Distributing Cognition in the Globe

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MY TITLE TAKES ITS INSPIRATION FROM Edwin Hutchins's 1995 study of maritime navigation, *Cognition in the Wild*.[1] At first glance, an analysis of navigation would seem to have little application to a study of Elizabethan and Jacobean theatrical practices, but Hutchins's book and the methodological assumptions on which it is predicated provide a powerful, flexible model for understanding the complexities and achievements of the early modern repertory theater. Using Hutchins's work and that of other cognitive anthropologists, sociologists, and philosophers, I will argue that our understanding of the playing system, particularly of the mnemonic demands that the repertory system made on its participants, has been consistently distorted by a tendency to view cognition as individual rather than social, which has caused us to imagine the workings of complex group structures in mechanistic terms. In other words, we have mistakenly assumed that properties of the system as a whole must be possessed by each individual within it. Instead, as I shall argue, cognition is distributed across the entire system. This is not in any way to suggest that individual agency has no place. On the contrary, an environment as cognitively rich as the early modern theater is precisely calculated to maximize individual contributions.

To exemplify the difficulties that theater historians sometimes have with taking account of system, I begin with two recent books that discuss rehearsal practices in the Elizabethan and Jacobean periods: Tiffany Stern's *Rehearsal from Shakespeare to Sheridan* and John C. Meagher's *Pursuing Shakespeare's Dramaturgy*.[2] In very different ways, both writers attempt to account for the cognitive demands that the repertory system imposed on early modern actors. Companies performed a stag-

[1] See Edwin Hutchins, *Cognition in the Wild* (Cambridge, MA, and London: MIT Press, 1995).

[2] See Tiffany Stern, *Rehearsal from Shakespeare to Sheridan* (New York: Oxford UP, 2000); John C. Meagher, *Pursuing Shakespeare's Dramaturgy: Some Contexts, Resources, and Strategies in His Playmaking* (Madison and Teaneck, NJ: Fairleigh Dickinson UP; London: Associated University Presses, 2003).

gering number of plays: six different plays a week, with relatively infrequent repetition and with the additional demands of putting on a new play roughly every fortnight. As Bernard Beckerman observed, between 1594 and 1597 a leading player such as Edward Alleyn "had to secure and retain command of about seventy-one different roles, of which number fifty-two or fifty-three were newly learned."[3] In addition to making enormous demands of human memory, these practices raise questions about the mechanics of producing plays under such conditions: simply put, how did actors do it? According to Tiffany Stern, very little rehearsal was scheduled: "group rehearsal was only actually necessary for parts of plays that could not be learnt alone . . . and was therefore the most dispensable part of play preparation, especially as blocking, music, even, perhaps, some gestures, seem to have been conducted during performance by the prompter and his men."[4] Stern argues that actors studied their parts privately or with a senior member of the company. "'Study' seems to have involved teaching a part by imitation; it was not a creative event, nor did it encourage textual exploration and discovery."[5] She also suggests that actors worked "within a 'line'": "having a formula that covered every performance made sense in a theatre in which there was little preparation time: it is always easier to play roughly the same part."[6]

   Stern's insistence that creativity was not a part of the rehearsal process is a welcome corrective to views overly influenced by anachronistic models of playing that assume a director and a set of actors seeking novelty, with the time to make textual (and sometimes personal) discoveries. However, at times she adopts a mechanistic view of system and implies that the agents involved are guided largely by a scripted, conventional set of behaviors. Actors are first described as specializing within a line and then as playing "roughly the same part"; the practice of learning by imitation is later characterized as learning "parrot-fashion."[7] Neither conclusion is borne out by the evidence. To take the example of acting within a line: while

   [3] Bernard Beckerman, *Shakespeare at the Globe* (New York: Macmillan, 1962), 9.

   [4] Stern, 122. Peter Thomson also argues for a minimum of group rehearsal; see his *Shakespeare's Professional Career* (Cambridge: Cambridge UP, 1992), and "Rogues and Rhetoricians: Acting Style in Early English Drama" in *A Companion to Shakespeare*, ed. David Scott Kastan (Oxford; Malden, MA: Blackwell Publishing, 1999), 321–35.

   [5] Stern, 121.

   [6] Stern, 72. Stern here cites T. W. Baldwin, *The Organization and Personnel of the Shakespearean Company* (Princeton, NJ: Princeton UP, 1927), albeit with some reservations. The argument about playing in a "line" was vigorously disputed by Beckerman, and by Gerald Eades Bentley in *The Profession of Player in Shakespeare's Time, 1590–1642* (Princeton, NJ: Princeton UP, 1984). This theory has been recently revived by David Grote in *The Best Actors in the World: Shakespeare and His Acting Company* (Westport, CT, and London: Greenwood Press, 2002).

   [7] Stern makes this comment in her discussion of improvisation, remarking that "an actor, having learnt his part parrot-fashion, had no other obvious input into his own performance" (106).

some specialization seems to have occurred, especially in the case of the leading man and the clown, the implication that players had "a formula that covered every performance" confuses the framework—the types of part played—with the individual performance—the unique demands made by any one part written and performed within it. Indeed, if the parts were *too* similar to one another, the actor risked confusing his roles.[8] If, for instance, David Grote's quite speculative casting of Condell from 1594 to 1597 is accurate, Condell played, among many other roles, the merchant in *Comedy of Errors*, Hubba in *Locrine*, Demetrius in *Midsummer*, Warwick in *2 Henry 6*, Manville in *Fair Em*, Aumerle in *Richard 2*, Chiron in *Titus*, Tybalt in *Romeo and Juliet*, and Hotspur in *1 Henry IV*.[9] While similarities may be detected among these roles, they are by no means "roughly the same part." As Grote himself asserts, "the repertory system demanded that . . . [actors] be able to play a number of different character types."[10] Stern's argument here bears some similarities to M. C. Bradbrook's contention that a stylized, formal, conventional method of acting must have been used in order to meet the constant demand for new plays.[11] Similarly the point about lines being memorized "parrot-fashion" rests upon a notion of imitation that ignores the strong strand of creative imitation in Renaissance poetic theory. Moreover, simply examining the nature of the roles played by both men and boys over the years reveals that they call for an extraordinary range of skills no parrot could possess.

A very different position is argued by Meagher, whose work on dramaturgy is predicated on the assumption that Shakespeare must have been present at rehearsal. He begins with a short passage from Quarto *King Lear*, offered as a "test case":

> *Fool* [sings]   That lord that counselled thee
> To give away thy land,
> Come, place him here by me;

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[8] On interference as a factor in forgetting, see Henry L. Roediger and Kathleen B. McDermott, "Distortions of Memory" in *The Oxford Handbook of Memory*, ed. Endel Tulving and Fergus I. M. Craik (Oxford: Oxford UP, 2000), 149–62, esp. 153–58. David C. Rubin discusses interference theory in *Memory in Oral Traditions: The Cognitive Psychology of Epic, Ballads, and Counting-out Rhymes* (New York and Oxford: Oxford UP, 1995), 147–55.

