This article reads some familiar speeches from key Shakespeare plays in the light of modern theories of perception, asking the Shakespeare texts for advice on such matters as “inattentional blindness,” “the distribution of the sensible,” visual perception and imagination, the “extended mind,” and “embodied cognition”. Holderness triangulates Shakespeare’s dramatic poetry with contemporary psychological and philosophical theories, and early modern works of philosophy and medicine, and asks whether these convergences are endorsements of Shakespeare’s universal wisdom, or genuinely new ways of seeing Shakespeare and the world.

Review Article: Shakespeare and Perception

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Christopher Chabris and Daniel Simons, *The Invisible Gorilla* (New York: Random House, 2009).
Laurie Johnson, John Sutton and Evelyn Tribble (eds.), *Embodied Cognition and Shakespeare’s Theatre* (London: Routledge, 2014).
Jacques Ranciere, trans. Gabriel Rockhill, *The Politics of Aesthetics: the distribution of the sensible* (London: Bloomsbury, 2004).
David Hillman, *Shakespeare’s Entrails: belief, scepticism and the interior of the body* (London:Palgrave, 2007).

It’s one of the most famous of all psychological demonstrations. Subjects are shown a video, about a minute long, of two teams, one in white shirts, the other in black shirts, moving around and passing basketballs to one another. They are asked to count the number of passes made by the team wearing white, a seemingly simple task. Halfway through the video, a woman wearing a full-body gorilla suit walks slowly to the middle of the screen, pounds her chest, and then walks out of the frame. If you are just watching the video, it’s the most obvious thing in the world. But when asked to count the passes, about half the people miss it.

This experiment, published in 1999 by Christopher Chabris and Daniel Simons, is a striking demonstration of what's called 'inattentional blindness'. When you direct your mental spotlight to the basketball passes, it leaves the rest of the world in darkness. Even when you are looking straight at the gorilla (and other experiments find that people who miss it often have their eyes fully on it) you frequently don't see it, because it's not what you're looking for.

In their book *The Invisible Gorilla,* Chabris and Simons argue that it's a mistake to see this demonstration as proof that some people are easily duped. It's rather an inherent limitation of cognition. Chabris and Simons argue that the real problem is 'the illusion of attention' - that we are often unaware of these limitations. We think that we see the world as it really is, but 'our vivid visual experience belies a striking mental blindness'. (p. 2) Humans overrate their cognitive abilities. 'Intuition deceives'.

The inquiry here was into cognitive processing, how we perceive the world through our senses. Can we trust them? Does the brain perceive everything in a scene instantaneously, and then later decide what to focus on, or decide at the outset what is relevant and significant, thus ignoring or forgetting the rest? But the point I'd want to home in on is the experimental context, which by definition doesn't involve spontaneous perception, but is based on *instruction*. If you are *told* to concentrate on one thing and not another, you may not see, or your brain may not retain an image of, the 'other' at all.

Let me take a parallel experimental example from Shakespeare. Act 3 scene 4 of Hamlet, the closet scene in which *Hamlet* tries to compel his mother to admit her guilt. First of all we can see that this scene is essentially about perception and cognition. To start with it's loaded, almost over-loaded, with graphic sensory perceptions from all five senses. Predominant is vision, understandable

since the scene is so much about looking and seeing, as when Hamlet forces Gertrude to look at the pictures of Old Hamlet and Claudius, and tries to get her to see the Ghost. The word ‘look’ appears 10 times in the scene, and the word ‘see’ 7 times, both appearing in key phrases: ‘Look, look upon this picture’. ‘Whereon do you look?’ ‘Do you not see him?’ etc.

Hearing is also prominent, with references to sounds such as ‘noise, that roars so loud’, to the penetrating effects of harsh words on the ear, and so on. The sense of smell is invoked, in Hamlet’s descriptions of what he considers adulterous sex, ‘the rank sweat of an enseamed bed’. And taste is also there, coupled with smell, for instance in the coinage ‘honeying above the nasty sty’. Everywhere there are images of sensation through touch: the heat of fire, the chill of frost, the regular beating of Hamlet’s own pulse.

These concrete images of sensation are generic to poetry. But this scene goes further, and continually references the organs of sensation themselves, the eye and ear and tongue and skin that do the perceiving. ‘Eyes’ are mentioned 8 times, ‘ears’ 3 times and ‘hearing’ twice. The word ‘skin’ is used only once, but the scene is full of allusions to areas of the skin – face, forehead, brow, scalp – and to physical processes that affect the skin – blush, blister, hair standing on end.

