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Believing in Robots

In this paper, I am going to position and address the robot as a performer; that is, as a self-consciously performing object in a live exchange with at least one spectator. Obviously, positioning the robot in such a way comes with problems, given that performance generally denotes an exchange that happens *live*, in every sense of the word. How can I position the robot as a performer when it is so evidently neither alive nor consciously responsive to its immediate context in the ongoing present? I am going to talk to, and about, such matters in this paper, as I introduce and speculate upon the forms of a number of robot performers that have been positioned as performers of characters on some twenty-first century stages. Finally, I want to engage with the question of belief: how audiences come to believe in these robots, and how such belief may have implications for robots beyond our stages.

As a side note, I want to highlight that as I engage with such matters as the humanlikeness of robots, kinship, and affinity, I am implicitly speaking to research into the appearance of humanlike artificial robots, deriving from Masahiro Mori's theory of the uncanny valley.[1] I shall not engage with such work explicitly here but for those who are familiar with this terrain, if you think you see connections, you do. This is a subject I have been thinking about.

What is a robot and what is it doing on our theatre stages?

It may seem a stretch to refer to the robot as a performer when, historically, we have tended to identify robots as workers. The word 'robot' derives from 'Robota' or its variations in Old Czech, Old Polish, and Old Slavonic, and it means 'forced labour' and 'slave'. Notably, it was a play from 1920 called *R.U.R.: Rossum's Universal Robots,* by a Czech playwright, Karel Čapek, that coined the word, 'robota', and identified robots as mass-produced workers.

We also associate 'robot' with futuristic technologies and societies, of course, which is due to science fiction. Cast in its science fictional contexts in the novel and on film and television, the robot often comprises an extra-ordinary, highly sophisticated and high-functioning, mechanical individual, explicitly or implicitly the product of futuristic technologies. Frequently positioned as expendable workers, these sophisticated robots also work, in the context of their stories, to challenge audiences about their assumptions about personhood, life, rights to life, what it means to be human, and so on.

Neither worker-machines nor futuristic humanoid robots are traditionally associated with theatre; *humans*, comprehended in their living physical forms, are associated with theatre.

[1] Masahiro Mori, 'The Uncanny Valley', trans. Karl F. MacDorman and Norri Kageki (*IEEE Robotics & Automation Magazine*, June 2012): 98-100, http://spectrum.ieee.org/automaton/robotics/humanoids/the-uncanny-valley.

Theatre is typically low-budget: expensive technologies are frequently not an option. If theatre wants to depict futuristic and highly realistic scenography, frequently it must turn to its imaginative and metaphorical methods for doing so – because they don't cost lots of money. As the theatre director, Peter Brook, has famously expounded, for an act of theatre to be engaged, we need nothing more than for '[a] man [to] walk[] across this empty space whilst someone else is watching him'.[2] Brook's choice of 'man' is, of course, interesting, not, for once, for its troubling gender assumptions but for its species assumptions. Indeed, one might assert with some confidence that theatre is fundamentally a human or humanist activity, since it comprises a shared space and form for contemplating our human condition, for working through our beliefs, our histories, our politics, our social forms, problems, and challenges, and so on. Up until this moment in history, robots have not had an awful lot to do with such a form. However, the new millennium has brought with it technological changes. Robots are becoming a part of our world in fact, not just in fiction; we appear to be on the cusp of a new age in which humans and robots are going to start sharing social spaces and interacting with each other. This prospective social shift, combined with increasing accessibility to robots, means that robots are moving onto our stages. I am interested in exploring how they are doing so and with what effects and implications.

While it is true that robots, understood as mechanical workers, have no tradition in theatre, their kin – automata: mechanical entertainers – most certainly do, as the theatre scholar Kara Reilly shows.[3] The stage automaton fascinates audiences as it dramatizes propositions and doubts about the human form. Consider the chess playing Mechanical Turk[4] and the diminutive, aristocratic, and doll-figures made by Pierre Jaquet-Droz in the eighteenth century, positioned in the creative roles of musician, draughtsman, and writer. The stage automata function as a kind of provocation, seeming to say: 'Look: I'm a machine but I am clever, artistic, and I look very like you. I am probably a trick, an illusion, but what if I'm not?'

