

Robots: Asleep, Awake, Alone, and in Love

ROBOTS IN LOVE?

In the music video made for Björk's track *All Is Full of Love* in 1999, director Chris Cunningham designed two Björk robots and depicted them in the process of manufacture, singing to each other and embracing, apparently falling in love.^{1,2} The clip's contribution to the representation of robotics lies in the fact that it celebrates the robots' production of feeling rather than the conventional robotic production of things, objects and commodities in the industrial context in which robots more typically operate. The only task given to the robots in the video is to join in an embrace while still being detailed by the industrial machines around them – machines that remain hidden and indeterminate. How can we respond to this scene? Do we read it as a challenge, with the robots now taking over the simple task of the human embrace? Or perhaps as an opportunity to rethink the relation between human and robot?

While there are no robots in Bennett's *Vibrant Matter: A Political Ecology of Things*, her use of the Spinozan concept of 'conatus' – purposeful and persevering agency or 'active impulsion' – is a notion that has the potential to help us with these questions. Her endeavour to 'uncover a whole world of resonances and resemblances' between human and object agencies (2010, 99) might offer the tools with which we can recompose our relations between these entities. The term conatus will appear throughout this chapter as we try to understand the place of robotic actors in theatre and in art as examples of Bennett's 'thingly' agency (2010, 99). Conatus, as

Spinoza used it, implies a subject's or an object's performative potential, an inchoate agency as well as an actual kinetic function (Bennett 2010, 2–3). Political theorist Oliver Feltham describes it as 'a continual endeavor or striving to persevere in being' linked to the notions (in humans) of 'appetite' and 'desire' (Feltham 2013, 98). The concept of an object's persevering agency – sticking at the task, even if the task is to embrace, to fall asleep, or just to fall over – upsets the subject/object divide in ways that art and theatre are uniquely well placed to explore and exploit. As we demonstrate, these venues can function as laboratory environments suitable for the consideration of Human Robot Interaction (HRI), a context in which it is useful to experience or at least debate the possibility of object kinship and empathy.

MARI VELONAKI'S *THE WOMAN AND THE SNOWMAN*

Mari Velonaki, director of the Creative Robotics Lab at the University of New South Wales, is an artist and roboticist who constructs a similarly unusual take on the representation of the robot in *The Woman and the Snowman* (2013). The work is described as offering 'differing allegories of reality' (Artspace 2013), though we would add that it is primarily concerned with a representation of a particular approach to robotics. In this multichannel installation, visitors see two large screens overlooking a gleaming, metallic, interactive, kinetic sculpture consisting of a rotating screen and accompanied by a specially composed audio track that an audience member can listen to through the headphones provided. The three screens (two large and one small) portray competing representations of a non-organic, anthropomorphic construction.

On one screen a snowman awkwardly but stubbornly inhabits an alpine scene surrounded by natural imagery. The snowman was constructed by the artist in the Snowy Mountains of New South Wales and has the lean, tough, weather-beaten look of a true antipodean snowman, built out of reluctant, late-season sludge rather than the powdery, voluminous snow of European climes. Although clearly the focus of the image, the snowman is not in close-up, but from a distance it takes in the entire scene, allowing us to see the surrounding eucalyptus trees and Australian bush. It is not just a generic snowman; it has a place and a meaning that is partly determined by that place. Meanwhile, on the small screen set at the top of the long pole of the sculpture, there are views of a 'real' Swiss snowscape, the view from the house where the artist grew up. Unlike the snowman in the Australian



Fig. 5.1 *The Woman and the Snowman* by Mari Velonaki, 2013

(Photo by Silversalt Photography)

bush, this is the sort of environment where a ‘real’ snowman might be expected to show up. Other scenes unfold, from 1960s cinema, featuring frozen human bodies. No context is supplied for any of these images so the scenes are displaced and floating. The soundtrack mixes music with Australian birdsong to further confuse the place of these images (Fig. 5.1).

The other large screen dominates the visual field of the presentation and features video, recorded by Velonaki, of the famous Repliee Q1 robot from Professor Hiroshi Ishiguro’s team at Osaka University in 2004. Repliee Q1 is modelled on the face of a female presenter on Japan’s *NHK News*. It has a limited number of behaviours, including slight shifts in sitting position, small head and eye movements and blinking, and the appearance of breathing with chest movements. These Repliee robots, or ‘actroids’, have also been designed to incorporate new gestures based on observation of human movements. They supposedly do this by interacting with a person who is wearing sensors on their body and processing these movements in an attempt to imitate them.