[9] See Grote, 228–29.

[10] Grote, 19. As with Baldwin, we do have to bear in mind the circularity of the reasoning here, in which working assumptions quickly become conclusions. Compare Beckerman's assessment of Baldwin in *Shakespeare at the Globe* (133–36) and Bentley's in *The Profession of Player* (233), as well as David Kathman's remarks on Condell in "Reconsidering *The Seven Deadly Sins*," *Early Theatre: A Journal Associated with the Records of Early English Drama* 7 (2004): 13–44, esp. 32.

[11] M. C. Bradbrook, in *Elizabethan Stage Conditions: A Study of their Place in the Interpretation of Shakespeare's Plays* (Cambridge: Cambridge UP, 1932), argues that the "general consensus of opinion on Elizabethan acting" was that "gesture would be formalised" and that "[c]onventional movement and heightened delivery would be necessary to carry off dramatic illusion" (109).

Do thou for him stand.
The sweet and bitter fool
Will presently appear,
The one in motley here,
The other found out there.[12]

Clearly these lines embody a complex bit of stage business. Meagher argues that editors have consistently mistaken the character who is "enlisted for the skit"; not Lear but Kent is the "thou" of "doe thou for him stand."[13] This point is made convincingly, but Meagher goes on to argue that "[w]hat has eluded generations of editors is not likely to have been instantly grasped by the company originally mobilizing the play": it therefore follows, argues Meagher, that Shakespeare was "expected to be available at rehearsals, able to explain and install such designs as this."[14] These conclusions are unwarranted on a number of grounds. Editors being notoriously indifferent to staging, it is not uncommon to find editorial explanations of passages that do not take full account of implied stage business. Moreover, Meagher himself would have been unable to solve the puzzle were Shakespeare's presence essential. Shakespeare may well have attended rehearsals, if there were rehearsals. But invoking the need for him to "explain and install" fairly minor bits of business is to assume that the system works rather inefficiently and posits a presiding genius necessary to interpret his craft to his benighted company. We might say: if a critic working at more than four centuries' remove from the expert actors who originally performed the play can reconstruct staging from the text, then such business is clearly embedded there and can have existed independent of the author's presence. This does not mean that Shakespeare was not present—there is every reason to believe that he was—merely that we need not assume he worked as a quasi-director.

Stern's and Meagher's accounts show two tendencies common in discussions of early modern theatrical practice as a system: either conventions are equated with a routinized set of practices, or the specter of such an equation is exorcised by positing an individuation that rescues the system from such a fate. No doubt because of the long shadow that Shakespeare casts over all studies of the theater, there has been a marked tendency to emphasize individual over system, even in studies that are purportedly *about* system. Roslyn Knutson demonstrates that an individualistic, agonistic model has shaped scholarly views of theatrical companies, particularly

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[12] This passage is quoted from the modernized edition of *The History of King Lear* (Q1, 1607–8) in *The Norton Shakespeare: Based on the Oxford edition*, ed. Stephen Greenblatt et al. (New York and London: W. W. Norton, 1997), 1.4.123–30. Unless otherwise noted, quotations in this essay from Shakespeare's plays all follow the Norton text.

[13] Meagher, 20.

of ostensible rivalries between companies. In *Playing Companies and Commerce in Shakespeare's Time*, Knutson discusses the model of "Theatre history as personality" and deftly reveals how assumptions about the business of playing have been shaped by discourses of individual rivalry.[15] Examples include the antagonism between Alleyn and Burbage in the famous Brayne lawsuit that allegedly ignited the feud between their respective companies, or between Shakespeare and Jonson, a supposed rivalry that was said to have sparked the so-called war of the theaters at the turn of the sixteenth century.[16] Just as Paul Werstine has shown how notions of the rogue actor and the pirate printer profoundly shaped narratives of the publication of Shakespeare's plays, so Knutson shows the individualistic bias behind theoretical models developed at the beginning of the twentieth century which stressed personal quarrels as the driving force behind theatrical practices.[17]

The model I propose for understanding the playing system is derived from the field of "situated" or "distributed" cognition. This field comprises a wide range of disciplines, including cognitive philosophy, education, sociology, artificial intelligence, and cognitive anthropology. Studies have produced, for example, qualitative analyses of supermarket shopping, the differences between everyday and school math, work on a dairy farm, and maritime navigation.[18] All these analyses share a view of cognition that foregrounds its social and environmental nature. As D. N. Perkins puts it:

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[14] Meagher, 22.

[15] See Roslyn Lander Knutson, *Playing Companies and Commerce in Shakespeare's Time* (Cambridge: Cambridge UP, 2001), 1.

[16] See Knutson, 1–7 and 103–26. A dissenting view entirely dependent on personalization is argued by James Bednarz, *Shakespeare and the Poets' War* (New York: Columbia UP, 2001).

[17] See Paul Werstine, "Narratives About Printed Shakespeare Texts: 'Foul Papers' and 'Bad' Quartos," *Shakespeare Quarterly* 41 (1990): 65–86. For an account of the perfectly ordinary business practices that in fact underlay the activities of the printers of the quartos, see David Scott Kastan, *Shakespeare and the Book* (Cambridge: Cambridge UP, 1999).

These theoretical models might usefully be extended to the founding scholars of Shakespeare studies; both David Kathman and William B. Long discuss the ways in which W. W. Greg's work on theatrical plots and promptbooks was so influential that it effectively precluded later scholars from actually examining them. See Kathman, passim; and William B. Long, "John a Kent and John a Cumber" in *Shakespeare and Dramatic Tradition: Essays in Honor of S. F. Johnson*, W. R. Elton and W. B. Long, eds. (Newark: U of Delaware Press; London: Associated University Presses, 1989), 126.

[18] The best introductory text on this subject is Stanley Woll, *Everyday Thinking: Memory, Reasoning, and Judgment in the Real World* (Mahwah, NJ, and London: Lawrence Erlbaum, 2002). See also Gavriel Salomon, ed., *Distributed cognitions: Psychological and educational considerations* (Cambridge: Cambridge UP, 1993); Jean Lave, *Cognition in Practice: Mind, mathematics and culture in everyday life* (Cambridge: Cambridge UP, 1988); S. Scribner, "Studying Working Intelligence" in *Everyday Cognition: Its Development in Social Context*, ed. B. Rogoff and Jean Lave (Cambridge, MA: Harvard UP, 1984), 9–40; and Richard A. Carlson, *Experienced Cognition* (Mahwah, NJ, and London: Lawrence Erlbaum, 1997). Lave has worked on math, Scribner on the dairy farm, and Hutchins (cited in note 1 above) on maritime navigation.