However, such provocations are not confined to stage automata. Some machines inherently challenge conventional historical assumptions about the human form. This is because the machine comprises one of the humanist subject's traditional 'others', one of the entities that allows us to know ourselves as human in comparison. (The other key distinguishing entities for the humanist subject have historically been animals and supernatural creatures, such as ghosts and angels.) Sherry Turkle, writing about the psychology of human relationships with technology, presents certain machines, such as the computer, as 'test objects',[5] as being particularly evocative and therefore challenging of human distinctiveness and uniqueness. The human, comprehending her own form as coming under threat from her mechanical other, such as the computer, tends to adapt her comprehension of her own form both by seeing herself by means of the 'other' and by distinguishing herself from it. So, we see a robot, we recognize and are, perhaps, drawn to certain of its features, which seem very like our own, but we also draw away from this mechanical other, insisting upon our human

[2] Peter Brook, *The Empty Space* (London: Penguin, 2008), p. 11.
[3] Kara Reilly, *Automata and Mimesis on the Stage of Theatre History* (Basingstoke: Palgrave, 2011).
[4] In fact, the Mechanical Turk was not an automaton – it was an elaborate illusion – but it was framed for audiences as an automaton.
[5] Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (London: Weidenfeld & Nicolson, 1996), p. 22.

differences, insisting, often, upon our uniquely human features. Formerly, these uniquely human features were generally deemed to be intelligence and the capacity to reason but having been outstripped in these areas by computers, now we tend to view creativity, free will, and emotions as the exclusive province of human beings. We shall see how long these qualities remain uniquely human. I am far from alone in having research interests geared towards interrogating notions of 'creativity' in relation to humanlike artificial objects, such as creative robots, which do not just appear to be creative, but *are* creative.

Turkle proposes that in the late twentieth century, the computer was *the* 'test object' by which humans positioned and knew themselves. In seeming to think, the computer troubles the Western belief in human uniqueness as comprising essentially rational, thinking beings, a belief that was most famously elaborated by René Descartes' centuries old edict: cogito ergo sum ('I think, therefore I am'). Turkle writes: 'people tend to perceive a "machine that thinks" as a "machine who thinks" (my italics).[6] An entity that seems to think conjures an idea that the entity has a mind. People have a tendency to infer such a thing, proposes Turkle. Irrespective of whether or not a computer can actually think, the appearance of thought can be sufficient to prompt ontological doubt and make us wonder: what does it mean to think? Do humans think? Might machines think? If so, who or what is thinking?

I am not convinced that Turkle is correct in all parts of her thesis. Certainly, machines – in this case, the computer – put pressure upon our notions about thought and human being. We know that the word, 'computer', was first used in relation to a human being and we also know that computation has been informed by, and now reflects back upon, our modes of understanding the human mind. However, do I consider the computer as a 'who' who thinks? I don't think so. When I see a computer perform a really clever computation, I don't tend to think, 'This computer is a clever thinker'; I think: 'That's really clever programming; wouldn't it be great if it worked even faster and could do x, y, z as well'. Similarly, when I see a mechanical arm draw a portrait, as we see here with Paul the robot,[7] while the status of the machine's artistic output is positioned as being up for grabs – is this robot arm's drawing *art*? – I don't find myself thinking: 'This robot arm is an artist'. For people to make such an imaginative leap in perception; to interpret the machine as being humanlike – in the sense of comprising an individual thinker, drawer, and performer – the machine needs to offer performative cues of humanlikeness. I shall revisit the notion of humanlikeness in due course.

For now, I propose that the robot is the twenty-first century's most compelling test object, at least in technologically advanced parts of the world: the robot carries forward species specific questions about mind but in addition to this, in having a physical body, which frequently resonates with the form of a human or animal, and in being animated – it *moves* – the robot works vividly to pose such questions as: 'Does this robot think?'; 'Who or what is thinking?'; 'What is life?'; and 'Can a mechanical artifact find living form?' When the robot finds humanlike form and is sufficiently believable in its performance of humanlikeness, the question becomes even more specific: we wonder: might the robot become or be, to all

[6] Sherry Turkle, *The Second Self: Computers and the Human Spirit*. 12th Anniversary Edition (Cambridge, MA and London, England: MIT Press, (2005 [1984]), p. 29.
[7] This film clip: https://www.youtube.com/watch?v=sv25kgFThj8 shows Patrick Tresset set up, and be drawn by, his robot, Paul.

intents and purposes, human? By implication, we also wonder: 'Are humans just complex kinds of machines?' which can be an uncomfortable idea.