The actroid was first developed in 2003 in Osaka by the Heart Company and further developed by Ishiguro at the Intelligent Robotics Laboratory. Actroids are predominantly female-gendered and have skin

made of silicon. They use servomechanisms powered by compressed air and are fixed to an umbilical-cord data feed that includes speech-recognition software and information from location and vision sensors. Within these parameters, the idea is to hide as much as possible of the mechanisms of robotics and mimic 'natural' human behaviour.

Ishiguro is concerned with anthropomorphism in robot design because, as he says, a 'human-like appearance gives a robot a strong feeling of presence' (Whitehouse 2005). His focus is on designing robots that can pass as human in intersubjective encounters. The model he developed in 2006, Geminoid HI-1, uses his own physical features and vocalisations on an actroid and, through motion-capture technology, synchronises the robot to his own bodily and facial gestures. But as Velonaki points out, these machines are enormously costly and cumbersome. These humanoid robots rely for their effect on concealing their constitutive 'back-end' machinery, which includes the significant human labour of keeping them going. We see the smiling silicon face but not the pneumatic actuators that effect the limited movement in their limbs. They are also slow 'learners' – one might pejoratively say they are stupid.

Velonaki spent several weeks in the company of Repliee Q1, trying to capture meaningful footage for her project, in search of material that would validate the enormous effort and expense of the robotics lab at Osaka to establish some empathetic relation between their actroids and a human public. The fact remains that, for all the claims made by roboticists such as Ishiguro about the future capacities of these robots to pass as human, it is perfectly obvious to any casual observer that these actroids, with their basic and stilted gestural repertoire, are not human actants. In fact, you would have to be a robot to mistake any of these machines for a human – except at one singular point, which Velonaki captures.

This moment occurred at the end of a long day and a recording session in which three hours of footage had been taken (for the three minutes you see), when the lab technicians shut down the robot for the night. The robot audibly sighed, its hair moved and it gently slumped into a sleeping position. The sigh was the exhalation of air as the pneumatics shut down, which also caused the hair to move. Nevertheless, Velonaki has described the sensation of creaturely empathy she felt at this moment, the only such time she experienced it despite the enormous effort and cost of the project and the countless person hours in the lab attempting to make the robot appear more human. But is this moment transferable? Does it work for the casual visitor to the exhibition? On opening night a visitor (prominent

Australian artist Mike Parr) noted the Japanese actor caught in the act of falling asleep in the frame of the screen. He spoke of its simple poetic resonance, the figure captured at the moment of suspension of physical effort, and was amazed to discover that the figure in the image was a robot.

We do not expect to see robots falling asleep or falling in love, but since the sci-fi classic *Blade Runner* (1982), the capacity for affect has been the increasingly blurred horizon separating human from cybernetic entities. In that film, the non-human ‘replicants’ (while not exactly the same as robots, but similar) are shown to be ‘more human than human’, not only in their physical prowess but in their ability to empathise with other creatures – whereas the ‘human’ characters in the film are rather limited in this respect. In Velonaki’s other art/robotics projects, such as the *Fish – Bird* series of works (2003–2009), a similar dynamic is at play.

FISH – BIRD

Fish and Bird are two characters or avatars that take different forms in the works. Fish and Bird have fallen in love but cannot be together ‘due to technical difficulties’ (Velonaki 2016). In the early works they were ‘disguised’ as wheelchairs. In *Fish-Bird Circle B – Movement B* (2004–2005) the two ‘lovers’ manoeuvre through the space, dropping little handwritten printed texts with messages such as ‘Come closer to me’ and ‘What do we have in common?’. The messages curl onto the floor and produce a kind of textual environment. The tragic wheelchairs seem to wander about, but hover uncertainly around the visitors to the space as if curious to explore the behaviours of the visitors. What occurs is a mediated dramaturgy in which a form of interspecies communication is played out: participants bend down and read the little scripts dropped conspiratorially and perhaps even excrementally from the printers underneath the chairs, which approach and then move away from each other and the visitors. This oddly intimate interactivity is the result of a distributed network of sensors that monitor the body language (gestures, movement, comportment) of both the wheelchairs and the visitors. This information is communicated wirelessly to the wheelchairs to influence their behaviours (Fig. 5.2).

