students unleash their creativity and apply theory. Exercises required the students to think outside of the box in order to solve the problems they had to face. For example, students were asked to use lines, colors, and feelings to portray a very short scene. Lines, such as perpendicular and parallel, represented the positioning of the actors on stage. Colors, such as burgundy and yellow, were associated with the mood and feelings the scene embodied. Lastly they were given a pace, such as slow or fast, associated with the speed the actors moved through the scene. The theatre professor believed that by limiting the design space through line, colors, and feeling, students' creativity would be stimulated. The students were also under a time constraint, which made them have to resort to innovative approaches to overcome the obstacles presented.

The class practiced acting and moving on stage using the technique of Viewpoints [10]. This technique, adapted by Anne Bogart and Tina Landau, is a philosophy translated into a technique for (1) training performers; (2) building ensemble; and (3) creating movement for the stage. A total of three main Viewpoints are identified: time, space, and vocal. Each viewpoint encompasses different facets. The viewpoint of time encompasses tempo, duration, kinesthetic response, and repetition. They all look at different aspects of time. Tempo refers to the speed at which a movement occurs. Duration refers to how long a movement or sequence of movements continues. Kinesthetic response refers to a spontaneous reaction to motion. Repetition refers to the repeating of something onstage. The viewpoint of space encompasses shape, gesture, architecture, spatial relationship, and topography. Shape refers to the contour the body(ies) makes in space. Gesture refers to a movement that engages part(s) of the body; gesture is a shape with a beginning, middle, and end. Architecture refers to the environment the actors are working in and how their awareness of it impacts the way they move. The actors learn "to dance with the space, to be in dialogue with a room, to let movement evolve out of our surroundings" [10]. Topography refers to the floor pattern and the design that the actors create by moving through the stage. The last viewpoint, vocal, encompasses pitch, dynamic, and timbre. Pitch refers to the level of a sound defined by its frequency. Dynamic refers to volume. Timbre refers to a particular sound emitted. Viewpoints exercises allow the actors to learn how to move through the space without context. Viewpoints help actors train their movements, they are not about telling a story.

An important expected outcome from the Directing course was learning what being a director entails. Being a director includes learning how to direct actors, stimulate the actors to move through the space, and realize that productions are a joint effort between all theatre practitioners.

#### *Application of Findings to Systems Engineering*

Similar to theatre practitioners that use different techniques and tools to approach different theatre production, engineers perform a similar analysis to figure out the best practice for each system. This is also closely tied to the importance of keeping the main stakeholder in mind when developing a system. In theatre it is seen when the director and everyone else involved in the production work towards doing justice to the playwright's vision. In engineering it is seen when engineers work towards trying to please the stakeholder's vision.

This course aimed at teaching the students multidisciplinary teamwork and leadership skills. Theatre practitioners, as do engineers, work closely with individuals that come from different

backgrounds, that speak different jargons, and that have different personal goals. For example, although the main goal of a production may be putting on a successful show, a sound designer's personal goal might be related to the audio system. The possibility of conflicting preferences and goals is a reality that can be challenging. The role that a director has in the production process is extremely important. The director is in charge of keeping the team working towards the common goal harmoniously. Teamwork was tested during the acting exercises that were performed by the students. One of these exercises forced the students to improvise and use their creativity to act a short scene following "line/color/feelings". This exercise put the students in a constrained design space and forced them to think outside of the box to meet the requirements they were given. A similar exercise could be useful in engineering to elicit "inconvenient truths".

The last exercise mentioned in this paper was performed using Viewpoints. These Viewpoints of time, space, and vocal, are useful to actors for training and learning how to move through space. They are different aspects of acting that allow the actors to practice each aspect individually to then bring them together in a performance. Similarly, in Model-Based Systems Engineering (MBSE), Viewpoints are used to look at a system from different angles. It is important to understand the different Viewpoints in MBSE to effectively disseminate information to the engineering audience. Using a new approach to Viewpoints based off theatre Viewpoints might introduce a novel method to improve information dissemination in engineering.

### **Acting III**

#### *Description*

This course is the last acting course offered at the university and it is taken by senior theatre students. This course, mostly practical, aimed at helping the students better their acting techniques and skills by teaching the students the classic types of characters found in theatre throughout history, and by performing short scenes implementing the theory learned throughout the semester. This course was divided into three main units: La commedia dell'Arte, Shakespeare, and Viewpoints. The first unit focused on teaching the students about personality and physicality of that era's character types. The second unit focused on teaching the students about classical Shakespearean works. The third unit focused on using Viewpoints techniques to practice moving through the stage, which was previously introduced in Directing.

