

Bridging Theater and Mathematics: a Playwright's View

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Abstract

The goal of this paper is to offer a playwright's perspective on how mathematical objects could be included in the design of a play. This is an attempt to communicate the meaning of the term "structure of the play" for the playwright by providing an example. The goal is to elicit ideas from others about mathematical objects, proof ideas, etc. that can be used as inspirational structures in playwriting.

Introduction

Since Aristotle posited, in his *Poetics*, the idea that a tragedy implies the fall of a person of high status, a comedy the rise of a person of low status, and that plays should hold to the unities of time, place and action, playwrights have been honing their works through structure. For many centuries playwrights debated the validities of Aristotle's structural prerequisites, but no matter what one's position, one can see that structures can benefit playwrights and that structures can be adapted to suit a variety of topics or themes. To put this idea simply: behind every great play, there is great structure. And perhaps behind great structures there lie great plays.

This paper is prompted by collaboration with Dr. Alexei Kolesnikov, of the Department of Mathematics at Towson University, whose perspective on this collaboration is contained in paper [1], which should be read together with this paper. Through numerous collaborations, Alexei and I discovered that our fields (mathematics and playwriting) have more in common than one might suspect. In each field individuals pursue, through diverse methodologies, an end goal that is often a unique statement of a particular idea or concept. My desire for structures to inspire plays and Alexei's desire to find unique ways to express mathematical structures has brought us to seek other perspectives and initiate conversations about how and why some structures seem to more readily inspire dramatic ideas.

Since 2008 Alexei has been a resource artist in the field of mathematics at WordBRIDGE Playwrights Laboratory, where I am Artistic Director. During three years of collaboration, working with over a dozen of new plays, Alexei and I began to discuss how structures might be useful to playwrights; one example is mapping the levels of conflict in a play into a visible structure. Each year at WordBRIDGE additional connections between playwriting and mathematics are discovered as the playwrights and Alexei discuss how his work and knowledge may connect to their craft and vice versa.

In November 2008, I was commissioned to write a play, *Arithmetic Insurrection*, for the Geomatics academy at Towson University. This play was about four well-known scientists and mathematicians and gave information on their lives as well as explaining several mathematical ideas, but outside of exposing a few structural features of playwriting, such as "the rule of threes," it did not embody the structures of

mathematics. During this time Alexei and I began to discuss ways in which a play could be constructed to not just be about mathematics, but to stem from a mathematical principle. I had written an award-winning play based on the structure of a television game show and was curious to see what mathematical objects might inspire new plays that would not necessarily be about mathematics, or the solving of a problem, but structured by mathematics and even inspired by the way a mathematical object functions.

So what does a playwright need in order to write a play? One possible answer is: Structure! Below, I describe an example of what a playwright means by the term “structure of a play.”

Structure of a Play, an Example

The starting point for this exploration is an exercise that I use in my playwriting classes and workshops. In this exercise, playwrights need to assign character to each square and create alliances based on the matching colors. Then they should make choices about the place, and time of the play, and why would two characters switch their “alliance” in the second act.

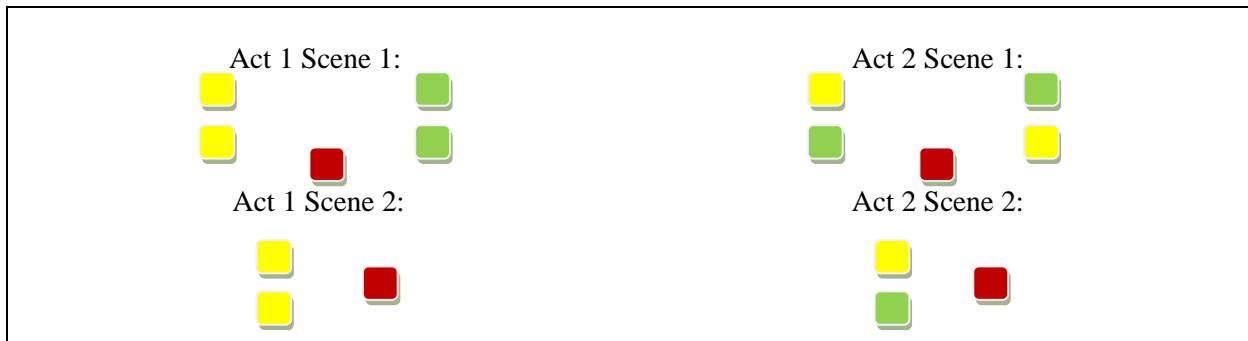


Figure 1: Structure to guide participants to write a play based on *Pyramid*, a game show:

Examples of scenarios inspired by the structure in Figure 1:

- Two couples [pairs of green and yellow] booked the same room in a bed and breakfast and try to convince the host [red] who should get that room; the couples switch because two of the partners get upset by how their counterpart handled the negotiation.
- In a *Star Trek* Universe, Captain Kirk and Spock [yellow] meet two aliens [green]. The two pairs encounter the Alien King [red]. Kirk’s attraction to one alien and Spock’s affinity to the logic of the other upsets the King who proposes a contest that only one group will win.

In this particular structure, what seems to inspire ideas is the switching of alliances, which can create conflict, a central building block of playwriting. Using a structure can inspire, promote, and focus a playwright’s ideas by defining certain aspects of the dramatic structure (the switch of alliances) and then drawing attention to the creative choices needed to explain the changes prescribed by the structure.

The structure of *The Price is Right*, a television game show, was a starting point for my play *Ain’t Nothin’ Quick ‘n Easy*. The game show structure was the backbone and inspired a play that addresses many of the issues facing people in rural America, but the initial inspiration of structure disappeared behind the play’s action and characters. Perhaps in presenting these ideas, additional mathematical or scientific structures may be identified and discussed that will inspire new plays and ideas.

References

- [1] Alexei Kolesnikov, *Bridging Theatre and Mathematics: a Mathematician’s View*. This volume.