Then Shakespeare goes further, and inserts explicit references to the human sensorium itself, albeit in a depraved and damaged state as he perceives it in his mother:

> Eyes without feeling, feeling without sight,
> Ears without hands or eyes, smelling sans all … (*Hamlet*, 3.4.80-1)

So the focus on perception is explicit. Eyes, ears, hands, smelling; Vision, hearing, smell, touch. One step further, and we find, foregrounded in the scene, the physiology of perception itself. ‘Sense, sure you have’ he says to Gertrude, ‘Else could you not have motion/But sure that sense is apoplexed …’. You must be capable of perception or you wouldn’t be alive; but your perception must be damaged, diseased.

So the parameters of the scene are set through a language of sense perception, dwelling persistently on the organs of sensation as well as the objects they perceive, and even extrapolating the perspective to consider the act of perception itself. But the real experiment is one of visual perception and cognition. Hamlet’s purpose in challenging Gertrude is to make her look inside herself.

> You go not till I set you up a glass
> Where you may see the inmost part of you. (19-20)

And he succeeds:

> Thou turn'st mine eyes into my very soul .. (90)

Gertrude’s eyeballs are figuratively inverted, so she can see what no-one else can see, the condition of her soul. The auditory sense is also involved, since Hamlet has been teaching her through sound as well as sight. ‘These words like daggers’, says Gertrude, ‘enter in mine ears’. The process of introspection, intuition, is represented through such images, very typical of the play *Hamlet*, of penetration, accessing the inside of the body: Stop wringing your hands, Hamlet tells her, so I can ‘Wring your heart’. In order to prove that Gertrude’s

heart is made of ‘penetrable stuff’, Hamlet must imagine physically grasping and ‘wringing’ it.

And so under Hamlet’s instruction, we have Gertrude metaphorically, but in a psychological sense literally, looking inside herself. Her attention is introspective. Her eyes and ears are turned inwards, gazing at her soul, listening to the sound of her conscience. Hence when the ghost of her dead husband walks past her, she cannot see him. Why do you ‘bend your eye on vacancy?’ she ask her son. Why do you seem to perceive something that isn’t there? ‘To whom do you speak this’? who are you talking to? ‘Do you see nothing there?’, asks Hamlet. ‘Nor did you nothing hear?’

‘Nothing at all’, is Gertrude’s reply, ‘yet all that is I see’. (134)

The condition this scene diagnoses in Gertrude is exactly the inattentional blindness discovered by Chabris and Daniel in their experiment with the invisible gorilla. Gertrude is watching the basketball game, and counting the passes. She does not see the invisible gorilla. She believes that her senses are fully capable of perceiving and processing everything in her environment’ ‘all that is, I see’. But they are not. ‘Her vivid visual experience’, in the words of Chabris and Daniel, ‘belies a striking mental blindness’. Her brain has selected certain elements of what she perceives, and ignored or forgotten everything else. She tries to dismiss her own attention deficit by claiming that Hamlet is only imagining what he sees and hears: ‘this is very coinage of your brain’. You’re making it up. She thinks he’s like the melancholic in Timothy Bright’s *Treatise of Melancholy* (1586): ‘a man transported with passion, utterly bereft of advisement, who causeth the senses both inward and outward preposterously to conceive … terrible objects, monstrous fictions’. But Hamlet is only seeing what everyone else who encounters the Ghost can see clearly, with the ‘sensible

and true avouch' of their own eyes. It is only Gertrude who cannot see the invisible gorilla.

Consider another parallel experiment from Shakespeare. When Prospero in *The Tempest* commands Ariel, 'Be subject to no sight but thine and mine, invisible / To every eyeball else', he converts the sprite into an invisible gorilla. Ariel will be able to walk through the middle of the basketball game of the drama, invisible to the participants whose attention is focused elsewhere. As spectators, we are in the privileged position of being able to watch the whole experiment. We can see the invisible gorilla; we can see the people who can't see him; but most important, we can see the experimentalist who is setting the rules, and determining what is seen and what isn't. Inattentional blindness is produced by the exercise of power. The omniscient, omnipotent sorcerer and his ubiquitous, discarnate accomplice, whose invisibility renders the rest of the *dramatis personae* subject to their sight and will, are made subject by Shakespeare to the sight of the audience, who perceive that the absolute power Prospero wields is the product of sheer illusions. Think of the stage direction in Act 3 scene 3: '*Solemn and strange music, and Prosper on the top, invisible*'. The auditory sense is both delighted and baffled by music, while the visual sense is disturbed by the irruption into visibility of an invisible man. There he is, in the gallery above the stage, in plain sight to us, but invisible to every eyeball else. Now you see me. Now you don't.