Such questions and ontological doubts flourish at the borders between the human and machine. We don't know what robots are going to become; they seem to promise so much. I am going to show you a clip, now, from a performance-lecture I delivered last April at the University of Reading, mainly for illustrative purposes as it picks up on a number of the ideas I have just run through. The clip starts towards the end of a scene that represents the construction of a robot by mechanized human workers. The finished product – the industrial robot (called Baxter and made by Rethink Robotics) – is unveiled and brought forwards by the workers as a list of unedited answers, supplied by my students, to the question: 'What is a robot?', is read out. Unmoving, unspectacular, the robot is evidently just a thing, a lifeless mechanical object, an anticlimax in comparison with the numerous identities posited in relation to it. But I think the promise of the robot is important and powerful; when we look at a robot, rather than a puppet, we bring with us expectations – hopeful and fearful – of autonomous animation and notions about what it might become.

Show clip: titled 'Dehumanized Workers'; available to view here: www.robottheatre.co.uk.

The Robot Performer

My interest in robots, inspired by their forms in plays but extending into real-world scenarios, now lies specifically with *sociable* robots. Sociable robots, I propose, are kinds of performers. I mean several things when I suggest that such robots are performers: I mean that robots are appearing as performers on our dramatic stages – I shall share a few examples in a moment. I also mean to draw attention to the fact that the robot's genesis lies in drama (as already noted, it was a play that gave birth to the word 'robot' – I don't think this is an insignificant fact; it was an imaginative act of creation in theatre that gave birth to the robot). Even more than this, I propose that robots, positioned alongside humans in the world, are inherently performative.

When robots are cast as performers in sociable contexts on the stage, they represent, as the human actor does, a character – a specific form, identity, and quality of being. In doing so, as performers, they demonstrate (or appear to demonstrate) autonomy, agency, responsiveness to context, and engagement with others. However, the sociable robot deviates from the human performer in a number of ways, not least by virtue of the fact it has no self (not yet, anyway); it has no individual mode of being in the world, no essential character, to *express*, *enact*, or originate speech or action (insofar as we can allow that humans can be accounted as having such). In this sense, the identity indicated by a robot's performance is entirely *performative*. Drawing on the cultural theorist, Judith Butler's, work on gender performativity but substituting humanness for gender, I propose that performativity of a humanlike character is a stylized repetition of acts, an imitation of the dominant conventions of humanlike characters. Whether the stage performer is human or robot, '[t]he act that one does, the act that one performs, is, in a sense, an act that's been

going on before one arrived on the scene'.[8] The implications are that the robot performer does not have to have an essential self to express: it only needs to perform the humanlike character that pre-exists it in ways that are plausible, compelling, and, accordingly, believable.

That the robot's identity finds form in the acts of its performance has implications that extend beyond theatre. Theatrical processes and structures, such as performativity, modes of theatrical representation and perception, and an understanding of the workings of character, can support understanding of, and engagement with, robots in all kinds of real-world settings, not just theatrical ones. I am starting to think about how the robot's positioning in specific contexts and forms, as particular sorts of identities, work upon the responses of audiences to particular robots. I am going to explore this notion through my analysis of the robot performers and characters in the discussion that follows. However, in the meantime, I want to make something of a side note that takes us into the realm of robotics research focused on real-world applications. I want to contextualize the significance of my notions, deriving from theatre studies, for those of you in the room who have some knowledge of, and interest in, the uncanny valley. In 1970, Masahiro Mori posited his theory of the uncanny valley – the idea that our liking of artificial objects increases the more humanlike they become, until such moment as the artificial object becomes too humanlike and becomes uncanny. This important theory, underpinning work on the appearance of humanlike artificial objects in robotics and computer animation, posits degrees of humanlikeness as the productive element of feelings of affinity and uncanniness, and it is positioned on a crude scale of realism. The theory, I argue in an article I am currently writing, fails to understand that species kinship does not necessarily produce feelings of affinity between object and human, just as it does not necessitate warmth of feeling between humans – not all humans mean the same thing to each other. The theory also fails to understand that realism is nuanced by a range of genres: every representation – realistic or otherwise – of an object or human carries implied identity and narrative structures within in its form. So when we look at a range of images of a human positioned on a scale of realism, much more than degrees of realism is at play in our reception of the represented object: for example, an unrealistic representation of a man can appear as if it belongs in a farce, a Disney animated film, a horror, a zombie genre, and so on, and this has implications for the kind of *character* he appears to be.