> 1. The surround—the immediate physical and social resources outside the person—participates in cognition, not just as a source of input and a receiver of output, but as a vehicle of thought.
> 2. The residue left by thinking—what is learned—lingers not just in the mind of the learner, but in the arrangement of the surround as well.[19]

Similarly, Gavriel Salomon attempts to stake out a middle path between individualistic and system-oriented models of cognition:

> To study a system assumed to entail more than the sum of its components, one needs to assume neither (a) that its components are *fully* determined by the whole system, not having any existence of their own, nor (b) that they are totally independent of the system affecting one another without being changed themselves in *some* but not all of their characteristics through the interaction.[20]

Salomon argues for what he calls a "spiral-like" model "whereby individuals' inputs, through their collaborative activities, affect the nature of the joint, distributed system, which in turn affects their cognitions such that their subsequent participation is altered, resulting in subsequent altered joint performances and products."[21] This model, which stresses both individual and collaborative cognition and provides scope for changes and refinements over time, has important implications for comprehending the early playhouse system.

Material from the distributed-cognitive model has also been employed by cognitive philosophers. Andy Clark, for example, argues that we should not conceive of the brain and the technologies we use as separate entities, the tool simply performing what the brain directs, but that we should instead "see that much of what matters about human-level intelligence is hidden not in the brain, nor in the technology, but in the complex and iterated interactions and collaborations between the two."[22] John Sutton's call for attention to "the cognitive life of things" similarly emphasizes the unstable relationship between interiority and exteriority: "In art, science, and ordinary life we construct, lean on, parasitize, and transform artifacts and external symbol systems. And in turn our bodies and brains are inflected and contaminated by the material supplements and cognitive prostheses which we

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[19] D. N. Perkins, "Person-plus: a distributed view of thinking and learning" in Salomon, ed., 88–110, esp. 90.

[20] Gavriel Salomon, "No distribution without individuals' cognition: a dynamic interactional view" in Salomon, ed., 111–38, esp. 121. Salomon's argument here is derived from the work of D. C. Phillips, *Holistic Thought in Social Science* (Stanford, CA: Stanford UP, 1976).

[21] Salomon, 122.

[22] Andy Clark, *Mindware: An Introduction to the Philosophy of Cognitive Science* (New York and Oxford: Oxford UP, 2001), 154. Clark expands on these arguments in *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (Oxford: Oxford UP, 2003).

incessantly internalize."[23] Sutton's work on memory provides a powerful model for the study of cognition as both historical and social.

Edwin Hutchins's study of maritime navigation proves to be the most relevant for understanding the early modern theatrical system. While the work of Lave, Cole, and Scribner already cited has some applicability, their studies, especially that of Lave, focus on *everyday* cognition, the working strategies by which people use environmental props to cope with mundane affairs. Hutchins, in contrast, studies *expert* cognition and, unlike other authors who emphasize individual expertise (e.g., that of chess masters[24]), he emphasizes group expertise. Moreover, the hierarchical structure aboard ship, overlaid with the need for collaboration as well as the constant integration of novices into the system, contains promising (though of course inexact) parallels to the repertory system. Finally, Hutchins is sharply alert to the need for historical and cross-cultural context, as evidenced by his inclusion of a consideration of earlier navigational practices based on the astrolabe as well as an account of Micronesian navigation, which operates on principles entirely different from those used in Western navigation.

Briefly stated, Hutchins seeks to understand "*naturally situated cognition*," particularly the "relationship between cognition . . . as a solitary mental activity and cognition . . . as an activity undertaken in social settings."[25] He reports on intensive fieldwork conducted on the bridge of a ship and, using these observations as well as research into historical and cross-cultural forms of navigation, reaches a number of conclusions that have implications for understanding theater—that most complex of human cognitive projects. Hutchins criticizes the current tendency in anthropology and other social sciences to view culture as a "collection of things" rather than as a "cognitive process that takes place both inside and outside the minds of people."[26] Like Clark and Sutton, he contends that the lines between "inside" and "outside" are frequently misdrawn or misidentified, "creat[ing] the impression that individual minds operate in isolation and encourag[ing] us to mistake the properties of complex sociocultural systems for the properties of individual minds."[27] That is, human beings create smart structures predicated on a system of constraints which, paradoxically, enable the execution of complicated tasks. Hutchins identifies specific external cognitive tools that function as constraints. For navigators, the

[23] John Sutton, "Porous Memory and the Cognitive Life of Things" in *Prefiguring Cyberculture: An Intellectual History*, Darren Tofts, AnneMarie Jonson, and Alessio Cavallaro, eds. (Cambridge, MA: MIT Press, 2002).

[24] The classic study of the individual expertise of chess masters is Adriaan D. De Groot, *Thought and Choice in Chess* (The Hague and Paris: Mouton, 1965).

[25] Hutchins, xii, xiii.

[26] Hutchins, 354.

[27] Hutchins, 355.

nautical chart is "the key representational artifact."[28] As he argues, "artifacts came to embody kinds of knowledge that would be exceedingly difficult to represent mentally."[29] Such tools are not limited to modern technology: the astrolabe, which Hutchins discusses at length, preceded GPS systems.

Moreover, the physical environment has been carefully structured to organize agents' cognitive activity. "Novice[s]" can thus be "embed[ded]" in the system and perform at a level far above that which they could attain by means of their individual cognitive powers alone. I shall return to this point in my discussion of the apprentice system at the close of this essay.[30] Aboard ship,

> a principal role of the individuals . . . is providing the internal structures that are required to get the external structures into coordination with one another. . . . tools permit us to transform difficult tasks into ones that can be done by pattern matching, by the manipulation of simple physical systems, or by mental simulations of manipulations of simple physical systems.[31]

I will turn now to an examination of several tools, artifacts, and practices of the early modern theater in order to show how they form elements of a cognitive structure that, in constraining and limiting, also enables an extraordinary level of achievement. These elements include the playhouse, the plots, actors' roles, the plays' verbal structures, and the apprentice system and the organizational practices of the companies.

Distributed cognition emphasizes the effects of cognitively rich environments on the agent operating within that system. The design of a physical environment influences how agents behave within it. One example cited by Donald A. Norman is relevant here: in automated control rooms, such as those used in nuclear power plants, enormous levers and buttons could easily be replaced with much smaller ones. But the oversized controls are retained because they orient the power-plant employees within a particular space, clarifying and organizing it so as to maximize "*situation awareness*."[32]

In the case of the early modern theater, the most important element of the environment was the playhouse itself. Players worked in a variety of spaces, some of

[28] Hutchins, 61.

[29] Hutchins, 96. Hutchins here cites Bruno Latour, "Visualization and Cognition: Thinking with Eyes and Hands," *Knowledge and Society* 6 (1986): 1–40.

[30] Hutchins, 224.

[31] Hutchins, 131, 170.