Ariel's invisibility concerns the techniques Shakespeare employs to make visible to the spectator the internalized imperatives which dictate his characters' fates, but of which the characters remain oblivious. Shakespeare, in other words, grasped - long before Jacques Rancière - the crucial part played in maintaining hegemony by what Rancière terms 'the distribution of the sensible'. That is, the systemic definition, allocation and control of what the members of a society are

capable of apprehending through their senses. The designated place of a person or a group within society, their allotted share in the collective economic and political power at its command, and thus the forms, scope and quality of their participation in the life of that society, are indivisible from the modes of perception that imperceptibly determine what is visible and audible to them, as well as what can be touched, smelled and tasted. Hence, as Rancière explains in *The Politics of Aesthetics*, the equally crucial part played by the arts in not only revealing how this perceptual regime 'defines what is visible or not in a common space' (p. 12), but also redefining the boundaries of what is apprehensible by the senses, and by the faculty of sight in particular. Insofar as 'Politics revolves around what is seen and what can be said about it, around who has the ability to see', works of art are thus inextricably political. They are 'forms of visibility', whose value resides in their capacity to expand the scope of the perceptible by rendering visible, 'from the standpoint of what is common to the community', methods of division and exclusion that would otherwise remain unseen. The most valuable works of art seek, through a radical reconfiguring of perception, nothing less than an 'egalitarian distribution of the sensory' as a precondition of 'the political redistribution of shared experience' (pp. 12-13).

The Tempest widens the visual field of its audience not only by empowering them to perceive the hidden mechanisms that govern their own destinies, but also by empowering them to perceive that they are man-made, and therefore mutable. And when Prospero surrenders absolute power in the Epilogue to the community formed by the audience, the profound political implications of making the invisible visible become plain for all to see.

In that example I've used as a theoretical prop the work of Jacques Ranciere, who was of course a student of Louis Althusser. So my *Tempest* experiment (which I've borrowed in part from Kiernan Ryan) is basically a Marxist

analysis of how ideology limits, constrains and circumscribes perception. The Invisible Gorilla experiment shows that people see what they're capable of seeing, or what they are told to see. Marxism predicates that people see only what the dominant ideology permits them to see. In Ranciere's post-Althusserian Marxism, as in the work of earlier Marxist theoreticians such as Pierre Macherey and Lucien Goldmann, art enables us to perceive ideology. 'The peculiarity of art', in Althusser's famous assertion, 'is to make us see, to make us perceive, make us feel, something that alludes to reality … What art makes us see is the ideology from which it is born, in which it bathes, from which it detaches itself as art, and to which it alludes'.[1] Perception is naturally limited by ideology; art exposes ideology and enables us to perceive how it constrains us. Art makes the invisible visible; but the invisible is nothing more than the covert mechanism of power.

The 'Invisible Gorilla' experiment, and the closet scene in Hamlet, demonstrate scenarios in which the visible can become invisible. In the example from *The Tempest*, the play's instruction to the audience is to perceive what is really there, but normally hidden: ideology. To make the invisible visible. I want to move now to a very different example, in which the audience is instructed to see what is there, and to pretend that it's something else; and to see what is not there at all, and to pretend that it is.

The Chorus in *Henry V* apologizes to the audience for the visual poverty of the theatre, which can offer only a poor imitation of the great pageant of history. If he had a 'Muse of Fire' he would be able to do what Joseph Conrad aspired to do: 'by the power of the written word, to make you feel, to make you hear, to make you see'.

