

“other recurrent stage properties, small and large, on the early modern commercial stages: handkerchiefs, beds, joint stools, coins” (80). It is a mark of the holistic approach of the book that this very tool kit is indeed used within an extended argument, in the succeeding chapter, to talk about recurring properties in history plays.

Subsequent chapters tackle romantic (and pastoral) comedy; city comedy; satire; and the “Cinderella’ of early modern genres,” tragicomedy (179). Case studies add a hail of other useful ideas: on ensemble scenes, acting styles, the sexual politics of the children’s companies, the question of what it means to be topical and satirical. The conclusion returns to the introduction’s vision of theater as an art form rooted in the wide and complex material world of early modern England. It addresses commercial theater’s multifarious links to court drama, household drama, touring and regional theatrical performances, civic drama, and pageantry.

One enemy here, implicitly, is the New Historicist vision of early modern drama, which tends to pare it down to a dialogue between state power and a professional theater built on the ruins of monasteries dissolved by that state power and uniquely privileged to address it. In this book, by contrast, the picture is more nuanced: “For all the specific arguments made about the commercial context for theatre in the early modern period and the significance of the purpose-built playhouses to the story of its development, this conclusion is a plea to avoid reading early modern commercial theatre as hermetically sealed. The tendrils of theatre and the influence of performance culture were extremely wide-reaching in the early modern period. They did not suddenly bloom overnight” (209). In other words, there is no excuse for not properly studying early modern cultural history.

This book challenges readers with a wide range of accessible, thought-provoking, and timely ideas about how to approach early modern drama. It is also a celebration of the power of that drama: “It is almost as if, as we start to reconstruct the performances of plays from this time, they start to crackle with life and we begin to register the mind-expanding, heart-expanding experience that they were for contemporary spectators, who themselves came back again and again to the theatre to watch plays and to be inspired by them” (210). The achievement of this book is that it helps its readers to begin work themselves on such reconstruction.

Losing Touch with Nature: Literature and the New Science in Sixteenth-Century England. By MARY THOMAS CRANE. Baltimore, MD: Johns Hopkins University Press, 2014. Pp. xiv + 228. \$49.95 cloth.

Reviewed by MARY FLOYD-WILSON

Mary Thomas Crane’s elegant book *Losing Touch with Nature: Literature and the New Science in Sixteenth-Century England* provides a fresh perspective on the awareness and impact of new ideas about nature that emerged in the early modern period. Careful to resist a teleological narrative in tracing the development of science, Crane charts how Aristotelian, Galenic, and Ptolemaic accounts of the universe began to break down for sixteenth-century English writers. Focusing on texts that communicated “specialized knowledge of mathematics, astronomy, and/or

medicine, designed in most cases to convey up-to-date knowledge about nature to a wider public" (22), Crane observes that "ordinary educated people" were aware of epistemological ruptures (19). These ruptures included, most dramatically, the Copernican hypothesis, as well as the appearance of a new star in 1572, the atomic theory of matter, the waning of Galenism, and the introduction of Arabic numerals. Locating Galenic and Ptolemaic thought under the larger conceptual umbrella of Aristotelian naturalism, Crane makes the fascinating argument that these older epistemologies continued to hold sway because they aligned with people's intuitive and embodied experience of the world (12–13). Even today, Crane notes, when students in a college physics class endeavor to learn Newtonian laws, they instinctively employ Aristotelian concepts instead (3). Modern scientific advancements, Crane reminds us, are counterintuitive. Recognizing that "ideological structures grow out of and are intertwined with basic models of the universe" (147), Crane is particularly invested in exploring how the loss of an embodied and intuitive understanding of the world may have *felt* to early modern people.

In her first two chapters, Crane delineates the complexities of Aristotelian naturalism to show that when the prevalent natural philosophy proved inadequate to answer uncertainties or questions about nature, writers turned to the secrets tradition, supplementing intuitive knowledge with hermeticism, Neoplatonism, astrology, and alchemy. She then traces how writers from Robert Recorde to John Dee to Gabriel Harvey demonstrated awareness of new ideas about nature. Challenges to Aristotelian naturalism, however, rarely brought about a radical shift in thinking. Instead, sixteenth-century English writers tended to invoke a "contradictory mix of philosophies and methodologies" (82). In the remaining chapters, Crane examines how the literary works of Spenser, Marlowe, and Shakespeare register various reactions "to the loss of an intuitive connection with nature" (9). Crane observes that we "can recognize traces of . . . new ideas in literary texts if we realize that their authors' knowledge of them was piecemeal, took sometimes surprising forms, often involved misunderstanding of crucial concepts, and was often expressed indirectly or metaphorically" (9).

As Crane persuasively demonstrates, we continue to bring certain assumptions to our construction of a "scientific revolution" (1), often repeating the account that Aristotelian naturalism had its basis primarily in books, only to be displaced by "an empirical study of nature itself" (19). And yet Aristotelian naturalism "enshrined ordinary, commonsense, daily perceptual experience as necessarily the only way to access the truth about nature," while new ideas such as "mechanistic atomism" or "an inertial theory of motion" were "not subject to directly empirical demonstration in the seventeenth century" (20). Crane observes, for example, that Galenic medicine was associated with making diagnoses based on "manifest humoral symptoms" (32), while Fracastorian and Paracelsian ideas about disease depended on theories of invisible transmission of "seeds" through the air (32–33). While other literary scholars have addressed mixed responses to these new medical concepts, Crane's most innovative contribution lies in her discussion of the difficulties presented by the Copernican hypothesis. Challenging the long-held assumption that early modern English writers were ignorant of Copernican theories, Crane shows that

