2018 SCS Annual Meeting
Session 9: Agency in Drama

Low-Probability, High-Consequence Events in Greek Tragedy: A Look at Aeschylus' *Seven Against Thebes*

I present to you a question: does it seem that tragedy in general—not just Greek tragedy—goes out of its way to dramatize low-probability, high-consequence outcomes? Low-probability refers to events are that are unlikely, events that are 1000:1 against, events such as Birnam Wood coming to Dunsinane Hill. In Shakespeare's play, the witches tell Macbeth that nothing can harm him until Birnam Wood removes to Dunsinane Hill. It's highly unlikely that the trees will take up their roots and hike up the hill. But when the troops camouflage themselves under Birnam Wood, the high-consequence event unfolds. Macbeth is caught flat-footed. All is lost.

We see something similar in Sophocles' *Oedipus rex*. The messenger comes out of left field to tell Oedipus that he's inherited the Corinthian throne, and, oh, by the way, your parents aren't who you think they are. How do I know that?—well, I saved you when you were a babe and your real parents had exposed you. Who are my real parents?—well, you have to ask the shepherd. What are the odds of a messenger, and not any messenger, but this messenger coming to Thebes at this exact moment? It's as likely as Birnam Wood coming to Dunsinane Hill. But it happens, and the outcome has high consequences, as Oedipus goes from being a king to an outcast.

This presentation is on how tragedy dramatizes the risk of low-probability, high-consequence events. But there's one problem: how do we know that an event in tragedy is unlikely? I mean, something has to happen, and anything that happens is, in a way, unique. How do we quantify the odds of what takes place against what did not take place? We need a play where we can see this.

In Aeschylus' *Seven Against Thebes* it's possible to quantify the odds of what didn't happen. In *Seven*, seven attacking captains lay siege to seven-gated Thebes. One brother, Polyneices, marshals the attack. Inside Thebes, the other brother, Eteocles, coordinates the defence. The worst-case scenario occurs if the brothers meet at the seventh gate. They would shed kindred blood and miasma would result. If they go to different gates, the worst-case scenario is averted. Or, if they find themselves at a gate prior to the seventh gate, Eteocles could substitute another captain in his place. But the worst-case scenario occurs if they're both at the final gate, as substitutions are no longer possible.

With seven gates, seven attackers, and seven defenders, what are the odds of the worst-case scenario? Let's look at this this way. What are the odds of rolling a six on a six-sided die? There're six equally probable outcomes, so the answer is 1:6. Now what are the odds of rolling two sixes? The outcome of two independent rolls is the product of their individual probabilities. 1:6*1:6=1:36. Now, if there are seven gates,

and the assignations are random, there's a 1:7 chance that Eteocles goes to the seventh gate. The odds of Polyneices going there are the same, 1:7. So we multiply the odds together and find that, the odds of the worst-case scenario is 1:49. Now, what are the odds of the worst-case scenario *not* happening? The answer is 48 out of 49 times. See how Aeschylus doesn't dramatize the likely scenario, but rather the worst-case scenario which is 48:1 against. Thanks to *Seven*, we can quantify how tragedy goes out of its way to deliberately dramatize low-probability, high-consequence events.

But—how do we know that the process of assigning gates to the attackers is random? Easy. The scout tells us:

> As I was leaving
> they were casting lots (κληρουμένους), each to divine by fortune
> against which of our gates he would lead his battalions (77-9, trans. Hecht & Bacon)

Since the attackers draw lots, it stands that Polyneices' chance of going to the seventh gate is 1:7. How do we know that the process of assigning gates to the defenders is random? That's harder. It's not explicit. Eteocles tells us at the conclusion of the first episode that:

> I will go and assign six men, myself the seventh,
> all fully armed oarsmen,
> against the champions at the seven exit-points of the city. (357-60)

Now, when he says that he "will assign six men, myself the seventh" he doesn't necessarily mean he's stationing himself at the seventh gate. So why say this odd phrase?—"assign six men, myself the seventh." I like Roisman's explanation: "it is an image of bad luck, since the number 6 + 1 [in dice games] was considered an unlucky throw."[1] I want to seize and expand this point. There's something ludic about this play; it exudes a sort of gambling hall or lottery atmosphere. We've already talked about how the attackers draw lots and the unlucky 6 + 1 gambling reference. Let's add to this. For instance, Eteocles remarks as he dispatches Melanippus to face Tydeus that: "The chances of battle are as dice (κύβοις) in the hands of Ares (511)." What other gaming references are there? Well, when Eteocles interprets the matchup between Hippomedon and Hyperbius, he says: "Hermes, by divine reason, has matched this pair (624)." Hermes, as Hecht and Bacon note, is invoked in his capacity as the god of luck and fortunate coincidence. Finally, the scout tells us after the brothers die that "they have shared out by lot (διέλαχον) their full inheritance (1039)." The lottery image, along with the ship of state image, are the two dominant metaphors of this play. Because of all these lottery images, I'm convinced that a random process must be involved in how Eteocles assigns the

