

Handling the Theme of Hands in Early Modern Cross-over Contexts

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Early modern culture incorporated the human hand into a large number of different visual-textual contexts: in religious imagery, in scientific illustrations, in manuals of various disciplines, as *manicules* in manuscripts and printed books, and with several functional and/or figurative significances in the literature and drama of the period. Hands seem to be thrusting themselves into these contexts as powerful reminders of a human agency, which is often both somatic and spiritual at the same time: in the human hand, relations between body and mind converge and contest in complex and multiple ways. As described by Claire Sherman in the exhibition catalogue *Writing on Hands: Memory and Knowledge in Early Modern Europe*, the early modern hand is “a meeting place of matter, mind, and spirit” (21).¹ This meeting place is, in several different ways, the implied setting for the following article. Some hands, such as Albrecht Dürer’s *Praying Hands* (1508) or Michelangelo’s meeting hands of God and Adam on the Sistine Chapel ceiling (1508-1512), have become enduring and familiar icons of visual culture; and of course, Dürer’s and Michelangelo’s hands are found within religious contexts in which the hand has always played vital roles related to matter, mind and spirit. However, besides the vast field of religious studies, there are more and other hands offering rich sites for exploring early modern chiasms of body and mind.² In the following analyses of examples from early English cross-over contexts, our purpose is to highlight and discuss the ways in which the hand and in particular two of its

most familiar functions – pointing and touching – may illuminate wider epistemological discourses that shift back and forth throughout the period: discourses on what a human being is and how humans perceive and understand the world they live in. Central here are questions as to how and where human perception and cognition take place; in the mind or in the body; or to be more precise: how bodies and minds are understood in relation to each other by early modern thinkers.³

We present an investigation of a selection of examples which span the dramatic writing of the period: from issues of the hand in two early Shakespearean tragedies, *Titus Andronicus* (c. 1594) and *Romeo and Juliet* (c. 1597), to *Hamlet* (c. 1602); to the medical sciences, William Harvey’s *de Motu Cordis* (1628); and to John Bulwer’s manuals on gesture, *Chirologia* and *Chironomia* (1644). Extracts from Bulwer’s manuals are also useful because their fluid generic qualities allow us both to provide a contextual backdrop specifically concerned with the hand for our other examples, as well as bridging some of the disciplinary gaps between them. At the same time, we want to acknowledge the fact that the early modern period did not, as William M. Hamlin writes, “recognize the strong disciplinary demarcations we typically acknowledge today” (5). Writers like Bulwer or Robert Burton, whom we also refer to, do not distinguish rigidly between their multiple interests, and we have therefore chosen the term “cross-over contexts” instead of the potentially anachronistic “interdisciplinary”. The order in which these examples appear is not based

on chronology or causality, but thematically arranged precisely in order to show their differing *and* overlapping epistemological discourses and the ways in which they illuminate relations between bodies and minds.

Perception and Cognition – Bodies, Minds, and Hands

Early modern description of perception and cognition is fraught with questions of how bodies and minds relate to each other – as intertwined and organic, or as separate and even competing material and immaterial human components. On the one side, the process of obtaining knowledge was complexly, but distinctly described as embodied and physiological: as Bruce R. Smith puts it in *The Key of Green: Passion and Perception in Renaissance Culture*, “before Descartes, thinking color, like thinking anything else, was a whole-body experience” (3).⁴ In this Aristotelian influenced account, knowledge of the world was generally understood to be obtained by way of the five outward senses – seeing, hearing, smelling, tasting and touching – sending the acquired information to the inner ‘common sense’, which, as Robert Burton describes in *Anatomy of Melancholy* (1621), was classified as “the judge and moderator of the rest” (101).⁵ Sense information was then processed by the other inner senses – the “fancy or imagination” – before stored by the “memory” and all inner senses were described as situated organically within the brain. Another well-known key factor in the framework of embodied perception was Galen’s, at the time still strongly influential theory of the four humours – blood, phlegm, yellow bile and black bile. These were thought to regulate the human body and its emotions by way of fluids (humours) dispersed throughout the body by the three

“spirits,” natural, vital and animal, originating respectively from the liver, the heart and the brain; a process also described in some length by Burton.

However, on the other side, Burton’s predominantly physiological accounts also contain elements that could be read as contradictory formulations within the overall discursive framework. In the subsections on “the Rational Soul” and “the Understanding,” he describes a component which, although working by organs, is in itself inorganic and incorporeal,⁶ and Burton is not the only early modern thinker to provide several and diverse descriptions of how his knowledge of the world is obtained and processed. Leading up to and contemporary with René Descartes’s paradigmatic separation of body and mind in *Discourse on the Method and the Meditations* (1637),⁷ other discourses on perception are blurring a straightforward acknowledgement of the senses as the only viable way to knowledge, as well as questioning the fundamental understandings of knowledge per se. Two important early modern influences are key factors in this context: tendencies to doubt and question forms of knowledge stemming from classical scepticism, which saw a strong revival around the turn of the century.⁸ Such tendencies, as has often been noted, explode in the conflicting epistemological discourses of *Hamlet* and we will draw on their influence in our reading of the play. Concurrently, the sciences were developing rapidly and, in doing so, also questioning the reliability of the senses in procuring knowledge and understanding, as we shall see when investigating the role of the hand in a series of illustrations from William Harvey’s treatise on blood circulation *De Motu Cordis*.⁹ In early modern scepticism and co-related issues of science, the act of doubting becomes an inevitable factor in the

ongoing separation of mind from body, which is fully embraced in Descartes's understanding of the pursuit of knowledge. Francis Bacon too, not only rejects the reliability of sensory perception, but claims doubt as the first and most fruitful step on the path to learning in *The Advancement of Learning* (1605): "if a man will begin with certainties, hee shall end in doubts; but if he will be content to beginne with doubts, he shall end in certainties" (31). The same principle is echoed by Descartes, who arrives at his famous *cogito ergo sum* sentence by rejecting

as absolutely false everything as to which I could imagine the least ground of doubt, in order to see if afterwards there remained anything in my belief that was entirely certain. Thus, because our senses sometimes deceive us, I wished to suppose that nothing is just as they cause us to imagine it to be.
(*Discourse* 101)