[32] See Donald A. Norman, *Things That Make Us Smart: Defending Human Attributes in the Age of the Machine* (New York: Addison-Wesley, 1993), 139–46, esp. 142.

which provided both vertical and horizontal areas, such as the balcony above and the trap below. Others, such as great halls, offered only horizontal space, with a hall-screen or some other feature allowing for entrances and exits. Only two elements seem to have been absolutely essential: the playing platform and stage doors.

The nature and function of stage doors have for good reason been studied exhaustively and contentiously: it would be difficult to overestimate their importance in organizing and simplifying the activity of the playing companies. I would concur with David Bradley's colorful account of the doors as "the systole and diastole of the great heart-beat of the Elizabethan stage as it fills and empties, fills and empties."[33] The structuring of the space shapes what can be done within it; "this simple machine," as Bradley calls it, orients mental activity in space.[34] For example, a chief point of dispute has been the use (and number) of the stage doors. Andrew Gurr and Mariko Ichikawa, following Bernard Beckerman, argue that these doors functioned fairly simply: an actor or group of actors entered at one door, crossed over the stage, and exited at the other, while the next group enters at the first door.[35] Bradley argues instead that the actor always "re-enters the stage through the door he last left by."[36] Tim Fitzpatrick argues yet a third position, that the doors represented fictional spaces: "one of these offstage spaces is 'further inwards,' a more private place—and . . . the other place is 'further outwards,' more public."[37] M. M. Mahood makes a similar argument, suggesting that one door leads inward and one outward, "especially in interior and urban scenes."[38] Without claiming to resolve this debate, I would argue that a system organized to reduce cognitive demands would tend to favor the Beckerman/Gurr-Ichikawa hypothesis. Arguments such as those put forward by Fitzpatrick and Mahood require that an actor consciously map fictional onto geographic space, or that such mapping be provided for him, either through prompting, annotation of his part, or some other means. When Mahood claims that her hypothesis works especially well for "inte-

[33] David Bradley, *From text to performance in the Elizabethan theatre: Preparing the play for the stage* (Cambridge: Cambridge UP, 1992), 29.

[34] Bradley, 21.

[35] Andrew Gurr and Mariko Ichikawa, *Staging in Shakespeare's Theatres* (Oxford: Oxford UP, 2000), 72–95. This account simplifies their model, which also posits the importance of a central opening (104–33). See also Ichikawa's *Shakespearean Entrances* (Houndmills, UK: Palgrave Macmillan, 2002).

[36] Bradley, 32.

[37] Tim Fitzpatrick, "Playwrights with Foresight: Staging Resources in the Elizabethan Playhouses," *Theatre Notebook* 56 (2002): 85–116, esp. 103. Fitzpatrick first advanced this argument in "Shakespeare's Exploitation of a Two-Door Stage: *Macbeth*," *Theatre Research International* 20 (1995): 207–30.

[38] M. M. Mahood, "Shakespeare's Sense of Direction" in *Shakespeare Performed: Essays in Honor of R. A. Foakes*, Grace Ioppolo, ed. (Newark: U of Delaware P; London: Associated University Presses, 2000), 33–55, esp. 34.

rior and urban scenes," this is also an acknowledgment that it does not work for all scenes or all plays. Even if we accept Fitzpatrick's model, in which stage right is always further in and stage left further out, someone must determine which direction is appropriate for each exit. Further, a play such as *A Midsummer Night's Dream*, which seems rather to dislocate than to establish space, especially within the woods, would not easily lend itself to such a model. Since fictional space is by definition different for each play and each scene, employing it as the basis for conventions that govern stage movement is risky at best. The more thinking that can be off-loaded onto the environment, the more mental energy remains available for those tasks that are primarily internal (memory for the spoken lines, for instance).

The stage, then, is the work-space of the company, simple in its melding of horizontal and vertical structures yet capable of great variety. As Jerzy Limon puts it: "During a performance at the Globe the empty space of the theatre is covered with a layer of fictional meaning that may convert it into practically any other space."[39] The work of this conversion is almost invisible and results from the mastery of this environment and internalization of the conventions through which it is navigated. Indeed, the very paucity of information about the use of stage space is a powerful indication of the tacit, invisible, and profound understanding of the stage that must have underpinned the work of the companies. Not surprisingly, *Enter* is the most common stage direction, occurring thousands of times. Of these usages, about six hundred specify entrance through a door, with the large majority of such directions appearing in some version of the *Enter character x at one door and character y at another* form.[40] Such a direction clearly indicates that this kind of entrance is a departure from the norm and implies that only such movements need be specified.

It is no coincidence that Beckerman developed his hypothesis about the use of the stage doors through a reading of playhouse documents known as "plots," which constitute central cognitive artifacts of early modern theater.[41] These folio-sized sheets of paper contain scene-by-scene accounts of entrances and, sometimes, exits; necessary properties; casting; and sound and music cues. Some extant plots appear to have a hole at the top, presumably for hanging on a wall.[42] Apart from format,

[39] Jerzy Limon, "From Liturgy to the Globe: The Changing Concept of Space" in *Shakespeare Survey* 52 (1999): 45–53, esp. 53.

[40] See Alan C. Dessen and Leslie Thomson, *A Dictionary of Stage Directions in English Drama, 1580–1642* (Cambridge: Cambridge UP, 1999), 84, 73.

[41] See Bernard Beckerman, "Theatrical Plots and Elizabethan Stage Practice" in Elton and Long, eds., 109–24, esp. 115.

[42] See W. W. Greg, *Dramatic Documents from the Elizabethan Playhouses: Stage Plots, Actors' Parts, Prompt Books*, 2 vols. (Oxford: Clarendon Press, 1931), 1:1–171, esp. 104ff and 2:II. Studies of the plots include Kathman; Michela Calore, "Elizabethan Plots: A Shared Code of Theatrical and Fictional Language," *Theatre Survey* 44 (2003): 249–61; Scott McMillin, "Building Stories: Greg,

the remaining plots seem to have a common concern with entrances and scene division. As Beckerman points out, the emphasis on entrances in these documents is most striking. Moreover, the subject of the verb is always a person or persons, entering not into a specified fictional space but either into an empty space (at the beginning of the scenes) or "to" a group of actors already onstage. The door from which the actor enters, the timing of his exit, and the door he passes through—these are rarely noted. When a plot is more specific, it is usually to mark an "*enter at several doors*" direction, as mentioned above, or a dumb show.[43]

The lack of data about doors and exits in the plots attests, as Bradley has argued, to "the existence of a regular and universal method of theatrical interpretation that allowed the texts to achieve their proper effect in performance."[44] But the plots have more to tell us than this. Precisely what they reveal has been debated since W. W. Greg's pioneering study. As Michela Calore shows, Greg was primarily interested in the plots' authority, and he differentiated between literary and theatrical "locutions," arguing that the former "disclose authorial origin" and that the latter were "derived from somebody other than the playwright, that is, from the prompter or book-keeper."[45] Calore rightly points out that such distinctions make little sense in the collaborative world of the theater. Such so-called literary descriptions as occur for dumb shows reveal that "the Elizabethan theatre relied on a specialized code that differentiated, by means of careful linguistic choices, those aspects of stage business that would have required special effects and/or actions and gestures."[46]