[1] Roisman, Hanna M. "The Messenger and Eteocles in the *Seven against Thebes*," in *L'antiquité classique*, vol. 59, 1990, 22.

defenders. After all, why would he say that "Hermes, by divine reason, has matched this pair" unless they were brought together under Hermes' tutelage as the god of lots? And why would the scout say that the brothers "have shared out by lot their full inheritance" unless a lottery process was involved in the assignations?

I want to share with you that *Seven* was the first Greek tragedy I read. When I first read it, I thought for sure that Eteocles decides the assignations on the spot, during the shield scene itself. The scout would report and he would say: "Oh, I just have the right guy to neutralize him." In hindsight, that's a very modern reading as that's probably how a general would decide today. But how would this fit in with the lottery images? It doesn't. Later I read Zeitlin's *Under the Sign of the Shield* where she points out that Eteocles clearly says he's going to decide the assignations *before* he meets the scout.[2] But then I thought: "Eteocles decides?—then what's the point of all the lottery and gambling images?" Then I heard Weckler and Wilamowitz' argument that some assignations are done before, and some during. While this solves the problem of the tenses, as during the shield scene sometimes Eteocles says "I shall station," and at other times "He has been chosen," it seems unnecessarily complicated. Because of the lottery references, I was ready to say that Eteocles decides by lot before he meets the scout. But when I recently read Herrmann's conjecture, I was immediately convinced: he conjectures that Eteocles decides by lot during the shield scene itself.[3] Herrmann's conjecture is brilliant. When Eteocles says that he's going to assign the men before the scout comes, he's putting their names in the helmet. As for the tenses, as he picks up the lot he can be saying "I will appoint" or "He has been already appointed." Furthermore, Herrmann's conjecture gives Eteocles something dramatic to do during the shield scene and, what is more, it means that, the defender assignations, like the attacker assignations, are random.

Could Aeschylus and his audience have worked out that the worst-case scenario is averted 48 out of 49 times? No. Sambursky, a historian of science, finds that the lack of both algebraic notation and systematic experimentation held the Greeks back from discovering the laws of probability.[4] The laws of probability would not develop until Cardano starts counting up the number of throws possible with dice two millennia later. But we know that the Greeks were able to understand the concept, if not the math of combinatorial analyses. Xenocrates, for example, mistakenly calculates that, by mixing together the letters of the alphabet, 1,002,000 unique syllables are possible.[5] Despite not being able to compute the exact odds, Aeschylus and his audience would have recognized that the odds of the brothers meeting at the highest gate was an exceedingly low-probability affair.

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[2] Zeitlin, Froma I., *Under the Sign of the Shield*, 45.
[3] Herrmann, Fritz-Gregor, "Eteocles' Decision in Aeschylus' *Seven against Thebes*, in *Tragedy and Archaic Greek Thought*, ed. Douglas Cairns, Swansea: Classical Press of Wales, 2013, 58ff.
[4] Sambursky, "On the Possible and the Probable in Ancient Greece," *Osiris* 12 (1956) 35-48.
[5] Plutarch, *Quaestiones convivales* 733a.

Besides the objective remoteness of the worst-case scenario, what subjective cues give Eteocles hope things will go his way? First, there's the enemy's disarray. Their morale is so low that they're already dedicating memorial tokens to send back home. One of their captains says outright that he's going to die. They also attack before their seer gives the signal. And there's infighting between their captains. Contrast this with the improving morale of the chorus of Theban women, who function as a barometer of morale within the city: they start off in panic, but by the first stasimon, Eteocles wins them over. Many indications give Eteocles subjective hope.