For Descartes that which in the end is absolutely certain, is the existence of his thinking self separate from his body, because it is that thinking self which is capable of generating doubt. In addition to influences of scepticism and science, it is undoubtedly important also to keep in mind that much of this debate originates in classical philosophy with the *agon* between Platonic dualism and the degradation of physical senses to the lower world (as opposed to the higher world of Forms or Essences); and Aristotelian confidence in sensory experience. Both Aristotelian and Platonic influences were preserved and channelled into the early modern period via the Scholastic thought of Thomas of Aquinas as opposed to Augustinian neo-Platonic philosophy. So the body/mind split decisively put forward by Descartes does not

necessarily just signal the paradigmatic end-point of early modern embodied understandings of the self, but may be understood as part of continuous – and continuously shifting – discourses all of which influence the epistemological landscape of the early modern period.¹⁰

The early modern hand and two of its most familiar functions – touching and pointing – represent a condensed, but central site for exploring some of these diverse and diverging understandings of human perception and cognition. Hands and their functions may intersect configurations of body and mind, illuminating as well as confusing relations between these, whether understood as intricate or separate. Furthermore, the role of the hand is crucial in relation to questions of how outward bodily signs, such as gesture, relate to human interiority. Questions on how thoughts and emotions may be hidden within or detected without are frequent in the period and central within certain of our examples, particularly and famously in *Hamlet*. In our investigation, centred on Bulwer's work on gestures in dialogue with Harvey and Shakespeare, the hand is thus situated at a cross-section where outward and inward movements of human perception, cognition, emotion, and bodily expression meet. A sensory perceiver – in touching, the hand is also an extension of the mind – in pointing. Pointing can be understood as an active gestural movement projecting outward and forward what is in the mind of the pointer; it is associated with indication and demonstration, and provides a sense of direction. In the act of pointing there will always appear to be a clear distinction between the subject who points and the object pointed at, not least because of the obvious spatial distance between them. A hand that touches, however, bridges this distance. Rather than just projecting



Figure 1 Diagram from John Bulwer, *Chirologia*. All images in this article can be found at archive.org

something unto to what it touches, it takes *in* what it perceives; a touching hand receives information and sends it inwards. The perceptive act of touching implies a certain permeable quality to the hand (certainly to the skin covering it). Thus touching, as we shall explore further on, is significantly passive as well as active; it is a movement of the hand that potentially blurs distinctions between perceiving subject and perceived object.¹¹

“Spokesman of the Body” – John Bulwer’s Handbooks

John Bulwer’s two manuals on gesture with more than a hundred different illustrations, *Chirologia: or the Natural Language of the Hand* and *Chironomia: or the Art of Manual Rhetoric* published in 1644, provide valuable insight into early modern understandings of gestural expression. Bulwer was a physician and teacher of the deaf, and the manuals appear to have been partly intended as a treatise on

sign language, but clearly developed into a study of everything historically and culturally related to gesture, with a strong focus on rhetoric in *Chironomia* and with abundant examples from classical literature and Scripture. Although there is no direct relation between the manuals and the stage, and Bulwer's works obviously postdate Shakespeare's career as well as the closing of the theatres in 1642, especially his illustrations are nonetheless often used in investigations of non-verbal effects of early English theatre (Figure 1).¹²

Several of the gestures described and depicted occur in Shakespearean dialogue and stage directions, and scholars have therefore been able to establish at least some visual evidence of a gestural vocabulary used by early modern actors and presumably understood by their audiences¹³, but comparatively less attention has been paid to the textual parts of the manuals and Bulwer's arguments developed in them. We deal here with extracts only from *Chirologia*, foregoing the extensive discussion of the hand's importance to the contexts of rhetoric in order to concentrate on material more closely related to the outlined questions of mind/body relations. Among Bulwer's more radical claims are his description of gesture as a natural and universal language, 'spoken' and understood by all people (a pre-Babel form of human expression),¹⁴ and his argument that gesture actually precedes spoken language happening almost simultaneously with thought. It is the latter idea which is of main interest to our investigation. Bulwer writes:

Since whatsoever is perceptible unto sense,
and capable of a due and fitting difference;
hath a natural competency to expresse the
motives and affections of the Minde; in whose

labours, the *Hand*, which is a ready midwife,
takes often-times the thoughts from the
forestalled Tongue, making a more quicke
dispatch by gesture: for when the fancy hath
once wrought upon the *Hand*, our
conceptions are display'd and utter'd in the
very moment of a thought (4).

There seems to be a symbiotic relationship between inward thinking and the outward expression of the body in this description. Bulwer's manual body-language is 'natural' in its immediate cause and effect, whereas the tongue takes time in dispatching the thoughts, denoting that verbal language is somehow less natural than a purely physical expression. At the same time, the mind and the hand also appear as distinct properties with a hierarchical co-relation, the hand working as "a ready mid-wife" to the mind and being "wrought upon" by the fancy. So, while Bulwer imagines the hand as a more direct source to the workings of the mind, the hand is also a servant to thought. Or is it? If gesture happens 'in the very moment of a thought', there must be a co-active relation between them more intricate and indistinguishable than the model of dominating soul over mechanical body, formulated a few decades later by Descartes.¹⁵ Bulwer in fact seems to be operating simultaneously with differing understandings of mind/body relations; one in which the body (hand) is symbiotic and co-active with thought, in the sense that mind and body are inseparable and one in which the hand is a ready midwife to thought, hinting at bodily expression serving what can be understood as independent cognition. This plural understanding is further illuminated and complicated, when compared to a particular Shakespearean example.

Handling the Theme of Hands

Nowhere in the Shakespearean canon are the uses and significances of hands more consistent and central than in *Titus Andronicus*, Shakespeare's early and excessively bloody Roman tragedy (c. 1594). Taking his main inspiration from Ovid's tale of Philomela in *The Metamorphoses*, Shakespeare has Titus's daughter Lavinia raped and her tongue cut out, but adds to the gore by having her hands cut off as well. Titus himself cuts off his left hand as part of a petition to the emperor, and throughout the play, hands - and the actions implied by them - are concurrently presented as both material and metaphorical often resulting in grotesquely overcharged puns.¹⁶ One of several instances of this self-conscious excess is Titus's reproaching reply (from which our title for this article is partly taken) to his brother Marcus in act three, when Titus and Lavinia have just one hand left between them: "Ah, wherefore dost thou urge the name of hands / To bid Aeneas tell the tale twice o'er / How Troy was burnt and he made miserable? / O handle not the theme, to talk of hands, / Lest we remember still that we have none" (3.2.26-30). This short scene, which displays Titus's rapidly growing insanity, contains a high number of explicit and implicit references to gestures. Initially Titus laments the loss of his left hand because he cannot, as Marcus appears to be doing, express his grief with a gesture of folded or wringing hands. That particular gesture, "Ploro" (Figure 2), is associated with the act of crying and described thus by Bulwer: "TO WRING THE HANDS is a naturall expression of excessive grieffe used by those who *condole, bewaile and lament*" (28).