The point I want to leave you with at this point is that the sorts of identities and characters performed by robots have a significant bearing upon their reception, and that the qualities and types of responses of audiences are at least to some degree unconnected to species forms. I shall leave this discussion by summarizing that the sociable robot's identity and character function are bound to its performance, and that the parts of that performance include its appearance *and* the types and qualities of its actions, the language it speaks (assuming it speaks), the quality of its voice, the context in which it is located, and the

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[8] Judith Butler, 'Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory', *Theatre Journal* 40:4 (Dec., 1988): 519-531, p. 526.

culturally resonant narratives and narrative forms bound to the performing object's identity and form.

Robots cast as characters in stage plays

As we moved into the new millennium, robots started to be positioned as performers on theatre stages. Whereas *human* actors performed the role of robot characters through most of the twentieth century, robots today are playing versions of their own kind on stage. An interesting innovation of today's performing robot, however, is that, unlike its automaton forebears, which represented human boys or girls or ducks or other living beings, the 21st-century-robot dramatic actor is playing character versions of its own kind. Behind the performing robot is an idea of an autonomous, intelligent, robot individual. The idea of the living human being or animal is still evident in this mimetic context; living entities comprise the models upon which animal- or humanlike robots are based; but now the animal or the human haunts and structures our understanding of the robot performer and character rather then being specifically represented by it. The stage robot is not functioning as a metaphor for the human in the play; the stage robot is functioning as a metaphor for a sophisticated android. In addition, frequently, the stage robot performer's robotness – its species differences with human being – is foregrounded in dramatic plays. The playwright, for example, is as likely to remind us about the robot character's very different, nonhuman relationship to death, illness, taste, and emotions, as he is to indicate the robot's humanlike capacities for intelligence and linguistic communication.

I am now going to outline a few ways in which robots have been positioned in some stage plays in recent years and propose a rough trajectory for them: from humorous gimmickry, through to naturalist characterisations and scenarios proposing the robot performer in sincere, speculative terms, through to the robot performer that is, to some degree, autonomous and that, through its autonomous learning programming, starts to fundamentally challenge notions of creativity in relation to performance.

Let us start with the robot performer as gimmick. In 2006, *Heddatron* was written by Elizabether Meriwether – who, incidentally, is the writer of the US sitcom, *New Girl* – and it was first performed in 2006 by Les Freres Corbusier off-off Broadway. *Heddatron* poses a madcap scenario in which self-aware robots abduct a bored, pregnant housewife and whisk her off to the jungles of Ecuador in order to perform Ibsen's *Hedda Gabler* with them.

[Show images of the robots] The silliness of the play's concept is carried over into the play's 2006 production. The production casts robot performers that have a home-made aesthetic – amongst these robots are two robots indicative of 1950s and 1960s science fiction (Hans and Billy); one is a crudely costumed broom (Berta) another is a cut-out silhouette of a female in Victorian dress (Aunt Tesman) – and these forms are positioned on platforms that move around like remote-controlled cars. These robot performers are meant to represent robots that have attained consciousness. More than this, two of the robots have apparently fallen in love with, and become obsessed by, the human, Jane, and, in a manner that humorously equates sex with making theatre, they kidnap Jane in order to perform Henrik Ibsen's *Hedda Gabler* with her.