> But pardon, gentles all,

> The flat unraised spirits that have dared
> On this unworthy scaffold to bring forth
> So great an object: can this cockpit hold
> The vasty fields of France? or may we cram
> Within this wooden O the very casques
> That did affright the air at Agincourt?
> O, pardon! since a crooked figure may
> Attest in little place a million;
> And let us, ciphers to this great accompt,
> On your imaginary forces work.
> … Piece out our imperfections with your thoughts;
> Into a thousand parts divide one man,
> And make imaginary puissance;
> Think when we talk of horses, that you see them
> Printing their proud hoofs i' the receiving earth;
> For 'tis your thoughts that now must deck our kings … (Henry V, Chorus to Act One, 9-19, 24-9)

The instructions to the spectator here are to see what is there in their immediate environment, the theatre, the stage, the actors, the lack of props and scenery; and to pretend that they see something else. Their eyes are to focus on the cockpit, the wooden O, the flat unraised spirits of the actors. But their minds should see the territory of history itself, the past, elsewhere, all the glorious panoply of an epic 15th century war.

These directives have been taken literally as defensive, apologetic and ashamed of the Elizabethan theatre's poverty of resources. It can be argued that *Henry V* is truly an epic play, and the Chorus can only lament, from the bare boards of an unworthy scaffold, the absence of space, pictorial décor

and narrative scope proper to the epic form.

At face value, this is about making the visible invisible, and replacing it cognitively with an imaginary reality: 'for 'tis your thoughts that now must deck our kings'. Don't see the actor, see the king. Now you see me, now you don't. But the Chorus's speeches can also be interpreted in almost the opposite way. They are directed to an audience that is already well accustomed to entering the theatre, and pretending that the representation they see is really something else. Otherwise why on earth would they come? Dramatic illusion naturally converts what is seen into a newly-visible, partly imagined reality. So when the Chorus calls the attention of the audience away from the dimension of history to a focus on the physical conditions of the theatre itself, he foregrounds the artifice of the drama's construction. The 'few vile and ragged foils' which would normally be perfectly acceptable as the broadswords of Agincourt, become visible as theatrical props. The 'wooden O' which could readily, by means of the conventions shared between actors and audience, be imagined as the space of a historical battle, is exposed instead as the space of a theatre. In this reading it is dramatic illusion that makes the visible – dramatic illusion - invisible, and the Chorus is actually reversing the effect, to make the invisible – theatrical artifice - visible. If the play was performed, as it appears in the first Quarto text of *Henry Fift* (1600), without the Choruses, then the actor would have been saying to the audience 'look at me, I'm *Henry V*'. The Chorus in the Folio text says the opposite: 'look at him, he's not *Henry V* at all; he's just an actor'.

These readings of the play would seem to be incompatible: you couldn't hold them both together in your mind. It was this dualistic aspect of the play that Norman Rabkin was addressing in his influential article, from 1977, on

'Rabbits Ducks and *Henry V*'.[2] Using the simple optical illusion from 'Gestalt psychology' of a rabbit-duck, Rabkin compared the perceptual model, in which we can see one of these objects at a time, but not both, with the way in which the play demands that the reader chooses between incompatible alternatives. Just as, in order to make totalizing sense of a puzzling image, we have to switch between seeing rabbit and seeing duck, so we have to choose between alternative responses to the play. As Ernst Gombrich puts it in Rabkin's primary source, *Art and Illusion*,[3] confronted with the rabbit-duck 'we cannot experience alternative readings at the same time. Though we may be intellectually aware of the fact that any given experience must be an illusion, we cannot watch ourselves having an illusion'. In other words once we've seen both rabbit and duck, we know they are both there. But we can't perceive both at the same time, because the brain insists on perceiving a whole that is other than the sum of its parts. Similarly we can *know* that *Henry V* is epic in both the Homeric and the Brechtian senses. But we can't *perceive* both at the same time.

There's one particular word in that first Chorus of *Henry V* that is obviously central to this debate, and that is the word 'imaginary'. Today in common usage imagination is very much a positive buzz-word word, denoting the faculty of creating new images and sensations that are not perceived through the senses. In education, imagination is regarded as the faculty that helps make knowledge applicable in solving problems, and is fundamental to integrating experience and the learning process. Albert Einstein famously said that imagination is more important than knowledge (by which he meant that you need both). Imagination is often invoked as the innate ability to invent partial or complete personal realms within the mind, using elements derived from sense perceptions of the shared world. Imagination takes reality and makes it new, different, transformed.

In psychology, however, the term is used technically for the process of reviving, in the mind, percepts of objects formerly received by sense perception. It's a secondary faculty, and therefore, in terms of reception of perceptual stimuli, weaker than the sense-perception it processes. In Elaine Scarry's words, 'the imagined object lacks the vitality and vivacity of the perceived'.[4] Since this use of the term conflicts with that of ordinary language, some psychologists have preferred to describe this process as 'imaging', or to speak of it as 'reproductive' as opposed to 'productive' or 'constructive' imagination. Imagined images are seen with the 'mind's eye', and the mind's eye can't see as well as the body's.