It occurs too in *Romeo and Juliet*: "Ay me, what news? Why dost thou wring thy hands (3.2.36)?" and, as we shall see, in *Hamlet*. As Titus continues



Figure 2 Detail from diagram from John Bulwer, *Chirologia*.

his lament, however, we find more implied manual action significantly confusing relations between body and mind:

This poor right hand of mine
Is left to tyrannize upon my breast,
Who, when my heart, all mad with misery,
Beats in this hollow prison of my flesh,
Then thus I thump it down (3.2.7-11).

Titus here clearly implies a gesture in the "thus" beating at his chest with his remaining hand, but the syntax in the passage is odd.¹⁷ Initially, the "poor right hand" is the subject of the construction, but in the last line Titus reinserts himself as subject with the pronoun in the first person: "Then thus I thump it down". It is as if Titus's body at first expresses emotion in what Bulwer would argue is inter-relatedness of gesture and thought, but then his dominating, even if disintegrating, intellect takes over the execution and meaning of his gesture. His body, in the end, is merely a "hollow prison" of flesh; his beating heart is "thumped" down by a hand that he controls. However, the fact that this hand was the executing subject, even if briefly, suggests a wavering understanding of where the body ends, and where the mind takes over. Not

unlike Bulwer, Titus displays mind/body understandings in which an embodied passionate self co-exists and overlaps with a separate intellect capable of mastering bodily functions. Both are moving inwards and outwards at the same time in the visualisation of the beating heart within, being kept down from without. The hand is absolutely centrally placed at an intersection of these; partly as a body part with a will of its own and partly as a tool to the will of its master. Titus's hand and its double significances are concretized by returning to Bulwer and his descriptions of our two key manual functions: pointing and touching.

Outwards and Forwards: "Gesture F: *Indico*"

On the act of pointing Bulwer begins thus:

THE FORE-FINGER PUT FORTH, THE REST CONTRACTED TO A FIST, is an expresse of command and direction; a gesture of the hand most demonstrative. This *Finger* being called *Index ab indicando, Deiticos* by the Greeks, *id est Demonstrator* (162).

The illustration "F" with the title "Indico" (Figure 3) provides the viewer with the sense of active command and direction described by Bulwer. The hand depicted here may be interpreted as containing a sense of determination, due to the way in which it implies a strong and direct line through the arm to the point of the index finger. Being, as Bulwer says, used to demonstrate (and of course figuratively to point something out), the gesture of pointing is perhaps the most familiar of all manual signs and also appears in the form of the manicule in various early modern disciplines.¹⁸ It is closely aligned with sight in directing another person's eye towards the object pointed at, but there is also frequently a claim to superior knowledge or status



Figure 3 Detail from diagram from John Bulwer, *Chirologia*.

implied in the action. It has an obvious performative quality both in the contexts of conferring distinction upon somebody (literally "to appoint") or denoting shame or accusation. As earlier explained, there is a clear distance measured out between subject and object; so that whoever performs the pointing is somehow in command. Bulwer also describes how persons of authority use the gesture:

As it is a gesture of command and direction, imperious masters with a stately kinde of arrongancie often use it to their *meniall* servants who stand ready expecting but the signall of their commands, when they call them, not without a taunt, to execute the tacit pleasure of their lordly will; an expression flowing into their *Hand* from the hautesse of spirit, and an indolent humor of dominæring: (166).

The vocabulary of "spirit" and "humour", as well as the described flowing movement from within the body out into the hand and index finger, implies that Bulwer might rely mainly on humoral theory here, but in the following paragraph he begins to separate the immediate correspondence between meaning of mind and the body signalling it: the

meaning of the great man's mind is to be guessed at by his servants, it is not naturally and easily apprehended:

And the signe of pride is the greater when men affect to have their minds thus descried, and put others to guesse at their meaning by what their talking *Fingers* exhibit, as if their high raised spirits disdained to discend so low as to explaine their minde in words, but thought it more then enough to signe out their intent with their *Fingers* (166).

The pointing hand here serves the mind of who performs the gesture, as the servants in Bulwer's description serve their masters. We perceive a movement that works from the inside outwards, the mind or spirit of the master is projected out into the world via the hand, and others are directed by it. By contrast, touching appears to provide a movement in the opposite direction: from outside to inside.

Within and Without: "Gestus M, Dissidentiam noto"

The conceptual understanding of touch offers in itself a somewhat contradictory perspective on the early modern period, as Elizabeth Harvey and others have shown in a recent anthology on touch in early modern culture. In her introduction, Harvey describes touch as a sense at once elevated and debased compared with the other senses and explains how, mainly through the legacy of Aristotle, sight continued to occupy a primary position among the senses, whereas touch was more commonly connected to the bestial and/or erotic elements of human perception. However, as Harvey writes, and as we shall see in William Harvey's medical illustrations further on, "tactility is also associated with authoritative scientific,



Figure 4 Detail from diagram from John Bulwer, *Chirologia*.

medical, even religious, knowledge" (E. Harvey 1). The sense of touch thus seems to be at the core of inter-related and yet contesting epistemologies throughout the early modern period, because touch is also a sense traditionally associated with doubt, most notably in the example of Thomas wishing to touch the wounds of the resurrected Christ. Bulwer also refers to Thomas in his section on touch in *Chirologia* and begins the section: "TO FEEL WITH THE FINGERS ENDS, is their scepticall expression who endeavour to satifie themselves by information of the Tact, in the qualities of a thing" (172). While providing sensory confirmation, touching can also imply an uncertain epistemology; it can be, as Bulwer says, an expression of scepticism. We may compare this to the illustration provided with the telling title "Dissidentiam noto" (Figure 4).

