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AI at Elsinore: What Horatio can teach us about Artificial Intelligence

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Abstract

This paper argues that the early modern period was already debating questions about the interstices and transitions between humans and machines, much like the ones that govern our engagements with AI today. Looking at Shakespeare's Hamlet, I will be showing that, next to the ghost, Horatio is another and arguably no less challenging uncanny character on the battlements at Elsinore. While the ghost is situated between the full humanity of a living human being and the inanimate materiality of a dead corpse, Horatio seems to be situated between the full humanity of being "passion's slave" and the mechanical functioning of a time-keeping and recording device. Horatio, then, is an experiment in artificial intelligence avant la lettre. This paper shows how his reduced, partial, and artificial humanity is explored by the play as it exposes Horatio's inadequacies.

Keywords: *AI; Shakespeare; Hamlet; Horatio; Automaton*

The early modern period may not have had silicon chips and football-playing androids, but, as I want to argue in this paper, it was debating the very same questions about the interstices and transitions between humans and machines that govern our engagements with artificial intelligence today. When humankind encounters the big and probing questions, it very often turns towards literature – and, more often than not, to Shakespeare. Hegel, Nietzsche, Freud, Derrida have all depended on the input of the Swan of Avon in crucial ways.[2] As I want to argue, Shakespeare can also help us with our apprehensions and reservations about artificial intelligence by offering an early modern intervention for our postmodern and posthumanist world. Approaching artificial intelligence raises the question of what exactly it is that we are talking about when we ascribe the quality of being 'intelligent' to a being. What cognitive feat defines intelligence? A range of candidates have been explored with strategy games such as chess and the Chinese board game Go as the most abiding yardsticks (see Lowry, 2021). I believe that in *Hamlet* Shakespeare is asking the same question about intelligence and its artificial simulation, but rather than look towards games, he chose to look at the theatre as a testing ground for human intelligence.

Artificial intelligence is an attempt to raise mechanical automata or silicon chips and semi-conductors up from their immaterial inertia towards a resemblance of human intelligence. Artificial intelligence, then, is the product of processes which attempt to raise inanimate matter and objects (combinations of plastic, wiring, silicon chips, transistors, metal rods, etc.) to a quasi-animate state, to a higher level in the chain of being where they become like human beings. A much-quoted and

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[2] Though we may be careful not to bestow the title of "philosopher" on Shakespeare himself. See Paul Kottman (Kottman, 2009, 17).

often overrated statement by Pico della Mirandola indicates that the early modern period may have been interested in a similar trajectory of intellectual upwards mobility. Pico extols

> … man who is permitted to obtain what he desires and to be what he wills […] If he cultivates his vegetative seeds, he will become a plant. If he cultivates his sensitive seeds, he will become a brute animal. If he cultivates his rational seeds, he will become a heavenly being. If he cultivates his intellectual seeds, he will be an angel and a son of God. […] Who will not wonder at this chameleon of ours? Or rather, who will admire any other being more? (Pico, 2012, 119-23)

Of course, Pico is here not really offering us a choice. Humankind is not called upon to elect whether it wishes to move upwards, but is destined to rise to a godlike state. Shakespeare, however, is clearly not part of this teleological optimism, and Hamlet gives us a famous send-up of Pico's celebration of humankind in his "What piece of work is a man […] in action / how like an angel, in apprehension how like a god" speech which in the end reduces us all to a "quintessence of dust" (2.2.303-8). But in *Hamlet* Shakespeare is not simply debunking Pico and the human subject. Rather, he is probing the issue of intellectual and ontological mobility along the chain of being. His experimentation in this field takes him in the opposite direction from Pico and against the cliché of early modern optimism. In *Hamlet*, Shakespeare creates one character who, rather than being enhanced to a super-human state following Pico's trajectory, is reduced in his human qualities in a way that strikingly captures the artificiality of artificial intelligence. This character is Horatio, whom we meet for the first time among the guards at Elsinore:

> *Mar.* Holla! Bernardo!
> *Bar.* Say, what, is Horatio there?
> *Hor.* A piece of him.
> *Bar.* Welcome, Horatio. Welcome, good Marcellus.
> *Hor.* What, has this thing appear'd again to-night?
> *Ber.* I have seen nothing.
> *Mar.* Horatio says 'tis but our fantasy,
> And will not let belief take hold of him
> Touching this dreaded sight, twice seen of us.
> Therefore I have entreated him along
> With us to watch the minutes of this night,
> That if again this apparition come,
> He may approve our eyes and speak to it.
> (1.1.20-32)

Horatio's very first line introduces us to the idea of his reduction. Like the guard Bernardo, we too are with Horatio only given "a piece of him" (1.1.22), not a fully developed character – let alone a full human being. The ghost, then, is not the only uncanny apparition of questionable humanity on the battlements at Elsinore. Horatio is another and arguably a no less challenging uncanny character with whom the Danish prince is confronted. While the ghost is situated between the full humanity of a living human being and the inanimate materiality of a corpse, Horatio seems to be situated between the full humanity of a rounded dramatic character and the mechanical functioning of a recording device.

In the first scene of act 1 and in the play as a whole Horatio's "piece of him" which we are given is that of an observing device, a sensor, of a machine that registers and measures. There are three pivotal scenes where in which Horatio? is made to perform this function: He is brought in to

observe and assess the ghost on the battlements in act 1; he is instructed to observe Claudius and to gauge his culpability during the staging of the Mousetrap in act 3; and he is called upon to give a report on his registering of the play *Hamlet*, which he has witnessed along with us, in act 5. In all three scenes, Horatio is not much more than a device that observes and measures. In act 1 he introduces himself as the epitome of the modern measuring device by measuring time. Horatio's name may point us to the Roman author Horace, but it also combines the Latin words *hora* and *ratio*.[3] Measuring hours is in his name and in his very design when he recounts his first encounter with the ghost to Hamlet:

> *Hor.* It would have much amaz'd you.
> *Ham.* Very like, very like. Stay'd it long?
> *Hor.* While one with moderate haste might tell a hundred.
> *Mar.* and *Ber.* Longer, longer.
> *Hor.* Not when I saw it.
> (1.2.234-239)

Horatio has indeed all but become a clock, a device which counts moments. He counts moments "with moderate haste" (1.2.237), thus referring us to the pivotal challenge of early modern clock construction, which was to slow down or 'moderate' the energy of the spring of the suspended weight which powers a clock. Horatio, then, points towards the momentous invention of the escapement which made this counting and measuring possible – a somewhat basic but quite clear early example of artificial intelligence.[4]

Scene 1 shows Horatio as a machine that is designed to control and measure two forces that are beyond human control: time and, of course, a ghost. Like all machines, he has been designed and programmed to fulfil his task. When he speaks to the ghost he is following a code, an established artificial pattern of strategies by which he hopes to arrive at a predetermined result:

> *Hor.* I'll cross it, though it blast me. Stay, illusion!
> If thou hast any sound, or use of voice,
> Speak to me.
> If there be any good thing to be done
> That may to thee do ease, and grace to me,
> Speak to me;
> If thou art privy to thy country's fate,
> Which, happily, foreknowing may avoid,
> O speak;
> Or if thou hast uphoarded in thy life
> Extorted treasure in the womb of earth,
> For which they say you spirits oft walk in death,
> Speak of it, stay, and speak. [*The cock crows.*]
> Stop it, Marcellus.
> *Mar.* Shall I strike at it with my partisan?
> *Hor.* Do if it will not stand.
> *Bar.* 'Tis here.

[3] Horace was given to punning on the temporal dimension of his own name. See Kenneth (Reckford, 1997).
[4] In a Victorian echo, Samuel Butler's narrator in *Erewhon* runs into trouble when the Erewhonians discover his watch and become fearful that it might be a powerful form of artificial intelligence. The Erewhonian magistrate "regarded my watch not as having been designed, but rather as the designer of himself and of the universe" (Butler, 1985, 82).