I am going to show you three short clips, now, from this first production of the play. (Incidentally, when I last checked a couple of years ago, *Heddatron* had had eleven productions.) The first clip shows the robots', Billy's and Hans's, first appearance on stage in Jane's front room; and the latter two clips are drawn from the rehearsals of *Hedda Gabler* by Jane and the robots.

Show clip.

Steve Dixon observes that 'some degree of camp seems inherent in almost all performing anthropomorphic and zoomorphic robots'[9] and he describes robot performance in terms of 'metallic camp'. In a performance that is knowing and self-conscious – that draws attention to itself – 'camp' is understood to denote performance that mimics and exaggerates, but fails to achieve, the human, while 'metallic' points to qualities of loudness, aggressiveness, or resistance.[10]

Clearly, we are not meant to take *Heddatron*'s robots seriously. For example, Billy and Hans are ridiculous creatures, albeit occasionally poignant, whose performances of sexual and gendered hu-*man* identities are loud and knowing failures. We are not meant to believe in these robots, not in any serious way. Having said this, Meriwether's philosophical proposition *is* serious. Though she presents *Heddatron* as a comedy, treating Ibsen and his naturalist form to irreverent pastiche, Meriwether's turn to an ostensibly naturalist play articulates how the philosophical grounding of naturalism – which takes a materialist view of the universe – allows for the possibility that robots might one day become conscious and find themselves exceeding their programming and becoming creative authors of their forms and lives.

The form of naturalism is picked up and explored in my next play by the playwright and director, Oriza Hirata, who creates 'android theatre' with Japan's Seinendan Theater Company, in collaboration with Osaka University Robot Theater Project, led by Hiroshi Ishiguro. In place of irony, Hirata's android theatre demonstrates a tendency towards sincerity arising from an assumption that the future ubiquity of robots is not only self-evident, but natural. While stage robots persist as objects of wonder in his theatre, they also find quietly realistic forms in posthumanist living rooms and scenarios, which cast humans and robots in mundane subject positions as close kinds of kin.

Kinship is an important idea in Hirata's play and production. Firstly, Hirata treats his android and human performers as kin in the way in which he directs them. Hirata's plays are naturalistic. The traditional approach of the naturalistic actor is character work, which is psychologically focused. The actor develops his character's backstory, relationships, and intentions, with a view to transforming himself into his character. All this is done to enhance the plausibility, the authenticity, the *believability* of an actor's performance. However, Hirata rejects such a psychological and ostensibly transformative approach and attends, instead, to the physical details of performance, modelling his actors' performances – android and human alike – on closely observed human behaviour. This is to say, Hirata depends upon the work of the audience to effect the transformation of his actors – including his android performer – into the character

[9] Steve Dixon, *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation* (Cambridge, MA and London: MIT Press, 2007), p. 273.
[10] Ibid, 273-4.

of the play.

More than this, Hirata's approach rests upon the assumption that the responses of human audiences are physiological and involuntary. Meticulously choreographing and modulating the physical performances of his human and android actors – attending to volume of speech, length of pauses, vocal intonation, speed of vocal delivery, quality and type of movement, details of facial expressions, and so on – Hirata boasts that he can make audiences weep for his android performers because '[m]ost human communication is not empathic but rather based on learned patterns of response to stimuli'.[11] In short, if we see an actor say and do certain things in ways that indicate intense sadness or pain, then irrespective of whether or not the performer actually feels such things, an audience will be physiologically stimulated to weep for the performer's emotional plight.

I think Hirata is being disingenuous. I think the physical details of performance insufficiently account for emotional responses in audiences and the playwright and director, Hirata, knows this. After all, we do not cry every time we see a person cry. Indeed, it is no particular stretch to allow that an act of weeping, performed in precisely the same way by two different people, might prompt two very different responses in an observer. In short, more is at work in manufacturing and directing audience responses than a series of physically performed details.

So, what else is at work? Firstly, we need to consider the *form* of the android's performance. Hirata's employment of hyper-realistic theatrical form works to direct audience attention towards surface details of performance in specific and conventional ways: audiences of naturalistic plays expect to engage with, and therefore attend to, character psychology and, more particularly, the subtext that underpins and informs the staged social interactions, irrespective of whether or not the performer is a robot or human. Hirata's android performers do not have minds – they are tele-operated puppets – but by locating them within a naturalistic play, Hirata prompts audiences to perceive mind and intention where no such mental components exist, and to seek out psychological character truths from character interactions and performances. The form of naturalism *programs* audiences to respond thus.