Here the touching gesture is depicted as the index finger of a hand touching two objects (smoking-pipes), and part of a burning fire is included in the background presumably to illustrate the more straightforward and highly useful purposes of tactile perception. However, whereas the illustration "F" of the pointing index finger creates a strong determined line within the frame, this touching index finger – and the whole hand it is

attached to – convey a more hesitating quality. The movement appears soft and somewhat awkward as if the hand experiences some uncertainty as to the effect to touch. Bulwer continues, with a reference to Helkiah Crooke's definitions in

Microcosmographia:

for although this touching virtue or tactive quality be diffused through the whole body within and without, as being the foundation of the animal being, which may be called Animalitas, yet the first and second qualities which strike the sense, we doe more curiously and exquisitely feele in the *Hand*, then in the other parts, and more exactly where the Epidermis or immediate organ of the outer touch is thinnest, but most subtly in the *grape* of the *Index*, which being the only part of the body that temperamentum ad pondus, is by good right chiefe Touchwarden to the King of the five senses (172).¹⁹

Bulwer follows Aristotle in associating touch with the animal being, but seemingly also Robert Burton, who says of touch: "Touch the last of the senses, and most ignoble, yet of as great necessity as the other, and of as much pleasure. This sense is exquisite in men, and by his nerves dispersed all over the body, perceives any tactile quality" (101). Touch is thus understood as felt within the body as well as without, and most of all with and through the index finger, but not in this finger's indicating capacity. Bulwer claims that the grape of the index is where the skin is thinnest; it is the permeable quality of the hand and the index finger in particular - its capacity to be a sensory gateway from the outside to inwards - that is appreciated here. Compared to the pointing finger, which is solely active, this

implies a simultaneously passive role in the act of perception. Pointing asserts the pointing subject's superior distance to the object pointed at. Contrastingly, touching can be understood as having a destabilising effect on whoever performs it, because it is mutual and reciprocal; touching indeed annuls the distance between subject and object, for in the act of touching how is it possible to distinguish between what is touching and what is touched? This question provides an important starting point for investigating a famous reference to touch in a likewise famous Shakespearean stage moment: the balcony scene of *Romeo and Juliet*.

To Touch a Cheek

Shakespeare's father John Shakespeare is known to have been a glover, so there can be little doubt that the young William would have grown up in an environment scattered with leathery replicas of the human hand, and his plays are likewise scattered with references to gloves carrying a variety of significances. Apart from the glove's importance in determining early modern social status, it is in itself a clothing item with complex material quality and significance. Its relationship with the hand that wears it is peculiarly intimate; when a hand wears a glove, the glove is situated in between the hand and the world, like a second skin, but it also touches the wearer's hand, while simultaneously being touched by it. In investigating Romeo's wish to be a glove upon the hand of Juliet in the balcony scene, this double understanding of touch can be crucial:

Her eyes in heaven
Would through the airy region stream so
bright
That birds would sing and think it were not
night.

See how she leans her cheek upon her hand.
O, that I were a glove upon that hand,
That I might touch that cheek!
(2.2.20-25)

Shakespeare emphasises significance here by rhyming hand with hand: “See how she leans her cheeks upon her hand/Oh that I were a glove upon that hand/That I might touch that cheek”. The hand is clearly important enough to be mentioned twice: the audience’s attention is called for. On the stage, Romeo’s “see how” verbally visualizes the act of pointing so that, even if not accompanied by an actual physical gesture by the actor, eyes in the audience will naturally be directed towards Juliet leaning on her hand. But what about touching that cheek? Initially the point is that Romeo is *not* touching Juliet; she is the object venerated from a distance. But even if he is not physically touching her, the sensory references to seeing and touching in the passage along with the tactile quality of the language begin to bridge that distance: Within three lines Romeo moves from implied pointing (“See how she..”) to touching (“That I might touch..”); from a verbal movement that projects to a verbal movement that touches and, even more importantly, is touched. Romeo’s words allow him to move from observing at a distance to being as close to Juliet as possible, in fact closer than possible: in between herself and herself (like a glove). Significantly, it would not be Romeo touching Juliet’s cheek in straightforward subject/object fashion, but Juliet touching her own cheek with her own hand and Romeo squeezed in between: Juliet, Romeo, hand, glove, and cheek, all touching each other simultaneously and without clear distinction or demarcation. In likening himself to a glove, Romeo foregoes his status as sole

touching subject and becomes, at the same time, touched object.

Heard in this way, the glove presents an audacious verbal image: its significance can progress beyond the naively erotic manner of the courtly lover, to the notion of the lover giving up the contours of his own self for the involved co-existence with the loved one. The movement of Romeo can be characterised thus: from his pointing finger (whether the gesture is verbal or actual) his self flows out towards Juliet’s hand where he situates himself in the in-betweenness of her touch, and the movement thus flows back from her to him. In this sense, this verbal touch echoes the touch of the lovers’ hands in the palm-to-palm exchange in sonnet form during their first meeting, and the correlation may show how closely words and physical actions intermingle. As so often in Shakespeare, the sounds of the language acquire a tactile quality in the sounds of the distinctively pleasurable consonant repetitions: “That I might touch that cheek”, but there is even more synesthetic quality involved in the passage. The sensory effects intermingle for the audience who hear Romeo, see Juliet, and through hearing and seeing, may simultaneously imply the sensation of touch.

Thus, this moment of the balcony scene relies on a particularly sophisticated use of sensory elements in effects of early modern theatre; effects which have been reiterated very recently by several scholars,²⁰ but senses and their perceptual capacities are not unambiguously celebrated by Shakespeare. Time and again his characters express mistrust in what they perceive with eyes, ears, noses, or indeed hands, and Romeo himself of course comments on the balcony scene with foreboding words that imply his misgivings about the “substance” of what has just passed: “I am

afear'd,/Being in the night, all this is but a dream,/Too flattering-sweet to be substantial" (2.2.140-41). His senses are dulled and flattered by the darkness of night and doubt consequently applied to the perceived reality. Early modern works published over the following decades in a very different context, that of science and scientific experiments, also show ambivalent attitudes to the senses. Such works are both sceptical as to the knowledge obtained by sensory perception, as we have already seen in references from the work of Francis Bacon, but, at the same time, science does not seem willing to absolutely abolish the senses, and contributes therefore often to the complication of epistemological questions rather than providing certainty. As we shall see presently, issues of science may co-illuminate some of the already outlined perceptive and cognitive ambivalences, as well as distinctions between subject and object in the gestural acts of pointing and touching.