Bradley argues that the plots served primarily for the "management of the acting cast: the fitting of the character roles called for by the text to the cast of available actors."[47] However, he concludes that the plots were too cryptic to serve as guides for the actors.[48] He cites as an example the term "the red-faced fellow" to argue that the plots were not public documents: such an appellation, he contends, "could hardly have remained on display in the tiring-house without becoming at best a standing joke, and would have been impossible for use by a call-boy who valued his skin."[49] Stern agrees: plots "were almost certainly prepared for call-boys rather than

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Fleay, and the Plot of *7 Deadly Sins*," *Medieval and Renaissance Drama in England* 4 (1989): 53–62; Bradley, 40–126; and T. J. King, *Casting Shakespeare's Plays: London Actors and Their Roles, 1590–1642* (Cambridge: Cambridge UP, 1992).

[43] For example, the plot of *The Seven Deadly Sins* has "Gorboduck entering in the midst between" (Greg, 1:104ff and 2:II).

[44] Bradley, 5.

[45] Calore, 250–51.

[46] Calore, 255.

[47] Bradley, 83.

[48] For a study of the plotter's "working methods," see Bradley, 40–47, 75–94.

[49] Bradley, 79.

for actors, as is sometimes claimed."[50] (Neither writer makes the case that "call-boys" as such existed in the pre-Restoration theater.) So Greg, Bradley, and Stern ultimately retreat from arguing that the plots were important to the players themselves. Such a view is puzzling and may reflect a desire for these artifacts to tell us not what the players needed to know but what *we* want to know.[51]

The paucity of the evidence and its apparent inconsistency in the surviving plots have puzzled commentators for some time. But if the plots do not in themselves provide the data we think they should, is this not to be expected in a theatrical system that relies on the interaction of its component parts and is not regulated by master-text and master-director? Conjectures based on information such as the use of the term "red-faced fellow" have led many scholars to overlook what the plots actually do tell us. David Kathman and Scott McMillin, in contrast, have examined the plots without such preconceptions and have overturned previous assumptions. Kathman, building on McMillin's work, has convincingly shown, for example, that the plot of *The Seven Deadly Sins* must have belonged to the Lord Chamberlain's Men during the late 1590s rather than to Lord Strange's Men in the early 1590s, as Greg assumed on limited evidence and as virtually all other scholars have unquestioningly accepted.[52] Yes, the plots are often maddeningly incomplete. Bradley complains that in none of them "is there evidence of a fully settled and regular way of registering whatever information it is they are intended to register."[53] This is the inevitable result of their being meant not to solve problems for scholars four hundred years hence but to help an Elizabethan company put on a play.

A plot functioned as a two-dimensional map of the play designed to be grafted onto the three-dimensional space of the stage and to be used in conjunction with the parts. Since players did not have the full text, this document allowed them to see and to chart the play, particularly to understand the rhythm of the scenes. Even if there are many odd gaps in the information that the plots record, we must not

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[50] Stern, 98. Stern argues that the absence of metatheatrical references to plots supports her point; however, plots are cited twice in stage directions, according to Dessen and Thomson (166).

[51] A dissenting view is raised by Patrick Tucker, whose *Secrets of Acting Shakespeare: The Original Approach* (New York and London: Routledge, 2002) promises to reveal the "original approach" to acting Shakespeare's plays. Tucker devises cue scripts (based on the Folio) and plots, and forbids group rehearsal until just before performance. It should be noted, however, that his "Plattes" are fuller than even the fullest existing plots; see, for example, the "platt" of *Two Gentlemen of Verona* (154).

[52] An instructive example from Kathman's excellent article concerns the use of the appellation "*Mr*" to designate sharers. Since some players are referred to as "*Mr*," Greg assumed that only those with that title were sharers. But it is more likely that the plotter was just inconsistent. Indeed, those roles that were not doubled are not identified with any actor; so it seems that this document was constructed on a "need-to-know" basis.

[53] Bradley, 78.

neglect the significance of their most salient features: their size and their physical layout. Here, and here only, the play is given a shape easily graspable by all members of the company. To pursue the cartographical analogy: if we imagine the "book" of the play as a street guide, containing all the information necessary to mount the play but dispersed across many pages and inaccessible to the individual player, the plot becomes the map, in which the architecture of the information is displayed, reduced to its most important component parts.

The chief visual feature of the plots is the underscore that divides scenes, confirming, as Beckerman has argued, the scenic unit's centrality for the Elizabethan stage.[54] The relative clarity of, and the constraints imposed by, the physical spaces of the stage (the doors, the traps, the pillars) combined with the abbreviated and therefore lucid information the plot contains, orient the actors in the play's time and space. Moreover, the plot, like the nautical chart Hutchins describes, is not merely a two-dimensional representation; it is also a "computational device."[55] Plots provide a spatial analogue—the play at a glance, so to speak—as well as a way to chart temporality and repetition, as actors, alone or in teams, enter and re-enter the stage. Moreover, for the actor doubling many small parts, it is indeed a calculating device. In *The Seven Deadly Sins*, for instance, the actor Richard Cowley played a lieutenant (Induction), a soldier (scene 4), a lord (scene 8), Giraldus (scene 10), and a lord (scene 21).[56] Certainly the demands of such a series of roles would have required an external aid. Bradley, while recognizing the plotter's need for pen and paper in order to calculate doubling, discounts the value of the finished document as a cognitive trigger not only for those who were doubling but also for the entire company, whose members could here see the play spread before them. That plots do not seem to tell us all we would wish to know is only to be expected when examining one element in a system of distributed cognition.

This brings me to the neglected question of how actors manage to remember their parts. One of the few clinical studies on actors' memorization is by Helga and Tony Noice, who conducted an ambitious qualitative study of modern actors' memorizing techniques.[57] They point out that memorization is rarely discussed explicitly in acting handbooks, and that directors and acting instructors are reluctant to give specific advice on part-learning.[58] The Noices also sketch out "a general model

[54] Beckerman, "Theatrical Plots," 109.

[55] Hutchins, 61.

[56] See Kathman, 22; and Greg, 2:II.

[57] Tony Noice and Helga Noice, *The Nature of Expertise in Professional Acting: A Cognitive View* (Mahwah, NJ, and London: Lawrence Erlbaum, 1997).

[58] Noice and Noice, 1–9.

of acting cognition," which includes such processes as breaking down the scenes into "beats," determining a character's overall goal and its articulation in each "beat," and then becoming the "character in his or her imagination."[59] They argue that verbatim memorization is a by-product of such intensive study rather than a goal in itself.