Let's remind ourselves of one of Shakespeare's big speeches on the imagination.

> More strange than true. I never may believe
> These antique fables nor these fairy toys.
> Lovers and madmen have such seething brains,
> Such shaping fantasies, that apprehend
> More than cool reason ever comprehends.
> The lunatic, the lover, and the poet
> Are of imagination all compact.
> One sees more devils than vast hell can hold—
> That is the madman. The lover, all as frantic,
> Sees Helen's beauty in a brow of Egypt.
> The poet's eye, in fine frenzy rolling,
> Doth glance from heaven to Earth, from Earth to heaven.
> And as imagination bodies forth
> The forms of things unknown, the poet's pen
> Turns them to shapes and gives to airy nothing
> A local habitation and a name.
> Such tricks hath strong imagination,
> That if it would but apprehend some joy,

> It comprehends some bringer of that joy.
> Or in the night, imagining some fear,
> How easy is a bush supposed a bear! (*A Midsummer Night's Dream*, 5.1.2-23)

Theseus is absolutely confident in the capacity of 'cool reason' to perceive the world as it really is through the senses. A bush is a bush, and a bear a bear. A rabbit's a rabbit, a duck a duck. The poet's imagination, that creates images of 'things unknown', and gives illusory solidity to 'airy nothings', is no different from the hallucinations of the madman, or the deluded vision of the lover. The play of course contradicts Theseus, and he himself is nothing more than a creature of the poet's pen. And yet Theseus exhibits a 'hermeneutics of suspicion' towards anything that is not empirically verifiable. As indeed does Gertrude in the closet scene, when she tries to blame Hamlet's hauntedness on fantasy:

> This the very coinage of your brain:
> This bodiless creation ecstasy
> Is very cunning in. (*Hamlet*, 3.4.139-41)

In some of these cases, we know that what the imagination perceives is real. Hamlet does see his father's ghost, and the play could not exist were it not for the poet's ability to render airy nothings into visible reality. On the other hand the madman sees only his own private hell; and the lover's irrational preference is his own idiosyncracy. We have no direct access to their states of mind.

This brings us to what is now known as 'theory of mind', what we think other people are thinking. How do we know what's in someone else's mind? We hear what they tell us, we see what they look like. Our senses perceive

information, and we try to use it to gain understanding. But the difficulty entailed in doing this successfully is notorious, and one of the basic triggers of drama. If, as Duncan tells us, 'there's no art to find the mind's construction in the face', then how can we hope to infer correctly what the other person is thinking?

Psychologists call this area 'social perception', and it's the basic traffic of human interaction. The consensus view is that social perception is a 'bottom-up' process, in which the brain uses social signals to make inferences about another person's mental state. I hear you shouting; I see you red in the face; I feel you poking me in the chest – I infer that you're angry. Some experiments conducted a few years ago at Cambridge by Greg Davis and Christopher Teufel[5] led to a questioning of this hypothesis, since they seem to demonstrate that social perception is more of a 'top-down' process. Attributing a mental state to another individual can *precede* what is noticed, and what is not. The experiments in question involved an observer watching another person, and also watching what he was looking at. They seemed to show that what the observer sees, derives from what he believes the other person can see. One set of experimental data suggested that 'when observers believed that another person was able to see, this mental-state attribution facilitated gaze-processing relative to when they believed that the person was not able to see, despite identical gaze stimuli'. Subjects responded to the position of a person's head by noticing more of the things that head was pointing towards, less of the things they thought he couldn't see. If you look at where a person's eyes are directed, you see more of what is in that field of vision. Your perception is influenced by your assumptions about what the other sees. You are entering another's state of mind. In the professional jargon, 'social perception is subserved by an interactive bidirectional relationship between the neural mechanisms supporting basic sensory processing of social information and

the theory-of-mind system. Consequently, processing of a social stimulus cannot be divorced from its representation in terms of mental states'.