The Scientific Hand – from Pointing to Touching to Proving

Neither bare hand nor unaided intellect counts for much; for the business is done with instruments and aids, which are no less necessary to the intellect than to the hand. And just as instruments of the hand stimulate or guide its motion, so the instruments of the mind prompt or look out for the intellect (*Novum Organum* "Aphorism 2").

As new methods and practices evolved within the natural sciences throughout the early modern period, the former privileged position of the human sensory system as the primary catalyst for scientific knowledge was downplayed: The use of the senses was no longer neither the only nor the best way to

achieve scientific knowledge, as emphasised by Francis Bacon in the quotation above from *Novum Organum*. The hands and eyes of the scientist were gradually supplemented and supplanted by new instruments and experiments which, especially during the seventeenth century, became the primary tools in scientific practice. Newly invented scientific instruments such as the microscope, telescope, and air-pump sparked the view that scientific instruments were the only way to achieve an objective understanding of nature. The use of senses – especially sight – was now linked inevitably to the subjectivity of the scientist. But, as argued below, the senses in form of the hand retained an important role in the visual culture in early modern science. The hand and references to senses thus are found in especially illustrations in late seventeenth-century scientific works. One such example is found in Robert Boyle's 1669-publication "A continuation of new experiments physio-mechanical, touching the spring and weight of the air and their effects" where the illustration depicting Boyle's experiment on barometers and atmospheric pressure shows two hands pointing at the barometer indicating different levels of measurement. And even though the hands in the illustration are graphic rather than being instrumental or directly involved in the experiment, it is worth noting that the hand is indeed still present in the illustration. One of the more prominent users of the references to senses is in fact Descartes who, in *Treatise of Man*, includes hands and eyes in illustrations accompanying his observations of the sensory system. Thereby Descartes depicts features about the senses by referring or pointing to these features through hands and eyes.

The Pressure of the Hand – Harvey and the Circulation of Blood

One of the most important scientific works of the seventeenth century, which fuelled the Scientific Revolution, is William Harvey's treatise from 1628, *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*. In this work, Harvey presented his theory on the circulation of blood, basing his theory on different pre-existing medical theories, most importantly works by Andreas Vesalius (1514-1564) and Galen (130-200AD), but offering a significant challenge to the Galenic humour theory on which we have seen both Burton and Bulwer rely. In the Galenic humoral system blood flowed through the body via the liver, but Harvey's dissections and experiments proved a different theory with the heart as blood-pumping vessel. Although ground-breaking, the theory did not immediately overthrow Galenic paradigms; discourses still co-exist and overlap. Most of Harvey's findings were based upon observations and vivisections of a number of different animals, but although the major part of Harvey's work is thus focused on animal observations, from around the tenth chapter he makes an important shift of focus from animals to humans.

The one iconic drawing in the book thus illustrates a human arm: an extension of a sensing subject rather than an object. The illustration shows how one can prove the circulation through veins and arteries by looking at the arm (Figure 5) and is part of a series of four drawings (or figures) of an arm showing and communicating the process of circulation of the blood. As the illustration visually instructs, a ligature is secured tightly around the upper arm, which subsequently cuts off the blood flow from the veins and arteries in the lower arm. The following drawings below show how the blood

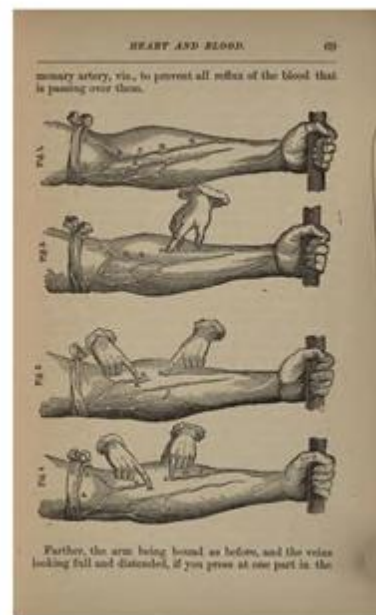


Figure 5 Illustration from Harvey's *De Motu Cordis* instructing how and where to put pressure on the arm.

flow is stopped (particularly visible in the veins as these are situated just underneath the skin), and Harvey further points to the now visible valves which help push the blood down the arm. Harvey's illustration is described in text over a couple of chapters in *De Motu Cordis* beginning with Chapter XI. Throughout the description of the experiment and the depiction, significant differences emerge between pointing and touching comparable to those already explored in this article. Harvey's description of the experiment falls in two central parts: First, he describes what happens when the ligature is applied to the arm (the first figure of the illustration), and secondly he describes the actual experiment which shows the nature of the blood flow in the arm (the last three figures of the illustration). These two parts of Harvey's argument equally represent the transition from pointing to touching. In the first part, Harvey relates how, when

a ligature has been tightened around the arm for a longer period and then released, the test-subject feels warmth streaming down the arm. Here Harvey examines the sensory experience of the test-subject; we are thus made aware of the fact that there is a person behind the arm and that the sensations this person feels are relevant to Harvey's argument. The scientist himself, however, is not interfering with his test-subject but remains merely observing.

In the second part of his argumentation, Harvey interacts more directly with the arm, thereby bridging the gap between himself as observer and test-subject. Thus, the scientist moves from pointing to touching, but the touch is not just symbolic: Harvey describes how he with one finger depresses one of the vessel valves in the arm and with another finger forces the blood in the vein back and forth, thereby "a violence to nature is done" (71), as he puts it. It is, then, because Harvey actually touches his test-subject and manipulates the blood that he is able to prove what he could merely observe in animals or in his examinations of the sensory experiences of test-subjects. Hence, apart from illustrating the features of the experiment with the blood flow, the illustration in Harvey's works also presents an interesting version of the pointing and touching hand: Contrary to the manicule or the pointing hand, Harvey's hands not only point to where one should look in order to see proof of his argument; instead, the hand is also actively touching the arm. Furthermore, it is clear that there is a subject behind the arm of the experiment, a person who is able to sense the warmth and cold depending on the tightness of the ligature: The experience of the test-subject, therefore, is an important notion in Harvey's description and depiction. In this respect, the bridging between the test-subject's sense and the touch of the scientist becomes very prominent.

Thus, in this case, the hands are indeed pointing towards the important part of the observation and experiment, but even more importantly, they participate in the experiment: It is the hand in the illustration which is actively pressing on the veins and performing the action necessary for the experiment to work. Thereby, the hand of the illustration becomes instrumental in proving Harvey's theory about the heart as a blood pumping muscle in the establishment of the theory of circulation.