While this study breaks new ground in both its methodology and its results, it can tell us very little about how actors in Shakespeare's time may have approached their roles. This is not because the biological basis of memory has changed, but because the mnemonic structures informing the practice of acting are culturally and historically defined. It does not take much reflection to realize that this "general model of acting cognition" is bound very specifically to late-twentieth-century acting practices, which are in turn based on assumptions about character and subtext derived from modern acting theory. Moreover, these practices are the results of institutional conditions such as long rehearsal periods, a relative scarcity of new plays, and, finally, the exigencies of memorizing prose rather than verse. None of these factors can have informed the mnemonic techniques of Shakespeare's actors, a group of men and boys trained from childhood in verbatim memorization, who were given "sides" containing only their own parts and cues (to be learned in a fortnight's time), and who were all the while performing five or six other plays. My purpose here is not to criticize the Noices' analysis but to draw attention to the need for a theory of cognition and memory that is both historically and socially grounded. In one sense, of course, the Noices' findings relate directly to the present study: while the precise mechanisms of encoding differ widely, mechanisms then and now are nevertheless socially distributed in structure. Modern actors depend on different mechanisms of distribution, including access to the entire playtext as well as to other forms of information about the play, the director's guidance, and the processes of group exploration and discussion employed in rehearsal practices.

Lois Potter has researched memory in contemporary repertory companies, organizations whose structures and working methods may more closely resemble those of the early modern theater. Surveying members of the English Shakespeare Company after a long tour of productions of the *Henry VI* cycle, she asked these actors how well they remembered both their current parts and parts performed in the past.[60] Many of them report embarrassing moments of being "out," but the other errors they report are often trivial. One actor recalls a time when he confused similar speeches from different plays, saying "'Good my lord of Lanc-, Leicester—Gloucester' ('all famous cheeses', he pointed out)."[61] However, even recognizing such

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[59] Noice and Noice, 114–15.

[60] See Lois Potter, "'Nobody's Perfect': Actors' Memories and Shakespeare's Plays of the 1590s," *Shakespeare Survey* 42 (1989): 85–97.

[61] Potter, 94.

confusion as error may be anachronistic. The "error" here may be lack of fluency—correcting oneself and thus exposing the mistake—rather than the slip in the name itself. Here a question arises about the standards of memory in the theatrical system. Lois Potter's work on an actor's insecurity and the terror that he will "with his fear" be "put besides his part" (Sonnet 23, l. 2) attests to the importance of remembering parts and not being found "out." But what counted as being perfect in one's part is a matter of debate. As noted above, we live in a text-rich environment and have access to sophisticated technologies of reproduction that allow easy comparison of an original text to a particular performance of it (one thinks of audiences who read a play's text during live productions). The notion of textual fidelity is problematic for the early modern period and has led some critics to misconstrue the nature of the so-called "prompt-book"—the "book of the play" held by the company, the playhouse document containing the entire text.[62] As William B. Long has pointed out, calling this book a "prompt-book," as Greg has done, has led to anachronistic assumptions that derive from later and more elaborate theatrical systems.[63] Some of the speculation about the "prompter" comes with the tendency, discussed above, to posit an individual agent who coordinated what was in fact a widely distributed system. G. E. Bentley, for example, in rebutting the suggestion that "the prompter's function . . . may have been carried on from time to time by various fellows of the troupe," claims that the "prompter's chores must have been so multifarious and vital and many of them so nerve-wracking that irregular substitutions would surely have produced chaos."[64] Later Bentley argues that the large number of new plays meant that "a letter-perfect rendition must have been unheard of, and prompting a constant necessity."[65] This is another example of the failed-system approach to explaining the early modern theater. In this model a frantic prompter barely saves the play from complete disaster. This argument assumes not only a dysfunctional system but also an expectation of "letter-perfect" renditions, in which every syllable is recalled precisely.

Instead, I would suggest that prompting is built into and distributed across the system: it is called "verse." As Samuel Daniel reminds us, "verse is but a frame of words confined within certain measure, differing from the ordinary speech, and

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[62] Scholars do not agree on how many copies of a play manuscript were produced, but they do agree that complete copies were not available for the actors.

[63] Long, 126–28. Long argues that the terms *playbook* and *bookkeeper* are at once more accurate and less likely to lead an investigator to "unwarranted assumptions" (127). For a contrasting view, see Tiffany Stern, "Behind the Arras: The Prompter's Place in the Shakespearean Theatre," *Theatre Notebook* 55 (2001): 110–18; and, in response, Andrew Gurr and Gabriel Egan, "Prompting, Backstage Activity, and the Openings onto the Shakespearean Stage," *Theatre Notebook* 56 (2002): 138–42.

[64] Bentley, 80, 81.

[65] Bentley, 82.

introduced the better to express men's conceits, both for delight and memory. . . . [Rhyme] consist[s] of an agreeing sound in the last syllables of several verses, giving both to the ear an echo of a delightful report, and to the memory a deeper impression of what is delivered therein."[66] Repetition and the use of patterns of tropes and figures, so characteristic of 1590s drama, also aids recall. This much is obvious. But we might take this argument further and note that iambic pentameter is a structure not just for remembering but also for forgetting. That is, the establishment of a rhythmical structure both prompts the memory and allows fluent— that is, unnoticed—forgetting. So long as the beginning and, especially, the ends of speeches are recalled (for cueing purposes), and so long as the player never gives the *appearance* of being out, who is to know? This point is amply borne out by Laurie E. Maguire's study of slips of memory in the BBC Shakespeare television series, begun in 1979. The BBC issued a playtext with each videotape, allowing Maguire (and anyone else) to compare the production to the text.[67] These video productions had the stated objective of textual accuracy, and botched scenes could, of course, be re-shot.[68] Despite this, and despite highly trained and competent actors, Maguire found myriad small deviations from the copytext throughout, deviations so tiny that they had gone unrecognized. These typically remain within the constraints of the verse, or alter it only slightly. For example: *Richard III*'s "to look on death no more" becomes "to look on earth no more"; *1 Henry IV*'s "But as the devil would have it" becomes "But as ill luck would have it."[69] Maguire concludes that such slips are simply the condition of human memory and argues: "Here we encounter a problem caused by the difference between sixteenth-century and twentieth-century culture. When the New Bibliographers talked about memorial reconstruction, the ideal they seemed to have in mind was a perfect reproduction: a tape-recording, a facsimile, memory behaving flawlessly. This is very much a twentieth-century ideal derived from a print-based culture which values textual fidelity. We do not know if Elizabethan actors shared this ideal."[70]

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[66] Samuel Daniel, *A Defense of Rhyme* (1603) in *Selected Poetry and* A Defense of Rhyme, ed. Geoffrey G. Hiller and Peter L. Groves (Asheville, NC: Pegasus Press, 1998), 197–226, esp. 201.