A Shakespearean example would be the exchange between Banquo and Duncan in *Macbeth*, describing the castle of Inverness as a 'pleasant seat' where 'heaven's breath smells wooingly'. Jonathan Goldberg points out that the field of vision (and touch and smell) Duncan is perceiving, is out of view for the audience/observer. It is only possible to see it, sense it, through the eyes and senses of a character. But as spectators we willingly collaborate in its creation, since in Goldberg's phrase 'we credit his imagination, and supply the sight'.[6]

In *King Lear* one character conducts exactly such an experiment with another. Edgar tells Gloucester what he would be able to see if he were not blind. In fact Edgar is of course making it all up, and there is no Dover Cliff. But he makes the experience visible, for Gloucester, and for us.

> Come on, sir; here's the place: stand still. How fearful
> And dizzy 'tis, to cast one's eyes so low!
> The crows and choughs that wing the midway air
> Show scarce so gross as beetles: half way down
> Hangs one that gathers samphire, dreadful trade!
> Methinks he seems no bigger than his head:
> The fishermen, that walk upon the beach,
> Appear like mice; and yond tall anchoring bark,
> Diminish'd to her cock; her cock, a buoy
> Almost too small for sight: the murmuring surge,
> That on the unnumber'd idle pebbles chafes,
> Cannot be heard so high. I'll look no more;

> Lest my brain turn, and the deficient sight
> Topple down headlong. (*King Lear*, 4.6.13-24)

Edgar has practiced upon his father's restricted sensory faculties by pretending they are walking up a slope and approaching the cliff. In the speech he creates, for both his father and the audience, a vivid multisensory image of a cliff-top experience. It's an invitation to see the unseen, but it's by no means a clear picture. What we 'see' is really a feeling, vertigo. The emphasis is on the difficulty of seeing, when looking from so high a point. Edgar mimics the kind of zooming and eyestrain that constitute long-distance visualization. Everything seen is 'almost too small for sight'. The sound of the waves from the foot of the cliffs is also a natural element of the scene, but they are heard only in the mind's ear, through the music of the verse, since they 'cannot be heard so high'.

Now Edgar has of course by means of this simulation taken the old man psychologically to the point he wishes to reach – the suicide's leap. Edgar is seeing things from his father's point-of-view. The interior mental world of Gloucester's imagination is furnished with a completely persuasive multi-sensory landscape. You don't have to be on top of Beachy Head to feel like this. At the same time Edgar is directing the old man's dark sight towards what he wants him to see, towards his invented vision. As G.M. Hopkins puts it, 'The mind, mind has mountains, cliffs of fall, sheer, no-man fathomed'. In the play both minds meet on the common imaginative space of Dover Cliff. Afterwards blind Gloucester can see much more clearly, as his mind's eye grows accustomed to the darkness visible of imagination. The doors of his perception, in Blake's words, are cleansed.

I disagree therefore with Jonathan Goldberg's view that watching a sighted man bearing false witness, and duping a blind man into seeing what is not there,

‘implicates the audience in the play’s annihilative vision’. We’re close in this interpretation to Jan Kott’s bleak view of this moment as a grotesque pantomime, a ‘theater of cruelty’ symptom of the play’s nihilism. If we read this scene in terms of theory of mind, we are given access to two minds, Edgar’s and Gloucester’s. The one is motivated by a therapeutic mission, albeit one that uses harsh methods. The other is shown dying to life, born again after a simulated death of despair to a new-found faith and charity. If we ‘credit’ their imaginations (Goldberg’s phrase), see things from their point-of-view, we might take a more generous, co-operative, collaborative view of what might be exchanged between actors, characters, and audiences. Through such psychological experiments in ‘mind-reading’ we might even be able to bring ‘empathy’ back in from the cold to where it was banished by Brecht’s ‘alienation’. As Raphael Lyne puts it, ‘rather than theatrical instances seeming like a sort of distraction-duping, they might result from evolved interpersonal dynamics, from our capacity and tendency to enter other minds and see the world as they do’.[7] Theatricality may after all have more to do with ‘sympathy and empathy’ than with ‘deception, irony and estrangement’.

My last example, from *Romeo and Juliet*.

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

Sight and touch are the senses most involved here. Shakespeare knew all about the tactility of gloves, of course, from personal experience. He found the glove a particularly rich source of sensuous imagery, precisely because it acts as a second skin, mediating between the perceiver and the external world. It touches

and is touched; receives and transmits sensation. And he knew that the early modern hand, as Claire Sherman puts it, was 'a meeting place of matter, mind and spirit'.