Examination of proof and satisfaction of sense information are also essential elements in *Hamlet* written almost three decades before Harvey's treatise, but although *Hamlet* himself, as we shall see, "experiments" with forms of knowledge about the human body and mind, doubt remains at the core of these relations: there is no firm establishment of any given theory. What also marks an important link between Harvey and *Hamlet* in what follows, is a transitional understanding of the human heart – and, as we shall see, its relationship with the human hand. If Harvey's discovery of blood circulation was an all-important challenge to predominant early modern understandings of the heart, paradigmatic shifts are set in motion: where the heart is the embodied seat of spirits and emotions as in Galenic humoral theory, it is, to Harvey a functional muscle. As a consequence, the metaphor of the heart as the seat of emotions can become precisely merely a metaphor, as indeed it is to the present day.²¹ In humoral theory human inward states and outward signs often correspond because both are embodied, as we have seen proof of in Bulwer. At the same time, throughout the seventeenth century, the relations between inner and outer components of the human self are set within a continuously shifting framework in which

it becomes increasingly difficult to discern between materiality of muscle and metaphor of emotion. These shifts are very much part of the contradictory discourses in *Hamlet*: a text which, as has often been noted, is written at the turn of more things than a century.



***Hamlet* – the Heart and the Hand**

In *Hamlet* relations between body and mind, human outward signs and inward states, and unstable epistemological issues, provide absolutely central parts of the discursive framework of the whole play, but in ways that are consistently inconsistent. *Hamlet* contains to an almost overwhelming degree all of the issues – and their counterparts – explored throughout this article, which makes it a fitting example with which to sum up, even if it does not provide any easy conclusions. As has been noted by many critics, past and present, it is notoriously difficult to extract any one systematic statement from the play, because it continuously oscillates between at least two conflicting statements that overlap and change, as in the usually comic exchange between Hamlet and Polonius concerning the potential shapes of a cloud in the third act:

HAMLET Do you see yonder cloud that's almost in shape of a camel?

POLONIUS By th' mass and 'tis like a camel indeed

HAMLET Methinks it is like a weasel.

POLONIUS It is backed like a weasel.

HAMLET Or like a whale?

POLONIUS Very like a whale
(3.2.368-373).

Of course Hamlet may be mainly exposing the old counsellor's insincerity in humouring his own rapidly changing statements and there is also a somewhat sinister element underlying the exchange, because it is their last encounter, before Hamlet mistakenly kills Polonius behind the arras in the closet scene, which we will investigate shortly. However, in a different perspective the exchange can be seen as a parody of a poorly performed experiment in which observation of a constantly changing form (such as a cloud) only leads to arbitrary conclusions and the knowledge provided by the senses is unreliable, to say the least. If there is a sarcastic comment on the reliability of empirical observation implied in this, it could be rendered even more tangible during the open-air performances at The Globe with real clouds visible overhead. It is one of several passages, which potentially epitomizes the play as in itself a kind of experiment that leaves no epistemology unexplored, but offers no *a priori* arguments, nor any *a posteriori* conclusions. In other words, it adheres to Bacon and Descartes's sceptical statements on doubt as the necessary starting point on the path to knowledge quoted in our introduction, but where Bacon and Descartes begin in doubts in order to end with certainties, *Hamlet* arguably continues and remains in doubts in order to avoid certainties.²²

The play begins famously with Horatio's sceptical questioning of the ghost's appearance to the soldiers: he "will not let belief take hold of him" (1.1.23) till he has seen it with his own eyes. This questioning of the ghost's appearance and message is later reinforced by Hamlet himself, who, although appearing fully convinced that the ghost is indeed his "father's spirit" when he first encounters it, later finds it necessary to test what he has actually seen

and heard through “The Mousetrap,” the play re-enacting the murder as described by the ghost: “I’ll have grounds/More relative than this. The play’s the thing/Wherein I’ll catch the conscience of the king” (Q1, 3.1.538-540).²³

Howard Marchitello, in the essay “Artifactual Knowledge in Hamlet,” has discussed these issues in-depth claiming that “The Mousetrap” is effectually Hamlet’s take on a rapidly developing early modern scientific instalment: the experiment. But does Hamlet gain any certainty of knowledge from this “experiment”? The problem here is again symptomatic of the play’s inter-conflicting statements: Claudius’ reaction (expressed through body language) is taken as trustworthy, but in several places elsewhere Hamlet notoriously reiterates the unreliability of such outward signs, because “they are actions that a man might play” (1.2.84). Importantly, scepticism in *Hamlet* is thus not just a question of what the body can know, but also of what can be known about the body, especially if the body has a complex and unresolved relationship with its outside and inside components. The question shifting back and forth in the play between sensory perception as reliable and unreliable is linked to the similarly alternately severed and linked connection between outward signs and inward states, which David Hillman has explored extensively in *Shakespeare’s Entrails: Belief, Skepticism and the Interior of the Body*. In the introduction to this book, Hillman formulates an important description of the shifting understandings of the human body in early modern England:

The body was losing its ontological standing of primacy and having to struggle, as it were, in the realms of epistemology – a position

from which it has never recovered. One could almost say that, gradually forfeiting its aura of presence or givenness, the body now had to defend itself, and one way of doing so in early modern England was through recourse to fantasies of a clearly defined boundary between the ‘inside’ and the ‘outside’ (6).