Also important is character. I am going to talk about this at some length in what follows but I will begin by exploring the performance elements of a particular robot: Geminoid F. Geminoid F is a tele-operated mechanical puppet that appears in two of Hirata's plays, masquerading as humanlike autonomous android characters. Ishiguro, Geminoid F's engineer, holds the view that facial expressions are key to the robot's successful performance of its sophisticated android character, where success is judged by the robot's capacity to make audiences 'believe' in, and weep for, it. Ishiguro argues that humanlike appearance is important, but it is important only insofar as it facilitates the expression of humanlike emotion: '[o]f course the robot needs to have a kind of a minimal [humanlike] appearance'; it

[11] Quoted in Cody Poulson, 'From Puppet to Robot: Technology and the Human in Japanese Theatre' in Dassia N. Posner, Claudia Orenstein, and John Bell (eds.), *The Routledge Companion to Puppetry and Material Performance* (London and New York: Routledge, 2014), p. 283.

would be no good for a robot to be, for example, 'just a cup or a kettle [because] this would make it difficult to read the human-like emotions'.[12]

I am not sure I believe Ishiguro, given the exactitude and particularity of humanlikeness that he has evidently aimed for in Geminoid F's look. It is true that the robot's highly humanlike face enables audiences to mistake its signs of emotions – its smiles and frowns – as the emotions themselves; and that emotional potential is important because it indicates individual consciousness, which, in turn, is almost certainly required if empathetic responses are to be engineered in audiences; if audiences are to be made to weep. However, Ishiguro has designed Geminoid F with a particular look, indicative of a socially significant identity, which signals far more than mere consciousness, and this identity operates such that it directs audiences towards particular qualities of responses.

I am now going to talk about the importance of character, including matters of performer-identity, in relation to Hirata's play, *Three Sisters: Android Version* (2012). This play is Hirata's contemporary version of Anton Chekhov's original (1900/01). In Hirata's play, Geminoid F plays android Ikumi, a sophisticated android replica of the youngest of three sisters living in a backwater of Japan. It transpires that the youngest sister, human Ikumi, is a 'shut-in' (a depressive and a recluse) and that the onset of her condition prompted her father, before he died, to build her an android-avatar stand-in in the form of android Ikumi. We are told what kind of robot android Ikumi is, a significant fact in the terms of the play. Android Ikumi is, we are told, a costly 'avatar-type android' who 'trac[es] the thought patterns of […] Ikumi as closely as possible' (Nakano in conversation with the character Mineko). Her avatar form means that android Ikumi's character elements and qualities – her patterns of thought, memories, knowledge, beliefs, likes, dislikes, fears, and so on – correlate with human Ikumi's. However, the android's character also extends beyond the form and experience of human Ikumi because the android is also, we are told, an autonomous learning robot whose individual experiences of the world develop her artificial intelligence and, in the process of doing so, change her. As the character Nakano observes of the android, the android's 'acquired knowledge plays a greater part' in her development as a particular kind of sociable character than anything determined by her programming.

So for me, an important question relating to the performance and reception of this robot performer is: does Geminoid F make us believe in her despite the considerable gap that is evident between her form as a mechanical puppet and that of an autonomous learning, artificially intelligent, and sociable robot-avatar? My answer is a complex 'yes' and 'no'. On one hand, there was no point, when I first watched the play as a film recording,[13] that I believed Geminoid F *was* android Ikumi. Had I understood the robot in such terms, I would forgive you for thinking I might be unhinged: mistaking fiction for reality indicates a psychotic response. On the other hand, in spite of the mechanical puppet's flawed performance of a conscious and self-determining android character – and it *is* flawed; the robot's performance

[12] Ishiguro, Dr Hiroshi, 'Q&A' with Oriza Hirata, Dr Hiroshi Ishiguro, and Bryerly Long (2013) [DVD] Recorded in Feb 2013, New York (while touring *I, Worker* and *Sayonara*. Oriza Hirata. dir. Seinendan Theater Company + Osaka University Robot Theater Project).