'See how she leans'. Using visual perception, Romeo points (at least figuratively) to Juliet's hand, directing audience attention to it, and mentioning it twice. "See how" verbally visualizes the act of pointing. Romeo's hand cannot of course touch Juliet's cheek, but does so virtually as a kind of extended perception. The sensory references to seeing and touching, along with the tactile quality of the language, bridge the distance: "That I might touch.." Romeo's words and gestures enact first a verbal movement that projects; then a verbal movement that touches and is touched.[8]

What Romeo is imagining is of course not merely getting close enough to Juliet to touch her; but getting even closer, becoming the glove that interposes between her cheek and her hand.

This seems to me a perfect exemplification of the 'extended mind'. Like the thought experiments of Clark and Chalmers, Romeo's verbal practice demonstrates how objects in the external environment becomes part of the perceiver's mind. His own hand extends his emotions into the distance where Juliet stands; while her glove, hand, cheek become extensions of his mind. Or to formulate the same idea in early modern terms, we can turn to John Bulwer's *Chirologie and Chironomia* (1644):

> 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.

In Bulwer's model of perception the senses go right to the heart of the matter: they reach 'the signifying faculties of the soul, and the inward discourse of reason'. As Jennifer Rae McDermott puts it, Bulwer 'somatises the process of interior perception as perspicacity wherein the eyes pierce the exterior by "spying into" hidden secrets, and the ears channel this interrogatory impulse by "sounding out" hidden secrets'.[9] Here as in the passage from *Romeo and Juliet*, the boundaries between inner and outer are collapsed, and the psyche extended into exterior space

All I've been doing here is to put familiar passages from Shakespeare's plays alongside various contexts from our contemporary understanding of perception. *Hamlet* against a famous experiment in visual perception and inattentional blindness; *The Tempest* next to a Marxist study of how sensory perception is constrained by ideology; *Henry V* in light of theories on visual perception and cognition from Gestalt psychology; *King Lear* alongside recent experiments in 'theory of mind'; and *Romeo and Juliet* together with the 'thought experiments' that underpin the 'extended mind thesis'. I've shown how easily the Shakespeare texts answer to these interpretative paradigms, co-operate with them to generate comparable ways of understanding perception: asking, with Katherine Rowe, questions like 'why do Renaissance texts answer so well to the demands of distributed cognition theory?' (*Embodied Cognition*, p. 193). And I've tried at the same time to draw on early modern works of medicine and philosophy that seem to corroborate the insights manifested by the plays.

So where are we in this relatively new field of Shakespeare studies? Where have we come from, and where are we headed?

Earlier I invoked Marxist criticism, which from the 1970s onwards was very much concerned with the limits and possibilities of perception. Once Marxism engaged with post-structuralism, it generated ever more complex and sophisticated ways of understanding how we understand, in Althusser, Barthes, Foucault, etc. More recent work has addressed these earlier sources very productively, and by revisiting, challenging or extending (especially) Foucault, produced some illuminating studies of early modern subjectivity, and the relations between body and mind. David Hillman's terrific *Shakespeare's Entrails* is a landmark text in this regard. Simultaneously the kind of post-Marxist work that focused on material culture began to propose different ways of understanding the relations between the perceiving self, and the properties of the material world.

The pre-Cartesian embodied mind is not of course peculiar to Shakespeare. Scholars have produced insights into the 'embodied mind' problematic by revisiting major figures of Renaissance thought such as Bacon, Montaigne, Descartes himself; but also by paying a new kind of attention – much more attention than I've ever seen paid - to less familiar texts, works of psychology, communication, philosophy, medicine, religion by Richard Braithwaite, John Bulwer, Helkiah Crook, Stephen Egerton, and so on. These sources help to corroborate that what we are find in the texts of early modern drama is not merely something we've cooked up in the present day and smuggled back into the past.