#### *Lessons Learned*

This course was physically involved, even more than the directing course, as the students practiced acting exercises almost every class period. The students were required to improvise on several occasions while interpreting classical types of characters. Multiple exercises focused on the characters from La Commedia dell'Arte. During the sixteenth century in Italy, the period during which La Commedia dell'Arte was practiced, not everyone in the audience spoke the same language. Different dialects were popular, so theatre relied heavily on physicality, types of characters, and lazzi [11]. Each character would have a distinct way to move on stage, they would wear particular clothes, and often wear a maschera (mask) (Table 3) that would be associated with such character. This would help the audience recognize what type of characters were on stage. Another way that La Commedia dell'Arte tried to bridge the language gap was the implementation of lazzi. Lazzi were actions that had the sole purpose of provoking a laughter from the audience (Table3).

One of the La Commedia dell'Arte exercises required the students to interpret one of the classic types of characters: Flavio, Isabella, Pantalone, and Dottore. Each classical character had their own personality and physicality that the students had to recreate while improvising. Learning such skills was deemed useful for students as it teaches them classic concepts that are still relevant in today's theatre. The exercise consisted in impersonating one of the characters and moving through space and interacting with the other characters interpreted by the other students. Other similar exercises were conducted during which the students had to interpret those characters but they were given a Canovaccio to follow. A Canovaccio was used in La Commedia dell'Arte instead of a script (Table 3). This was considered to be more of guidelines for the actors instead of precise directions. A Canovaccio example would be:

- Flavio loves Isabella, Isabella loves Flavio
- Pantalone, Flavio's father, loves Isabella
- Flavio and Isabella find out that Pantalone and Dottore have planned the wedding of Isabella and Pantalone
- What to do? The servants distract Dottore, they will get him drunk and drugged up!
- Pantalone will be seduced by another woman, his own son dressed in drag...
- The new "lady" convinces Pantalone to ignore the pact with Dottore and puts Pantalone in an uncomfortable situation with Dottore
- The servants take pictures and threaten to tell the town of this great Scandal!
- The two old men say they will do anything for the pictures not to be printed.
- Everything returns to normal!

This Canovaccio above, used in the class for an exercise, shows how the actors have creativity freedom to interpret the guidelines as they wish. No two scenes or plays would ever be the same as it is extremely difficult to recreate something that was not fully scripted.

#### *Application of Findings to Systems Engineering*

This acting course showcased the usefulness of using different types of characters for learning acting techniques. Similar types of templates could be useful in engineering. For example, having some templates to choose from in MBSE tools such as SysML could be beneficial to both cut down time and improve modularity. Additionally, using templates that are known to be successful could also minimize mistakes.

Another lesson from Acting that engineering might benefit from can be found in the use of a Canovaccio. Canovaccio was used by theatre practitioners to provide guidelines for a play. This allowed for practitioners speaking different dialects to be able to use the same Canovaccio and it also allowed for their creativity to shine. Using an approach similar to a Canovaccio in engineering

Table 3. Terminology used in La Commedia dell'Arte.

| <b>La Commedia dell'Arte</b> |   |                  |
|------------------------------|---|------------------|
| Maschera                     | Lazzi                                       | Canovaccio       |
| Mask worn by actors          | Action to elicit laughter from the audience | Story guidelines |

might boost creativity by allowing the engineers more freedom. A “requirements Canovaccio” might provide that freedom.

## **Rehearsals**

### *Description*

Rehearsals for two productions held at UAH, *I & You* and *Neighborhood 3: Requisition of Doom*, were attended to understand the process behind bringing a script to life. In this multidisciplinary effort, which involves actors, stage managers, and sound designer, among others, there are several milestones that need to be met. Theatre practitioners also keep track of the progress, props, actors, and more through forms and reports: production meeting notes, stage manager forms, rehearsal reports, and performance reports. The knowledge and skills learned by the students throughout the courses afore mentioned, and more, were all put into practice during rehearsals.

### *Lessons Learned*

The rehearsal process starts with the first read through during which everyone involved in the production, from actors to props master, meet for the first time to read over the script and share ideas. After the read through, the cast will have a better idea of what their character is like and who they will be interacting with on stage, while the crew will have a clearer idea of what it is expected of them. Each theatre practitioner working on the production will continue to work on their parts until next rehearsal. A rehearsal that is conducted early on is the stumble through. All cast, the stage manager and her assistant, and director take part in this rehearsal. During this rehearsal the actors start running their lines on stage, blocking is finessed, and the props position is studied. Blocking refers to the movements the actors perform on stage. At this point the actors do not have their lines memorized and they are allowed to keep the script on hand. The actors will have their lines memorized by the off book clean rehearsal. During this rehearsal, the actors go through the play for the first time without the script at hand. Blocking is still flexible and it might change before opening night. The tech crew starts integrating their work in the rehearsals during the run show. While the actors are practicing their scenes the tech crew starts practicing the special effects (e.g. sound and lights). The tech aspect of the show will be finessed in the tech rehearsal where the tech crew assumes the main role and the actors work around them. The dress rehearsal is one of the last rehearsals before opening night.