[13] *Three Sisters: Android Version,* Tokyo: Seinendan Theater Company + Osaka University Robot Theater Project. Written and directed by Oriza Hirata., 2012 [DVD].

is, well, a bit mechanical: it is sometimes slow with its cues and, up close, you can see that there is no spark behind the eyes – ; and in spite of the fact that I always knew that, empirically speaking, Geminoid F was a puppet, Geminoid F did 'transform' into android Ikumi for me such that I was prompted to misperceive her as a kind of kin and feel empathy for her. Furthermore, not only did I feel something for android Ikumi, I felt *more* kinship and empathy for her than I did for her human original.

I find this fact really interesting: that I can be directed to feel more affinity, liking, and empathy for a robot character than for a human one. How is this possible?

The two Ikumis appear almost indistinguishable in appearance terms. Android and human Ikumi share qualities at the level of personality, too: they are both quiet, thoughtful, and have a tendency to be abrupt, which sometimes topples over into rudeness. However, differences are evident, which have implications for audience responses. For example, the android repeatedly reminds us that, unlike her human original, she has no knowledge of death; she can smell but she cannot eat; she cannot lie; and she cannot forget. Geminoid F's performance also marks out her differences by virtue of her literally and metaphorically mechanical acting. One would expect such species differences – some of which reveal themselves, in terms of acting, as flaws – to produce ambivalent or negative audience responses. However, the opposite, in this example of *Three Sisters*, is true.

In fact, it is character rather than species form that works to manifest empathy in audiences here. In the case of *Three Sisters: Android Version*, it is the particular qualities of android Ikumi's character and her corresponding behaviours, in comparison with those of human Ikumi, which differentiate responses to her (insofar as we are able to generalize an audience's response). The *android* appears relatively sociable, warm, and responsive: she sits amongst, and partakes in, conversations with her sisters and guests, seeming to demonstrate a high level of understanding of human needs and feelings; her voice is soft in tone and predictable in its modulations; and her turns of the head and range of expressions, including smiles, are sensitively choreographed by Hirata to indicate the android's conscious and thoughtful attention to the human characters in the scene. Such performative elements, combined with details of her appearance, mean that this physically attractive, highly woman-like, twenty-something android, demonstrating a sophisticated AI, conjures a quality of character that is intelligent, attractive, gentle, direct, calm, honest, compassionate, and, crucially, *sociable*.[14] Indeed, of the two, it is *human*, not android, Ikumi who demonstrates qualities that might be deemed machine-like: *human* Ikumi seems comparatively cold, frequently dissatisfied, is less eager to please, and her voice has a harder, flatter quality to it. In short, during her relatively rare appearances on stage, human Ikumi is a less sociable participant than her android double to whom the role of sister in this drama's family is abdicated.

Human Ikumi is the real sister in the Fukazawa family but she does not perform the role in the sorts of ways we expect of, or culturally value in, a sibling. It is *android* Ikumi whose performance of a sister finds a more idealized and, therefore, imaginatively and emotionally

[14] In many ways, android Ikumi is not dissimilar to Ava in *Ex Machina*, manifesting an idealised female form, albeit of a sort that lacks Ava's ruthless and violent capacity for self-preservation.

compelling form: she takes an interest in her elder sisters and brother and participates in the activities and concerns of the household with apparent selflessness and compassion. It is android Ikumi, then, who is positioned in performative terms as kin to the Fukazawa siblings and in the process, she prompts the sisters (and her audiences) to experience affinity for her, a sense of synchronicity, a sense that she, despite her form as android, is friendly towards them, that she understands and likes them in a way that the real Ikumi appears not to. The fact that android Ikumi is not really Ikumi appears to matter less to these sisters (and, by implication, the audience) than her performance of the role of sister, which materialises in an idealized and friendly form.