But today the field has become much more than merely historical, since it's been newly energized by scholars paying attention to significant advances in psychology, neuroscience, philosophy and medicine. As Laurie Johnson, John Sutton and Evelyn Tribble explain in the introduction to their collection

Embodied Cognition in Shakespeare's Theatre, the cognitive sciences have moved beyond explanatory models that weren't really all that much use to us – cognition as serial digital computation, or thought and affect neurocentrically reduced to brain processes alone. The imaginative world of the Shakespearean drama was surely much richer and more interesting than a view of the body and world as mechanistic input-output devices for the brain. Now, as those editors put it:

> Cognition is increasingly seen … as 'enactive', 'embodied', 'distributed', 'situated' or 'extended'. Emerging paradigms in the cognitive sciences have increasingly sought to embody and extend cognition beyond the brain. (p. 3)

In turn 'mind' becomes a 'wild heterogeneous assemblage of neural, kinesthetic, somatic, interpersonal and material resources'. Here psychology has produced notions of human understanding that are much closer than before to Shakespeare's theatre; and much more useful for critical and creative work in the Humanities. Contemporary science and philosophy are capable of offering us the model of a psychophysiological entity, a 'mind-body' comparable to Montaigne's 'close stitching of mind to body, each communicating its fortunes to the other'. And this of course is what we suspected was the case all along.

Let me conclude with a very useful example discussed in *Embodied Cognition and Shakespeare's Theatre*: from Sir John Davies's philosophical poem, 'Nosce Teipsum'. A passage on the skin.

> LASTLY, the feeling power, which is Life's root,
>
> Through every living part itself doth shed,
> By sinews which extend from head to foot
> And like a net all o'er the body spread.

> Much like a subtle spider which doth sit
> In middle of her web, which spreadeth wide,
> If aught do touch the utmost thread of it
> She feels it instantly on every side.

Spider and web here are not two distinct entities, one merely the means to the other. They are holistically integrated. The web is of course the human skin, the spider the receiving mind. But the web is an extension of the spider, as the skin is of the body. As Jennifer Rae McDermott says of this text, 'The spider not only 'feels', but infers change in the surround with a power homologous to the thinking brain'. (p. 157) Those outward-reaching tactile filaments allow the perceiver to gather 'intelligence' (the word that once meant information and now means mental power). The spider-web analogy constructs an integrated body-mind. And it is of course a classic Shakespearean image: McDermott goes on to discuss the image of the web in *Othello* (pp. 157-8), and elsewhere in the volume we find discussions of spider and web in *The Winter's Tale*.

Now this could sound at first sight like yet another rediscovery of Shakespeare's eternal wisdom. But it's not of course: these precise meanings were not detected in those texts until they were re-read in the light of these new psychological theories and demonstrations. Shakespeare's work is not eternally omniscient, but like the embodied mind itself, passible, permeable, subject to and responsive to change. As David Hillman and Mazzio put it in their Afterword to *Embodied Cognition*:

> Shakespeare's theatre is perhaps the ultimate example *of* distributed cognition or an extended system or web; a place where we can see the ways in which play, actors, audience, and wider culture are all interlinked in a quasi-haptic environment: the drama *touches* us in every sense of the word. The idea of cognition distributed across time as well as across bodies

and worlds offers a possible way to begin to think – without appeals to universalism – about the enduring power of Shakespeare in our lives and in our body-minds. (p. 255)

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[1] Louis Althuuser, *Lenin and Philosophy and Other Essays* (London: Monthly Review Press, 1972), p. 214.
[2] Norman Rabkin, 'Rabbits, Ducks and Henry V', *Shakespeare Quarterly*, 28:3 (1977), pp. 279-96.
[3] Ernst Gombrich, *Art and Illusion: a study in the psychology of pictorial representation* (Princeton University Press, 1960).
[4] Elaine Scarry, 'On Vivacity: the difference between day-dreaming and imagining-under-authorial-instruction', *Representations*, 52 (1995), pp. 1-26.
[5] Christopher Teufel, Paul C. Fletcher and Greg Davis, 'Seeing Other Minds: attributed mental states influence perception', *Trends in Cognitive Science* 14(8), pp. 376-82.
[6] Jonathan Goldberg, *Shakespeare's Hand* (University of Minnesota Press, 2003), p. 136.
[7] Raphael Lyne, 'Shakespeare, Perception and Theory of Mind' in *Reading Literature Cognitively*, edited by Terence Cave, Karin Kukkonen and Olivia Smith, special issue of *Paragraph*, 37.1 (March 2014).
[8] Anne-Sophie Refskou and Laura Sovso Thomasen, 'Handling the Theme of Hands in Early Modern Cross-over Contexts', *Early Modern Culture Online* 5 (2014) ,pp. 31-51.
[9] Jennifer Rae McDermott. 'Perceiving Shakespeare: A Study of Sight, Sound, and Stage', *Early Modern Literary Studies*, Special Issue 19 (2009) pp. 1-38.