[67] Laurie E. Maguire, *Shakespearean suspect texts: The 'bad' quartos and their contexts* (Cambridge: Cambridge UP, 1996), 135–46.

[68] Maguire reports that the scenes could be re-shot "'only three or four times at the most'" (135).

[69] Maguire, 138.

[70] Maguire, 147. The ease of substituting words within a constrained framework is borne out by David C. Rubin, who studied undergraduates' memory of Beatles' lyrics in the late 1980s. He found that rhythm and poetics tended to be conserved, and often meaning was as well, within these constraints. So, for example, the line "to help with good Rocky's *revival*" was remembered as "to help with good Rocky's *survival*." See Ira E. Hyman Jr. and David C. Rubin, "Memorabeatlia: A naturalistic study of long-term memory," *Memory and Cognition* 18 (1990): 205–14, esp. 210. See also Rubin's *Memory in Oral Traditions* (cited in n. 9, above), in which Rubin argues for the value of multiple

Maguire's analysis of memory is also useful in examining another cognitive arti-fact of the early modern theater: the part, or "side." Like the plots, the few manu-script parts that survive seem impossibly scanty. Edward Alleyn's Orlando cue-script or "part," reproduced in Greg's *Dramatic Documents*, contains only the barest of cues, sometimes just a word or two.[71] It is always possible that other cue-scripts were fuller or that there was something like the "abstracts" that Hieronymo gives out in *The Spanish Tragedy* (4.1) by which the actors in his "tragedy" are to "note [their] parts." However, if Alleyn's part is representative, we can see that parts perform the useful function of stripping all superfluous information. Modern actors' painstaking research into their roles would be counterproductive in situations where it is neces-sary to master or re-master a role as quickly as possible. We live in an information-dense society and tend to think that more information is better. We can off-load such information onto computer hard disks, file folders, electronic organizers, cal-endars, and so on. However, managing the mass of data that we have involves seri-ous challenges that are met with filtering and organizing devices such as RSS feeds. Our cognitive needs involve managing and filtering rather than committing to memory, and the mechanisms used by modern actors (as shown by the Noices) involve such extended cognitive devices.

Yet it is worth considering the benefits of information "underload." Although the cues seem sparse, and although, as Carol Rutter puts it, it is difficult to imagine "one-self playing Polonius without knowing any of Hamlet's lines or any of the stage action while Polonius is off,"[72] there are clear advantages to such ignorance. While the practice of selective knowledge may have originated in exigency—the prohibitive

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constraints in aiding recall in both verbatim and gist contexts. Mark Rowlands discusses the impli-cations of Rubin's work for cognitive philosophy in *The body in mind: Understanding cognitive processes* (Cambridge: Cambridge UP, 1999), 119–47. Lukas Erne has also argued, based on variations between texts, that players seem to have substituted words fairly frequently; see his *Shakespeare as Literary Dramatist* (Cambridge: Cambridge UP, 2003), 187–89, 198–219.

According to Julie Stone Peters, print resulted in a greater emphasis on verbatim memorization in the theater, at least in contrast with medieval plays, which seem to provide a space for improvi-sation (*Theatre of the Book, 1480–1880: Print, Text, and Performance in Europe* [Oxford: Oxford UP, 2000], 102–4). While this is no doubt true in the long run, Peters may overstate the immediate effect of print, as well as the fact that printed plays constituted only a small percentage of performed plays. Another factor to consider here is that the "book" of the play had to be approved by the Master of the Revels. However, as Potter notes: "In practice . . . this rule must have referred to the content rather than the precise words of the text; unless the Master of the Revels had a phenome-nal memory, he could hardly have checked on the latter in detail" (87). For an account of the rela-tive flexibility of English censorship practices, see Richard Dutton, *Mastering the Revels: The Regulation and Censorship of English Renaissance Drama*" (London: Macmillan, 1991).

[71] See Greg, 2:A–E.

[72] Carol Chillington Rutter, *Documents of the Rose Playhouse* (Manchester, UK: Manchester UP, 1984), 51.

cost of copying full playbooks for the entire company—it nevertheless may have had many useful side effects.[73] In the first place, as anyone who has tried to get amateur actors to stop reading other people's parts will know, text is an attractive nuisance. Anything we have, we read. When instead the actor must hear the cue, the emphasis must be on listening. Stern has shown that the scripts contain within themselves most of the information that an actor needs. She observes that "playwrights . . . seem to have enwrapped their 'direction' into the form in which they wrote their plays in the first place: they produced texts that, divided in parts, would bring about the action required in performance—without the actor necessarily needing to understand what is going on."[74]

The most effective of all cognitive scaffolds is good writing. If the secret of remembering is to "think memorable thoughts,"[75] then the secret of writing plays is to write memorable words. The Elizabethan educational system's reliance on the mnemonic and the rhetorical arts is well known, of course, as is the early theatrical system's reliance on the training that boys received in school.[76] While most of the work on memory in this period, beginning with that of Yates, has emphasized image-reliant artificial memory, verbatim memory—that is, "memory for words" rather than "memory for things"—has received less attention.[77] Rhetorical treatises acknowledge that the place system is inadequate for "memory for words," owing to the double cognitive burden of remembering images for each word. Schools, however, stressed verbatim memory as well, including the remarkably durable requirement that schoolboys memorize Lyly's *Accidens* as a foundation for Latin study. A grammar-school-taught boy apprenticed to a playing company would have had endless training in verbatim memory, and the more skilled students would have developed effective strategies for quickly committing long passages to memory. Here the Noices' discussion of "script segmentation," the division of the script into individual beats, may have some relevance. Richard A. Carlson argues that

[73] In this I would take issue with Potter's argument in "'Nobody's Perfect'" that "verbatim memorizing is easier if a text is perceived and studied as a whole, not bit by bit" (87).

[74] See Stern, *Rehearsal*, 88–89, who cites the example of premature cues that might induce an actor to attempt to interrupt, as in the case of the repeated cue of "I'll have my bond" in *The Merchant of Venice*.

[75] Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (London and New York: Routledge, 1982), 34.

[76] The best treatment of this relationship remains Joel B. Altman's *The Tudor Play of Mind: Rhetorical Inquiry and the Development of Elizabethan Drama* (Berkeley: U of California P, 1978).

[77] Frances A. Yates, *The Art of Memory* (Chicago: U of Chicago P, 1966), 6ff. Mary J. Carruthers discusses verbatim-memory practices at length in *The Book of Memory: A Study of Memory in Medieval Culture* (Cambridge: Cambridge UP, 1990), 73–79, 86–89, 261–66. See also Lina Perkins Wilder, "Toward a Shakespearean 'Memory Theater': Romeo, the Apothecary, and the Performance of Memory" in this issue of *SQ*.