“‘Seems’, madam - nay it is, I know not ‘seems’” (1.2.76). Hamlet’s already alluded to declaration early in the play in response to his mother questioning his signs of grief is what Hillman calls “a paradigmatically skeptical avowal of the unbridgeable gap between the ‘inner’ and the ‘outer’” (85). In his first sustained speech Hamlet describes a series of gestural signs of grief – such as tears and sighs – and likens them to “actions that a man might play” (1.2.84) compared to having “that within which passes show,/These but the trappings and the suits of woe” (1.2.86). Tremendous amounts of scholarship have been devoted to the question of what Hamlet is hiding “within:” the question of what kind of subjectivity – pre-modern, early modern, or indeed modern – can be extracted from the play, so we will not here repeat what has been extensively explored for decades.²⁴ Instead we will condense our focus to one particular gesture, significantly related to this question: Gertrude’s wringing her hands in the closet scene. This gesture, which also appears in Bulwer’s *Chirologia* as already mentioned in our section on *Titus Andronicus*, occurs immediately after the mistaken murder of Polonius. It is implied in Hamlet’s comment on his mother’s distressed reaction which rekindles his intent of “speaking daggers” to her: “– Leave wringing of your hands. Peace, sit you down / And let me wring your heart” (3.4.32-33). Bulwer’s full description of “Ploro” is as follows:

TO WRING THE HANDS is a natural expression of excessive grief used by those who *condole, bewail* and *lament*. Of which gesture that elegant expositor of nature (Francis Bacon in *Sylva Sylvarum*) hath assigned this reason: sorrow which diminisheth the body it affects provokes by wringing of the mind, tears, the sad expressions of the eyes, which (tears) are produced and caused by the contradiction of the spirits of the brain, which contradiction doth strain together the moisture of the brain, constraining thereby tears into the easy; from which compression of the brain proceeds the HARD WRINGING OF THE HANDS which is a gesture of expression of moisture (28).

Bulwer (and Bacon before him) here directly connects the outward signs of sorrow – tears and the wringing of hands – with an inward physiological state: the wringing of the brain caused by the spirits also encountered in humoral theory. Grief is here distinctly described as an embodied emotion operating via “spirits” between and through inner organs such as brain and heart. So it may well be in Gertrude’s case, but, at the same time, there is reason to question whether Gertrude’s heart is to be understood in a physiological or psychological context; whether it is the bodily seat of distress and grief or the metaphor thereof.²⁵ The answer, as so often in the play, is likely to be both, and this places Hamlet’s understanding intriguingly somewhere between Galen and Harvey as well as in puzzling relation to Bulwer.

In fact, Hamlet seems at first to imply the contradiction of Bulwer’s description: a severed connection between outer sign and inward state:

Gertrude’s hand-wringing is an “action that a (wo)man might play”. Hamlet’s task then is to re-connect outer and inner by wringing her heart: “If it be made of penetrable stuff,/If damned custom have not brazed it so/That it be proof and bulwark against sense” (3.4.34-35). It appears that he succeeds, if we are to believe Gertrude’s lines a little later: “Thou turn’st my very eyes into my soul” (3.4.88). However, this turning Gertrude inside out ought also to be counterpoised with Hamlet’s exchange about his own heart – and what it hides – with Guildenstern by the end of the scene containing the performance of “The Mousetrap” which almost immediately precedes the closet scene. The significant prop in this brief exchange is the recorder, to which Hamlet compares himself accusing his old school friend of wanting to draw out his secret, of wanting to “play upon” him: “You would seem to know my stops, you would pluck out the heart of my mystery” (3.2.356-57). The exchange has been expertly analysed by Graham Holderness, who writes that “scepticism denies the inherence of inner in outer, and assumes a gap between inner truth and outer display. The sceptic assumes that outer display in others is probably misleading (actions that a man might play)” (305), which is undeniably the case here.

What is also important to also add in our context is attention to the recorder itself, because it is indeed an instrument to be handled; music is to be drawn out from it by the correct placement of fingers. As Guildenstern says “I know no touch of it, my lord” (3.2.348): the skill required is manual. Hamlet, however, implies a human interior that cannot be handled, that cannot be touched, that there in fact exists a place where the hand cannot enter. Not even the hand of the anatomist, for Hamlet’s words “the heart of my mystery” seem to

denote a metaphorical as well as a material space. The heart of Hamlet's mystery is safe from outside interpretation, but few minutes later he penetrates his mother's heart proving again the changeable nature of epistemological statements about what can be known with and about the body in the play. To Bulwer wringing one's hands clearly denotes a direct corresponding inner state, but in Hamlet this correspondence is alternately contradicted and confirmed within the space of two preceding scenes. The fact that Hamlet predates Bulwer by several decades – and the fact that both Burton's *Anatomy of Melancholy* and Harvey's *De Motu Cordis* are published in between respectively in 1621 and 1628 – is arguably proof of the non-linear development of these shifting paradigms in the early modern period: the relations between Hamlet's hearts and hands thus represent a cross-section of our cross-over examples.

Handling the Theme of Hands: Conclusive Remarks

We have used the example of human hand, and in part its two familiar functions of pointing and touching, in order to explore, but by no means fully exhaust, early modern epistemological questions related to "Matter, mind and spirit". The intention has been to follow the hand as a thread through multiple and interwoven discourses in early modern England, creating a dialogue between the different, but also overlapping disciplines as a useful co-illuminating factor. Bulwer, Harvey and Shakespeare are all handling similar questions of how to understand relations between mind and body, but in significantly different ways that prove the non-linearity in the development of these paradigms. All three writers are pre-Cartesian, but that does not mean that they simply represent a



Figure 6 Detail from diagram from John Bulwer, *Chirologia*.

paradigmatic embodied understanding of human perception and cognition that changed for good with Descartes and his Enlightenment legacy. Rather they show how continuously relative such discourses were throughout the sixteenth and seventeenth centuries. The human hand, which we have suggested represents a gateway between mind and body, between inner states and outward expressions, is thus found where discourses overlap. Bulwer's gesture "M" with the accompanying illustration entitled "sollicite cogito," "I think anxiously," (Figure 6) can be said to encompass, in a very condensed manner, some of these overlapping discourses – and the often accompanying anxiety in early modern thinking.

The illustration shows a thinking subject whose thinking process is hidden and yet revealed in body language – this is one of Bulwer's illustrations which contain a torso and head as well as a hand – and the gesture is the, even to modern eyes, very familiar scratching of the head. The question as to why humans scratch their heads while thinking, Bulwer answers thus: "But why we should in earnest meditation so naturally expresse our endeavour by this recourse of the hand to the head,

to scratch where it doth not itch; is, may be, to rouse up our distracted intellect” (85-86). A hand used to rouse up a distracted intellect shows a an interdependent, but at the same time confused relation between the body and the mind; between material and immaterial understandings of the human self that are highly important to continue exploring in the context of the early modern period. Our attempt described as “handling the theme of hands” points out the implication of performing

material act (handling) with an immaterial notion (a theme). To handle a theme, as we have realised here, is literally trying to grasp the ungraspable – a fundamental paradox that characterises the early modern hand and its epistemological significances.