In the example of Geminoid F's performance of android Ikumi, we see a demonstration of the significance of dramatic character – the parts of its roles and qualities – in the mimetic process. The imaginary, fictional parts pertaining to character fuse with the real, physical details of performance to produce a singly perceived, dialectical phenomenon. Indeed, in *Three Sisters*, the imaginary realm of character does not merely fuse with the physical performance; as the play progresses, increasingly, it overrides it. For example, when Geminoid F's performance failed, which it periodically did – that is to say, when her slow cues or awkward turns of the head reminded me of the robot's relatively clunky mechanical form – instead of experiencing disappointment, repulsion, or frustration in response to having the illusion spoiled, I found myself continuing to 'believe' in the total impression of the figure as a likeable character and as seeming to be, in some important respects, a sociable human like me.

I want, finally, to turn to the performance of the robot, Myon (pronounced Moo-on), in Gob Squad's 2015 production of *My Square Lady*, which was performed at Komische Oper Berlin. I saw the production on 5th July 2015. The robot, Myon, is the product of Manfred Hild, who is Professor of Digital Systems at Beuth Univesrity of Applied Sciences in Berlin. Hild leads the team developing Myon at the Neurorobotics Research Lab. *My Square Lady* is performed by an eclectic group of performers, including opera singers, the roboticist Hild, who performs karaoke, children, as well as members of the Gob Squad performance collective. *My Square Lady* is based on *My Fair Lady*, which is itself based on George Bernard Shaw's *Pygmalian*, a story about a young woman's education to become, ostensibly, a full human being. In Gob Squad's production, the individual being educated is Myon, a diminutive humanoid robot about the size of a 7 year-old child (1.25m tall and weighing 15kg).[15]

There is much I could say about Myon and this fascinating production. However, I shall confine myself, here, to the robot's ambiguous status as an improvising performer and our interpretation of Myon as a particular identity and character.

I am going to play you a clip from the production: the scene where Myon is being taught how to be a conductor. I do not understand the minutia of what is going on because they are speaking German. There were limited subtitles available during the performance I watched but these are not available on the film I am about to show you, so much is guess work.

[15] You can find out more about Myon in a chapter by Manfred Hild, Torsten Siedel, Christian Benckendorff, Christian Thiele, and Michael Spranger (2012): 'Myon, a New Humanoid' inn Luc Steels and Manfred Hild (eds.), *Language Grounding in Robots* (New York: Springer, 2012): 25-44.

However, what I can tell you is that Myon is being positioned as a kind of conductor-in-training and what I find interesting are the ways in which we read the robot.

Play clip.

In this clip, Myon is, first, taught how to conduct by the conductor and then expected to start conducting the orchestra and opera singers. However, he fails to do so: he fails to perform his conducting action at the required moment, needing a prompt from Sean and one of Myon's engineers. I found myself reading the robot's failure as more than a problem of programming or functioning. I knew and know that Myon has no subjective interiority but I am biologically and/or culturally programmed – as, I suggest, are most, if not all, of us – to anthropomorphise the robot in such terms. I suggest that Myon's failure to start conducting at the required moment is generally read in terms of character; that is, we read the robot as having a humanlike interiority, which expresses and originates intentions, thoughts, feelings, desires, and so on. More specifically, I suggest that, in the case of Myon, his failure to start conducting signals a variety of possible psychological states: stage fright (this is indicated by the conductor and Sean in an exchange in German), uncertainty, reticence, or, as Gob Squad's performer, Sean Patten, indicated, a self-willed inclination for contemplation. These interpretations, related to the robot, which is cast as a juvenile, innocent sort of performer in this public and formal context, produce witty and poignant results. When Patten suggested that Myon should stop thinking, should stop contemplating, and should, instead, understand that it is time to perform, I felt for the robot as I would feel for a child on stage. I wanted him to do well; I wanted him to start conducting. Myon's childlike identity is emphasized in this stage moment and more generally in *My Square Lady*: the robot is the size of a child; it is treated as a child being taught new skills; and he seems childlike in his turns of the head to look at the conductor (as if seeking reassurance). So when we get to the moment when Myon is due to start conducting, we wonder: Will he start? Through the course of the scene showing Myon being taught to conduct through to finally conducting the orchestra and opera singers through a song, we watch as the robot, childlike, appears to get the hang of it, growing in confidence, and this seems somehow rather delightful. When Myon does, finally, get going with his conducting, it is as if he understands.