"practice changes the cognitive units into which skill is organized," resulting in the "*restructuring* of mental routines."[78] Dividing and restructuring material, or "*chunking*," is a powerful step in moving from novice to expert practice.[79] In the case of theater, we might say that chunking is distributed between the playwright who writes the part, designed to be memorized in this fashion, and the player who learns it.[80]

The elements of this cognitively distributed theatrical system must finally be placed in the context of the company itself, for it is this structure, like the structure of rank and command in the naval system that Hutchins discusses, that ultimately gives shape and form to the plays. According to Knutson, companies were organized along guildlike lines. She also suggests that the companies

> learned strategies of growth and productivity from the guild structures, where newly authorized members were absorbed into the commercial life of the profession . . . , [and that] as a commercial paradigm, the guild does not preclude hierarchical lines of power between a company and its patron; indeed, the guild is itself a hierarchical structure. Yet its design offers stability for the company when beset by misfortunes such as changes in membership, changes in patronage, playhouse closures, and personal quarrels.[81]

While I would eschew the claim that playwrights wrote formulaic parts for players accustomed to playing within a line, it is nevertheless clear that there was a reciprocal relationship between players and plays: a company would be unlikely to add to its repertory a play without appropriate roles for sharers and hired men. By the same token, the presence of particularly talented players, especially boys, seems to have affected the kinds of plays that were written for the company. Stability at a company's core afforded a vital range of embodied experience that could be utilized when inducting new apprentices and hired men into the company structures.

The apprentice system and its effect on the plays are of special significance. As mentioned above, Hutchins argues that one of the advantages of the hierarchical systems aboard a naval vessel is that a novice can be inserted into the system and still perform well, owing to the cognitive supports the system offers him. Hutchins observes: "One can embed a novice who has social skills but lacks computational skills in such a network and get useful behaviour out of that novice and the system. . . . The task world is constructed in such a way that the socially and conversationally appropriate thing to do given the tools at hand is also the computationally correct thing to do. That is, one can be functioning well before one knows what one

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[78] Carlson, 60.
[79] Carlson, 60.
[80] Carlson, 60.
[81] Knutson 20, 23.

is doing, and one can discover what one is doing in the course of doing it."[82] Although this model is meant to explain numerical calculations, it is nevertheless extremely useful in understanding the apprentice system in Shakespeare's company. As David Kathman has shown, boy-actors were, in most cases, formally apprenticed to members of the company who were free of various guilds; and they typically remained with the company throughout their apprenticeship, playing progressively more difficult roles.[83] Boys usually played women exclusively when first performing, later playing both female and male roles, such as pages, once they entered their later teens.[84]

Kathman's evidence not only establishes the professionalization of the system, it also effectively dispels arguments based on the assumption that boys could not have played such "weighty" roles as Cleopatra.[85] While the documentary evidence Kathman has amassed provides the most compelling case for the training and the expertise of the boy-actors, the internal evidence from the plays is also illuminating. M. M. Mahood argues that Shakespeare "wrote some of these [bit] parts for trainee actors. . . . the plays themselves furnish evidence that Shakespeare was aware of the need to help tiro players in their first stage appearances, and that he devised some of the minimal roles in his plays almost entirely with this in mind."[86] She suggests that the stage direction "*Enter two or three*" may mean "'Two actors are needed here, but a small extra part can be made if you have a novice actor in need of work experience.'" In such cases, "the resultant group of two, or sometimes three, skilled men and a learner is after all a normal work group in any undertaking."[87] Small speaking parts, likely to be played by boys, mirrored the patterns of deference inherent both in the apprentice system itself and in society at large. A boy who is told "here, sirrah, approach" knows what he is to do.

Mahood does not equate the bit part with rote or hack work and thus does not confuse the system's properties with the potential of its individual agents. Against the

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[82] Hutchins, 224.

[83] See David Kathman, "Grocers, Goldsmiths, and Drapers: Freemen and Apprentices in the Elizabethan Theater" *SQ* 55 (2004): 1–49; and on the median age of theatrical apprentices, see Kathman, "How Old Were Shakespeare's Boy-Actors?" forthcoming in *Shakespeare Survey*. Kathman's work builds on G. E. Bentley's research about apprentices, presented in *The Profession of Player* (113–46). I would like to express my gratitude to Mr. Kathman for sharing his work with me prior to its publication.

[84] Kathman, "How Old Were Shakespeare's Boy-Actors?" Kathman bases his analysis on existing legal records, Henslowe's records, and the evidence of the plots, which show the same boy playing female and smaller male roles.

[85] Rutter, 224. See also Marvin Rosenberg, "The Myth of Shakespeare's Squeaking Boy Actor—Or Who Played Cleopatra?" *Shakespeare Bulletin* 19 (2001): 5–6.

[86] M. M. Mahood, *Bit Parts in Shakespeare's Plays* (Cambridge: Cambridge UP, 1992), 17.

[87] Mahood, 18.

arguments of Bernard Beckerman and others who have claimed that players of small parts were left to "fend for themselves," she points out how often such roles play against rather than to type: soldiers are frightened, messengers turn out to have agendas of their own.[88]

The fact that the roles given to boys, particularly after 1600, are so complex has sometimes been presented as evidence that men must have played them. Such arguments think of the boy-actor in isolation from the nature of the system that fostered him, beginning with the training in verbatim memory that any literate boy would have acquired through the school system. The apprenticeship system was also very efficient, because the task of training a boy could be subsumed into the task of memorizing one's own lines. Together, the demands of the repertory and the apprenticeship systems produced a pool of extraordinarily talented boy-actors, a circumstance that enabled Shakespeare and his theatrical contemporaries to create plays with male-female dynamics of a sophistication and subtlety as yet unknown on the English stage.

Hutchins argues that "[r]emembering is not a retrieval of an identifiable single structure; rather, it is a process of construction via simultaneous superimposition of many kinds of constraints."[89] In other words, remembering is a hybrid process that depends on the interaction between systems, some of which are more or less external and others more or less internal.[90] If we examine the cognitive systems that comprised the early modern theater, we can see the workings of the "simultaneous superimposition" of constraints. The productive constraint of the stripped-down part reduces the need to filter signal (one's own part) from noise (everyone else's); the plot provides a schematic diagram of the shape of the play as a whole to supplement the part; the physical space of the theater and the conventions of movement it supports enable the transition from the two-dimensional maps of plot and part to its three-dimensional embodiment onstage; and the structures and protocols of the theatrical company pass on its practices to new members. Such a theater can best be understood, in other words, through a framework that takes group practices seriously, that assumes that systems can work well, and that sees individual agency as constrained but not contained by these practices. In making this argument, I am aware of importing what may seem an alien discipline into the realm of theater history. In so doing, I have tried to show both what theories of distributed cognition offer to theater history *and* what historically specific studies offer to cognitive science.

[88] Mahood, 15.
[89] Hutchins, 309.
[90] Rowlands, 121.