Hor. 'Tis here. [*Exit Ghost.*]
Mar. 'Tis gone.
(1.1.129-147)

Horatio is here asking all the right questions of a ghost, everything that literature and the tradition of ghost lore has taught him and contemporary audiences to expect. Guilt, foreknowledge, hoarded treasure – these are the kinds of reasons that an early modern automaton designed to interrogate ghosts would have been programmed to check for. Needless to say, the algorithm at work in Horatio is woefully inadequate to understand this ghost. Horatio's software lacks the flexibility to consider potential meanings beyond clichés and preestablished patterns. Horatio therefore tries to stop and immobilize the ghost both in space and semantically: "Stop it, Marcellus." (1.1.141) Horatio has to arrest time and semantic flux since his very functioning hinges on the basic mechanism of time keeping. Stopping and measuring the flow of time is his fundamental *modus operandi*. This is him taking stock of the first encounter with the ghost:

Bar. It was about to speak when the cock crew.
Hor. And then it started like a guilty thing
Upon a fearful summons. I have heard
The cock, that is the trumpet to the morn,
Doth with his lofty and shrill-sounding throat
Awake the god of day, and at his warning,
Whether in sea or fire, in earth or air,
Th'extravagant and erring spirit hies
To his confine; and of the truth herein
This present object made probation.
(1.1.152-161)

Horatio is again focussing on time. Here, the cock rather than Horatio's counting is keeping time, but it is a fixed point in time, signalled by the crowing of the cock, which Horatio uses as hermeneutic leverage to ascribe meaning to the ghost's appearance and vanishing. Again, time and meaning are arrested, and as with Horatio's pre-programmed catalogue of questions, his reading is, again, wide of the mark when he decides to see the ghost as a "guilty thing".

Horatio, then, arrives at an apportioning of guilt that is as clear as it is wrong, and the question of guilt will be at the centre of the second instance where Horatio is called upon to act as a measuring device. In act 1 he was acting as a documenting device at Marcello's invitation; in act 3 we see him employed as a sensor of guilt at the invitation of Hamlet. The scene is that of the *Mousetrap*, "the thing", as Hamlet says, "[w]herein I'll catch the conscience of the King" (2.2.600f.). Hamlet does not trust his own assessment of the reaction with which his uncle is going to respond to a staging of his own crime, and he therefore decides to make use of his friend Horatio as a precision tool for reading human behaviour and for measuring guilt:

Since my dear soul was mistress of her choice,
And could of men distinguish her election,
Sh'ath seal'd thee for herself; for thou hast been
As one, in suff'ring all, that suffers nothing,
A man that Fortune's buffets and rewards
Hast ta'en with equal thanks; and blest are those
Whose blood and judgment are so well commeddled,

> That they are not a pipe for fortune's finger
> To sound what stop she please. Give me that man
> That is not passion's slave, and I will wear him
> In my heart's core, ay, in my heart of heart,
> As I do thee.
> (3.2.63-74)

Horatio has been very carefully picked by Hamlet, whose main criterion is Horatio's superhuman imperviousness to the passions. What Hamlet is saying, though, is in effect that in being superhuman his dear friend is at the same time non-human and/or less-than-fully- human, only "a piece" after all. Horatio has been reduced to an ideally balanced creature which is immune to the emotions and to manipulation. He is celebrated for being unaffected even by fortune and by the passions. By contrast, Hamlet is fully aware that he himself is trying to play his uncle much like a pipe which will 'sound a stop'. Hamlet is also aware that the most he himself would aspire to is being an instrument that is harder to play on than a pipe:

> You would play upon me, you would
> seem to know my stops, you would pluck out the
> heart of my mystery, you would sound me from my
> lowest note to the top of my compass; and there is
> much music, excellent voice, in this little organ, yet
> cannot you make it speak. 'Sblood, do you think I
> am easier to be played on than a pipe? Call me what
> instrument you will, though you can fret me, yet you
> cannot play upon me.
> (3.2.355-363)

While Hamlet sees himself as a "little organ" which is capable of "much music, excellent music", he sees Horatio as a neutral and objective tool. Horatio's unaffectedness may, however, turn out to entail a lack of responsiveness and a lack of comprehension. Hamlet appears to sense as much and sets about programming Horatio for the situation he is going to confront him with:

> I prithee, when thou seest that act afoot,
> Even with the very comment of thy soul
> Observe mine uncle. If his occulted guilt
> Do not itself unkennel in one speech,
> It is a damned ghost that we have seen,
> And my imaginations are as foul
> As Vulcan's stithy. Give him heedful note;
> For I mine eyes will rivet to his face,
> And after we will both our judgments join
> In censure of his seeming.
> (3.2.78-87)

What Hamlet is here demanding of Horatio is emotion recognition – a task which has for some time been seen as a promising and challenging application for artificial intelligence. Attempts have been made to teach machines to understand human emotions based on EEG readings, but also on facial recognition. A team at Beijing University has placed its focus "on investigating emotion recognition based on 3D facial expression in real time, which could be applied to application of

various intelligent interactive platforms" (Wei, 2017, 1845). Horatio, who is instructed to rivet his eyes to Claudius' face, could be seen as an early modern version of the elaborate algorithms developed and tested here. The programming of emotion recognition programmes requires the creation of a set of actual human responses which can then be observed and analysed. To this end, human subjects are exposed to a variety of stimuli: "Several methods exist for subject stimulation. For example, participants could be looking at pictures, looking at movies, listening to sounds, stroop tests or playing games. [This study uses] pictures from the subset of the International Affective Picture System (IAPS)" (Hosseini, 2010, 102f.). What affective computing is doing here is remarkably reminiscent of Hamlet's theatrical experimentation. Rather than anachronistically sending Claudius to a cinema or show him a picture from the standardized IAPS database of pictures which psychology uses to elicit emotional responses, Hamlet offers his uncle a stage plays which he has designed to elicit a very specific emotional response – guilt. Hamlet is thus using *The Mousetrap* as a trigger for his uncle whose response he in turn uses to calibrate Horatio. Aside from testing his uncle, Hamlet is thus also trying out and testing his measuring device Horatio.

Recognizing and understanding emotional responses from an observation of facial expressions is a very tall order for any machine, whether it has been produced in a late modern digital laboratory or on the early modern theatre stage. Needless to say, Horatio is a less-than-fully successful device for reading Claudius' reaction. This is the short dialogue which has Hamlet examine the results of his experiment:

> *Ham.* O good Horatio, I'll take the ghost's word for a
> Thousand pound. Didst perceive?
> *Hor.* Very well, my lord.
> *Ham.* Upon the talk of the poisoning?
> *Hor.* I did very well note him.
> *Ham.* Ah ha! Come, some music; come, the recorders.
> (3.2.280-5)

Though Hamlet is triumphant, one cannot but be surprised by how utterly unhelpful Horatio is here. He "did very well note him" indicates no more than that he was indeed present and an observer of the events. In terms of a machine, one might say that his sensors were switched on and working. But other than recording the events, Horatio does not give any indication of having comprehended what he has witnessed, of having understood the human reaction before him. This scene can thus be read as Hamlet testing and experimenting all around: he is testing his uncle, and finds him guilty; he is testing the ghost, and finds him reliable; he is testing Horatio, and decides to find him reliable and supportive. Hamlet has come to his conclusion about the guilt of his uncle, and he is content that Horatio is not contradicting him, even though the report of his friend is not exactly clear. Hamlet is the manipulator here – a manipulator who is prepared to tamper with the results of his own experiment – and it is only apt that after he has praised Horatio for not being, like himself, a pipe that fortune can play upon, Hamlet himself is now ordering the recorders to be played.