Robert Recorde's *Castle of Knowledge* (1556)—an astronomy text framed as a dialogue between a Master and a Scholar—“contains the first reference to Copernican theory in English” (61). Recorde's inquiring Scholar raises “hard questions” about “the progression, retrogradation, and station of the Planetes.” The Master, however, encourages the Scholar to remain satisfied with basic Ptolemaic notions despite the Master's own awareness that “most wise men in that arte” subscribe to “contrary” explanations (67). Even when more pressing questions about Aristotelian cosmology emerged in 1572 with the appearance of a new star in the constellation Cassiopeia (75), many appeals to Copernicanism proved partial and ill informed. Indeed, writers such as Richard Bostocke and Gabriel Harvey seemed to echo Recorde's Scholar when they invoked Copernican theory as a “solution to the problem of precession” but failed to comprehend that the system encompassed a “heliocentric universe and a movable Earth” (80). For other thinkers, like Thomas Digges, “Neoplatonism,” the fallibility of human senses, and the “metaphysical optics of Roger Bacon” enabled their “acceptance of a heliocentric system” (77). In other words, for a number of writers, including John Dee, it was the secrets tradition that helped make “the unsettling of the Aristotelian cosmos more intelligible and less threatening” (76). Rather than expecting that ordinary and intuitive experiences of nature were manifestations of truth, scholars expected truth to be hidden, only to be revealed by special practices.

In chapter 4, Crane shows how *The Faerie Queene* captures the period's mixed and contradictory approaches to the new science. While the poem poses questions about Aristotelian naturalism and the stability of the universe, demonstrating an awareness of changing ideas, it ultimately reaffirms Aristotelian orthodoxy. Similarly, in the *Mutabilitie Cantos*, Mutabilitie not only hints at Copernican theory but also advances the notion that change was possible in the supralunar realm. Nature responds, perhaps on the basis of her secret knowledge, by simply dismissing Mutabilite's arguments (104–8).

Crane turns to Shakespeare's Sonnets and *King Lear* in chapter 5, where she traces allusions to mathematical theory and terrestrial physics. Shakespeare's investment in “number and abstraction” in the Sonnets hints at the “new possibilities for combination and recombination and for the multiplication of difference that mathematical theory” (131) brought to sixteenth-century England. In *King Lear*, Crane finds a provocative and conservative shift away from the threatening problems implied by an atomic theory of matter: “the existence and nature of infinity, the existence of a void or vacuum, the gap between mathematical theory and material phenomena, the gap between what could be seen and what could not” (134). Only smell, a privileged sense in the play, still seems to hold the possibility of conjuring up a sensory experience of nature that could, perhaps, yield truths in a world where “the basic spatial experiences of embodiment are disjoined from human understanding of what cannot be seen or felt” (146).

The book's final chapter examines how Marlowe's *Tamburlaine* and Shakespeare's *Antony and Cleopatra* represent political power in terms of emergent scientific ideas about the cosmos. Not surprisingly, Marlowe invokes the new ideas to extend the possibilities of *Tamburlaine's* overreaching ambitions. In her compelling

reading of *Antony and Cleopatra*, Crane contends that Rome and Egypt represent different theories of matter. The Egyptian world view proves to be nostalgically geohumoral, where humans are embedded in an environment that shapes their bodies, minds, and temperaments. The Romans, by contrast, anticipate the “Cartesian mind-body split” (159). They imagine themselves not only to be impervious to the environment but also able to control and dominate their world. The play seems to stage the inevitable yielding of the Egyptian world view to the Roman, but it does so regretfully, lingering long enough “to register the loss of an intuitive connection with the Earth” (166). Throughout this study, Crane’s thoughtful use of cognitive theory brings a subtle and illuminating perspective to the history of science. *Losing Touch With Nature* deftly elucidates the period’s rapidly changing perceptions of the physical world, but, even more impressively, Crane helps us see how these perceptions informed the structure and ideological stakes of early modern English poetry and drama.

Gender and Song in Early Modern England. Edited by LESLIE C. DUNN and KATHERINE R. LARSON. Farnham, UK and Burlington, VT: Ashgate, 2014. Illus. Pp. xvi + 220. \$104.95 cloth.

Reviewed by ROCHELLE SMITH

A collection of essays on a shared topic does not require a unifying theme, and so the one that emerges from the eleven original essays gathered here is an unexpected pleasure. Read them individually to appreciate how “gender informs our understanding of song as both textual and musical practice” (8). Read together, they begin to speak to one another about the ways in which a song can be a slippery and subversive thing. Music in the early modern period was regarded as “an emblem of concord and proportion” (2), studied alongside arithmetic, geometry, and astronomy as the fourth subject in the quadrivium. From the mundane requirement of keeping time to the lofty goal of creating celestial harmonies, music was aligned with rationality and control, harmony and hierarchy, and so deployed in the service of preserving order. On the other hand, as these essays demonstrate, song, especially female or feminized song, could be a powerful force for shaking up that order. This rich collection teases out the complexities of gender and song in early modern England, demonstrating the power of song to subvert traditional hierarchies and to complicate the binaries by which the early moderns organized their world.

Several essays focus on male singers and the role of song in the construction and performance of masculinity, a welcome change from the more common focus on women. The subject of Scott A. Trudell’s “Performing Women in English Books of Ayres,” one of the strongest essays, is the “flexibility of gender as it was performed in the ayre movement” (29) of the early seventeenth century, and he argues that “singers shifted along what remained during this period a continuum, rather than a binary, between male and female gender roles” (24). Linda Phyllis Austern similarly draws attention to male singers in “Domestic Song and the Circulation of

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