The surest indication that things will go his way comes in the shield scene. In the shield scene, the scout describes, gate by gate, the attacking captain's appearance, demeanor, and shield device. Eteocles, in turn, draws the lot to determine the defender and interprets the tale of the tape. Since chance is a reflection of god's will, you can tell from the random matchups which side heaven favours. In the game of knucklebones, for example, rolling the Aphrodite throw (1, 3, 4, and 6) was considered a propitious sign from the goddess. So, to make up an example, if the bad guy carries a brutal monster on his shield, and your guy happens to be carrying a shield depicting a peasant farmer, that's heaven telling you: "Your guy's going to die." So, how do the matchups work out? Well, in aggregate, the matchups overwhelmingly favour Eteocles. For example, the attacker at the fourth gate sports a Typhon device and he happens to be matched up against the defender bearing the Zeus shield: in myth Zeus had tamed Typhon. Or, as it happens, the attacker at the first gate who shouts out impieties is matched up with a defender who just happens to be "a noble man who honours the throne of Reverence (503)." So, gate by gate, as Eteocles sees the matchups unfolding, he grows more confident.

Objectively, the worst-case case scenario is buried deep in the odds. Subjectively, everything's going his way. He's unified the city. The matchups look better and better. But what's happening? The odds of the worst-case scenario go up gate by gate each time the brothers' lots don't come up. At the first gate, the worst-case odds are 1:49. At the second gate, they go up to 1:36. By the sixth gate, they've escalated to 1:4. See what's happening? Paradoxically, as he becomes more confident, he's actually in greater danger, till the point when he's most confident, at that point he's in the greatest danger. That's the genius of *Seven*: even as the situation becomes subjectively better, objectively things are becoming much worse. At the sixth gate, with his cheeks flush with the glow of wine and his hair all but adorned in ivy, as he dispatches Lasthenes to confront Amphiaraus, he seals his own doom in a stunning twist of fate. When the scout announces Polyneices stands at the seventh gate, the low-probability, high-consequence event comes to pass. The event was objectively low-probability because the odds that it happens is 48:1 against. The event was subjectively low-probability because everything was going his way. By combining subjective and objective probabilities, Aeschylus spring loads the low-probability event so that when it takes place, we feel its impact.

I think these low-probability, high-consequence events are commonplace all over tragedy. Take Sophocles' *Oedipus rex*. Like Eteocles, Oedipus has played his hand well. Everything's going his way. "Don't worry," says the Corinthian messenger, "you're really not from Corinth. You're going to be king of two cities." At the point of maximum confidence, the low-probability, high-consequence event happens and Oedipus loses all. Or take Shakespeare's *Macbeth*. Like Eteocles, Macbeth has played his hand well. "Nothing can harm you," say the witches. At the point of maximum confidence, the low-probability, high-consequence event unfolds: Birnam Wood. Can you see a general trend?—at the point of maximum confidence, an unexpected, low-probability event unfolds with high consequences.

This way of looking at tragedy I call risk theatre. Tragedy warns us, that at our point of maximum confidence, we are, paradoxically, in the gravest danger. I think that tragedy speaks to our confident age, an age of both great risk and great reward. While I was writing this, an article appeared in Wired magazine on November 16 on gene editing.[6] Here in the US the entomologist Akbari is working on a gene drive, a way to supercharge evolution by forcing a genetic modification to spread through an entire population. With the gene drive, he can take flight away from mosquitoes and vanquish malaria—promising, of course, minimal disruption to ecosystems. And on November 17, USA Today reported that in Italy, Doctor Canavero was getting ready to do the world's first head transplant on a human being.[7] What could go wrong?—they had already done one on a dog. Akbari and Canavero are confident, and have the best-laid plans. But so did Oedipus, Eteocles, and Macbeth. I look at tragedy as a theatre of risk because such an interpretation speaks to our technological age of manufactured risk. In such an age, I believe that we have a moral obligation to come to terms with low-probability, high-consequence events. And what better place to explore these than through drama? We emerge from risk theatre with eyes wide open. And I think, if you look at tragedy as a theatre of risk, it will guide you well because you'll be better apprised that the things that hurt you come where you least expect. I'll finish by saying that I've written a book on risk theatre and that I'm in high-level talks with theatres in Victoria, Canada to produce new tragedies based on this exciting concept. The goal to start a new art movement in tragedy. Thank you for listening, and I welcome your feedback on risk theatre, the theatre that guarantees low-probability outcomes, every time.

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[6] Molteni, Megan, "This Gene-Editing Tech Might be too Dangerous to Unleash," Wired, November 16, 2017.
[7] Hjelmgaard, Kim, "Italian Doctor Says World's First Human Head Transplant 'Imminent'," USA Today, November 17, 2017.