### *Application of Findings to Systems Engineering*

Observing how a play goes through different milestones until opening night provided important knowledge. Similarities between the milestones a production has to go through could be compared to design reviews an engineered system has to meet. For example, during the System Requirements Review (SRR) in engineering the design process focuses on the high level requirements concept. Similarly, theatre practitioners focus on the creative process during idea creation, casting, and table work milestone.

The identification of similarities between theatre and engineering could be further leveraged by potentially using theatre productions as a surrogate for systems engineering. Since the validating process of new engineering approaches can take years, using a system that has similar complexities, such as theatre, might be beneficial for investigating different systems engineering approaches.

## Conclusions and Future Work

The cross-disciplinary education of an engineering student in theatre yielded interesting results in regards to similarities between the disciplines and on useful theatre techniques that could be applied to engineering practices (see Table 4). The knowledge learned will lead to research that will investigate how engineering curriculum can benefit from the adoption of topics taught in Theatre courses.

The next step in the collaboration between theatre and engineering at UAH will be with the “Trading Places Boot-camp” project. This project aims at teaching engineering students theatre principles, and teaching theatre students engineering principles. Questionnaires and professional assessments will be used to determine the knowledge transferred.

Table 4. Engineering Applications of Theatre Topics.

| Course →                       | Script Analysis        | Theatre History          | Directing                             | Acting  | Rehearsals     |
|--------------------------------|------------------------|--------------------------|---------------------------------------|---|----------------|
| <b>Topics Learned</b>          | Contextualization      | Evolution of Theatre     | Teamwork; Improvisation; Viewpoints   | Types; Canovaccio                             | Milestones     |
| <b>Engineering Application</b> | Preference elicitation | Evolution of Engineering | Leadership; Teamwork; MBSE Viewpoints | Templates; Guidelines vs. Strict requirements | Design Reviews |

## References

- [1] “KA: An Epic Show at MGM Grand Las Vegas,” *Cirque du Soleil*. [Online]. Available: <https://www.cirquedusoleil.com/ka>. [Accessed: 08-Jun-2018].
- [2] “Theatre Engineering,” *School of Engineering Education - Purdue University*. [Online]. Available: <https://engineering.purdue.edu/ENE/Academics/Undergrad/MDE/PlansofStudy/theatre-engineering>. [Accessed: 24-May-2018].
- [3] “Merging Theater and Engineering · Engineering · Lafayette College.” [Online]. Available: <https://engineering.lafayette.edu/2011/03/30/merging-theater-and-engineering/>. [Accessed: 24-May-2018].
- [4] E. Stiles and C. of Engineering, “Engineering, Theater Students Combine Skills to Produce High-Tech Stage Sets,” *UANews*. [Online]. Available: <https://uanews.arizona.edu/story/engineering-theater-students-combine-skills-to-produce-high-tech-stage-sets>. [Accessed: 24-May-2018].
- [5] “Theatre meets engineering at Penn State Berks | Penn State University.” [Online]. Available: <http://news.psu.edu/story/505422/2018/02/14/arts-and-entertainment/theatre-meets-engineering-penn-state-berks>. [Accessed: 24-May-2018].
- [6] J. Thomas, *Script Analysis for Actors, Directors, and Designers*, Fifth. Burlington, MA: Focal Press, 2014.

- [7] E. Wilson and A. Goldfarb, *History of the Theatre Living Theatre*, 5th ed. McGraw-Hill Publishing Company, 2006.
- [8] "May 25." [Online]. Available: <https://www.space.com/11772-president-kennedy-historic-speech-moon-space.html>. [Accessed: 03-Feb-2019].
- [9] J. Jory, *Tips - Ideas for Directors*. Smith and Kraus, Inc., 2002.
- [10] A. Bogart and T. Landau, *The viewpoints book: a practical guide to viewpoints and composition*, 1st ed. New York : St. Paul, MN: Theatre Communications Group ; Distributed by Consortium Book Sales and Distribution, 2005.
- [11] A. Fava, *The Comic Mask in the Commedia dell'Arte*. Canada: Northwestern University Press, 2007.