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¹ This catalogue was published for the exhibition *Writing on Hands: Memory and Knowledge in Early Modern Europe*, conceived by guest curator Claire Richter Sherman and organized by The Trout Gallery, Dickinson College, Carlisle, Pennsylvania, in cooperation with the Folger Shakespeare Library, Washington, D.C. in 2000 and 2001. Besides the catalogue an interactive website was created: <http://handoc.com/WritingOnHands/index.html>.

² The early modern period is here the conventionally understood timeframe of 1450-1750. Dealing with material beyond this time-frame or indeed questioning the time-frame itself, is beyond the scope of this article as our main examples for analysis are all from sixteenth- and seventeenth-century England. Furthermore, we deal only with examples from printed materials and thus not handwritten or hand-drawn materials.

³ The *OED* entry for the verb "to perceive" is not irrelevant here, as it in fact reads: "To take in or apprehend with the mind or the senses." Key differences in descriptions of early modern perception can be read into this definition and several of the questions explored by this article are precisely between "taking in" or "apprehending with the mind or the senses".

⁴ In recent decades scholars have explored early modern notions of the embodied self to great extent: important works include Michael Carl Schoenfeldt, *Bodies and Selves in Early Modern England: Physiology and Inwardness in Spenser, Shakespeare, Herbert, and Milton* (1999); Gail Kern Paster, *Humoring the Body: Emotions and the Shakespearean Stage* (2004); as well as Bruce R. Smith's historical phenomenology influencing several very recent publications on early modern senses, emotion and affect.

⁵ This account of outer and inner senses appears in Burton, Part 1, "Anatomy of the Soul," subsections V-VII, (98-101). Similar understandings of the senses and perception appear in important works from the period with some variations: Helkiah Crooke's *Microcosmographia: A Description of the Body of Man* (1615); Thomas Wright's *On the Passions of the Minde in General* (1601, 1604, 1621, 1630); and Edward Reynoldes, *A Treatise of the Passions and Faculties of the Soule of Man* (1647). The concept of the 'common sense' was derived from Aristotle, for an extensive account see Daniel Heller Roazen, *The Inner Touch: Archaeology of a Sensation* (2007).

⁶ See Burton, Part 1, "Anatomy of the Soul," subsections IX-X, (104-105).

⁷ Descartes writes: "This 'me', that is to say, the soul, by which I am what I am, is entirely distinct from body, and is even more easy to know than is the latter; and even if body were not, the soul would not cease to be what it is" (*Discourse* 101).

⁸ The revival of scepticism is by historians inextricably linked to ongoing theological debates in the context of the Reformation. See for example Hamlin, *Tragedy and Scepticism in Shakespeare's England* (2005). Landau also discusses the connection between the revival of scepticism and the disputes over religious dogma during the Reformation in "'Let me not burst in Ignorance': Scepticism and Anxiety in *Hamlet*" (2010).

⁹ Bacon, for example, also writes that: "By far the greatest hindrance and distortion of the human intellect stems from the dullness, inadequacy, and unreliability of the senses" (*Novum Organum* 87).

¹⁰ For a more detailed account and discussion of these different early modern epistemologies see for example Gallagher and Raman, introduction to *Knowing Shakespeare: Senses, Embodiment and Cognition* (2010), pp. 1-29. Or Hillman, introduction to *Shakespeare's Entrails: Belief, Scepticism and the Interior of the Body* (2007), pp.1-57.

¹¹ This argument is also important in twentieth century phenomenology, particularly in the work of Maurice Merleau-Ponty, and has been recently explored significantly within the contexts of what is known as "historical phenomenology" by Bruce R. Smith, particularly in *Phenomenal Shakespeare* (2010): see for example (xvii-xviii).

¹² See for example Roach, (1985) or Astington, (2010).

¹³ The fact that the same actors were evidently influenced by verbal and non-verbal methods of rhetoric also provides a link to Bulwer: See Roach (1985) or Astington (2010), as well as Thomas Heywood's well-known *An Apology for Actors* (1612) which ostensibly emphasizes acting as rhetorical art.

¹⁴ Bulwer is by no means the first or only advocate of this notion. It is found in Quintillian's *Institutio oratoria* (first century AD). See Kendon, (2004) p.18.

¹⁵ See Descartes, *Treatise of Man* (*De homine*, 1662 and *Traite de l'homme*, 1664): "I assume their body to be but a statue, an earthen machine" (1).

¹⁶ The whole play may indeed be read as a complex comment on an interplay between words and bodies, as Mary L. Fawcett has shown in an influential essay "Arms/Words/Tears: Language and the Body in *Titus Andronicus*" (1983).

¹⁷ Jonathan Bate also mentions this in his notation of the Arden edition of the play (n9-11, 206).

¹⁸ For an extensive account of the manicule see Sherman (2008).

¹⁹ Touch was sometimes referred to as "the king of the five senses" (E. Harvey 1, n1.); an epitaph that contradicts its Aristotelian hierarchical status showing further its ambivalent place in early modern discourse.

²⁰ See for example Craik and Pollard (2013) or (Karim-Cooper and Stern (2013).

²¹ For an example of how scholars have discussed the relationship between metaphor and materiality – differences in meaning between modern and early modern psychology – in recent decades see for example Schoenfeldt (1999) p. 8.

²² For accounts and discussions of classical scepticism in early modern England and in Shakespeare's writing see Hamlin (2005) or Bell (2002).

²³ In the case of Horatio, senses are reliable in at least ascertaining the existence of the ghost whatever it may be or represent, but the play then proceeds to significantly complicate this epistemology, by offering its opposite. As Howard Marchitello writes: "*Hamlet* is important to this discussion of the senses in early modern culture in part because it marks a crossroads, a moment of the jarring coincidence of two radically opposed epistemologies distinguished above all by the different ways in which the body's role is understood. On the one hand, thinking happens only through the body and its properly functioning perceptions. On the other hand, Shakespeare's era witnessed an increasingly serious skepticism over their viability to secure knowledge" (139).

²⁴ See for example Holderness (2009) for an extremely helpful overview and discussion of this.

²⁵ Hillman argues that *Hamlet* represents precisely a striding of both meanings in relation to the heart; the transition from materiality to metaphor has not yet been made, but is in the making: "the play itself is one of the central transitional points between the physical and the 'spiritual' in Western culture; Hamlet's death a corporeal representation of these faultlines, half-metaphorical, half-somatic: 'Now cracks a noble heart' (5.2.364)" (116).