In act 5 Horatio follows a third invitation to act as observer to a theatre production. Act 1 has shown him watching the ghost's dumbshow on the stage of the battlements, a show that Marcello had invited him to attend. Act 3 has shown him watching the *Mousetrap* at the invitation and careful instruction of Hamlet. In act 5, it is Fortinbras who asks Horatio to act as observer and analyst of *The Tragedie of Hamlet, Prince of Denmarke*, which he has just both acted in and watched as a kind of on-stage audience. At first, Fortinbras rhetorically asks for a different observer to give his report:

> This quarry cries on havoc. O proud Death,
> What feast is toward in thine eternal cell,
> That thou so many princes at a shot
> So bloodily hast struck?
> (5.2.369-372)

Fortinbras is addressing death – a truly passion-free observer, a pipe that indeed no one can play on. Horatio feels called upon to answer Fortinbras' question, since Hamlet has given him instructions to do just that: "Report me and my cause aright / To the unsatisfied." (5.2.344f.) Hamlet seems to be concerned about his "wounded name" (5.2.349) which "things standing thus" (5.2.350) would leave behind, and with his final dying words he asks Horatio to use some discretion when it comes to reporting the play "aright" to Fortinbras: "So tell him, with th'occurrents more or less / Which have solicited – the rest is silence." (5.2.362f.) But Hamlet need not have worried. For all his enthusiasm in volunteering a report for Fortinbras, Horatio turns out to be probably the least suitable character on the stage to explain the play or to give a comprehensive account of the events. This is his summary:

> And let me speak to th' yet unknowing world
> How these things came about. So shall you hear
> Of carnal, bloody, and unnatural acts,
> Of accidental judgements, casual slaughters,
> Of deaths put on by cunning and forc'd cause,
> And, in this upshot, purposes mistook
> Fall'n on th'inventors' heads. All this can I
> Truly deliver.
> (5.2.384-70)

This is a perfectly conventional revenge plot and may be a good fit for the majority of revenge tragedies of the time. It is what early modern theatre culture has programmed Horatio, and audiences in general, to see. It is, however, not by any stretch of any theatregoer's imagination what the theatre audience and Horatio have just seen unfold before them. Horatio's genre sketch leaves out the ghost, the madness, Hamlet's antic disposition, all of the contortions and speculations that go into the development of Hamlet's actions, and so much more that makes *Hamlet* such a rich and relevant play. Linda Chares has very aptly summarized her reservations about Horatio's capacities as a playgoer: "We must credit Horatio, then, with formulating the first 'Cliff's Notes' version of *Hamlet*" (Charnes, 2006, 99). These days we might compare Horatio's performance as a theatre critic to the text production of ChatGPT or some other automatic text generating software which is also only artificially intelligent. According to Shakespeare and according to anyone who has had to deal with automatically generated texts, Cliff's Notes is the best we can expect from artificial intelligence.

What, then, does the tragedy of *Hamlet* have to say about artificial intelligence by showing us these three instances where the AI which the play has created – Horatio – is being tested? One could argue that the character of Horatio shows, from a distance of more than 420 years, that AI may be quite harmless, but also quite useless. It appears that it would take a slave of passion to know and understand the passions. The AI Horatio is simply not up to the task of understanding us or our stage representations – and that should reassure us when we are facing interactive computer programmes or when we are trying for the umpteenth time to prove to some stubborn robot that we are not a robot by "selecting all images with traffic lights" in a CAPTCHA test. *Hamlet's* assessment of AI, then, is quite sobering, but it also registers a certain danger: Horatio's

interventions and inept observations end up all but effacing the glory of the tragedy. In act 1 we see him take over from the soldiers on the battlements, and at the end of act 5, as the sole survivor of the dramatic action's witnesses, he returns us and Hamlet to the company of soldiers. Indeed, the conclusion which Fortinbras draws from Horatio's inept account seems to mock the late Danish prince:

> Let four captains
> Bear Hamlet like a soldier to the stage,
> […] and for his passage,
> The soldier's music and the rite of war
> Speak loudly for him.
> (5.2.400-5)

Hamlet has proved to be many things – a thinker, an actor, a playwright, a clown, a villain, a tester of artificial intelligence, even – but he is certainly not a soldier. Since it is Horatio's ineptitude that has caused the play to end on this quite drastic note of misapprehension, we can conclude that if we rely on artificial intelligence we might run the risk of losing our grasp on our own lives, our comprehension of who and what we really are. Maybe, then, we do not have to be scared of the power of artificial intelligence, but we may want to be very wary whenever we choose to use it.

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