The experience and the meaning generated by this work are a result of the entire system. It is dramaturgically constituted through the interactions between entities rather than as a feature of one or more of the constituent entities. In this way the dramaturgy approaches the condition



Fig. 5.2 *Fish – Bird* by Mari Velonaki, Sydney 2014

(Photo by Lucy Parakhina)

Bennett describes as an ‘agentic assemblage’ in which she understands agency itself as a ‘confederation of human and nonhuman elements’ (2010, 21). Obviously there is no attempt to visually anthropomorphise the ‘robotic objects’ here, but this does not prevent a certain affectual intimacy occurring between visitors and the star-crossed wheelchairs. Based on the benign proto-subjective behaviour of the robots coupled with the inevitably subjective projection of the visitors, one can conclude that the work demonstrates that we do not need identifiably human actors as guarantors of meaning and intimacy. This would seem self-evident to anyone who has a pet, but not perhaps in the world of robotics, which invests gargantuan sums in the pursuit of visually anthropo-mimetic systems in its attempts to guarantee meaning through ‘presence’. In this sense Velonaki and her team are embarking on a kind of deconstructed robotics, where the mechanics are laid bare and the overall experience design is purposive rather than just a rudimentary interactivity based on crude behaviours and realist visuals.

In *Circle D: Fragile Balances* (2008) and *Circle E: Fragile Balances* (2009), Fish and Bird appear as two ‘luminous cube-like objects’ (Velonaki 2016) that communicate with each other and with visitors via the display of personal, handwritten messages. The use of a handwritten font is significant here, as is the materiality of the messages: the effect is intimate and personal rather than machine-like. The content of the messages was taken from lines by Velonaki’s favourite poets, and partially generated randomly from a database she created over a three-year period leading up to the project in which she collected and collated love letters sent in by members of the public and visitors to the galleries where the work was shown. These letters were scanned and added to the database of text for use by the robots. Again the design of the work incorporates a dramaturgical perspective on the idea of the robotic, a distributed dramaturgy of participants and performances (textual, gestural) played back at different times and in different spaces. The notion of the ‘robotic’ is also displaced from one object (the wheelchair, for example) into another (the light boxes), to highlight both the function of display and the larger structure of the database narrative used in the works – as if to illustrate what Bennett says about ‘the distributive quality of “agency”’ (2010, 21). The fact that the characters of Fish and Bird might appear in different forms is itself an intriguing aspect of the work’s dramaturgical construction. Ultimately, for Velonaki, it is a dramaturgy of interaction and experience: ‘People can always relate to a love story and to a fairy tale. In fact, I find the way people insert themselves into the work and the technology the most interesting thing of all as an artist’ (Tsitas 2009).

Velonaki’s work in creative robotics gestures towards something beyond the robotics of industrial design and performance based on efficiency (speed and productivity) and beyond the comparatively simple question of the representation of robotics in the world. This something involves a rediscovery of the larger representational function of robotics in imaging the enhanced qualities of human experience rather than simply its visual manifestations.

As artist and theorist Anna Munster notes, ‘Cyborgs, clones and robots can all be understood as protosubjectivities’ (2006, 64). We take this to mean that they are potential subjects – subjects about to be born, not fully actualised in the world. In this sense they are ideal vehicles for performance based on new media dramaturgy as they can translate ‘between the informatic and the organic’ (Munster 2006, 66) in the case of *Fish – Bird* or even *The Woman and the Snowman*, with its more representational function,

facilitating meaningful transactions between human visitors and robotic objects. The protosubjective also marks a transitional state or liminal phase between the objecthood of the machine and the subjecthood of the human, which is where this discourse of robotics and representation is properly situated. In effect, Velonaki's works, like Cunningham's Björk video, offer ideal instances of the kind of performativity that creative robotics and NMD more generally proposes: work in which an empathetic, systemic interaction between interfaces and actants is made possible. In so doing, this work refuses the overstatements of the robotics industry with its bombast about passing for humans, and what Munster describes as 'the transcending of the organic by the cybernetic' (2006, 66). Instead it opens up space in which Bennett's idea of 'agentic capacity' is extended and 'differentially distributed across a wider range' of ontologies (Bennett 2010, 9).

The work does not seal off its topic as a perfectible algorithm dependent only on sufficient resources for a glorious realisation, but a messy and very human processual performativity that itself creates and recreates a dynamic that Munster describes as: 'the tension of unresolved desire that is produced out of a differential of technical and organic forces as that which remains to reignite, propel and be recaptured' (2006, 66). This metaphor of the creative fuel of technical and organic difference placed in dialogue is one of the keys to the importance of Velonaki's creative robotics work – as art in which falling asleep or falling in love or some other expression of hitherto only human frailty might well prove central to the development of a deconstructed robotics.

ROBOT HYPEROBJECTS

Another way to consider the robot in terms of HRI is as a kind of 'hyperobject' (Gibson 2014). This term derives from the work of Timothy Morton, who makes the case for a class of objects that exceed the usual parameters of objecthood and massively exceed the space-time distribution of human presence (Morton 2013). Morton mentions the long-lasting products of human manufacture, such as the styrofoam cups and plastic bags collecting in the ocean, and also climate change itself, as a class of hyperobjects. It is beyond the capacity of humanity to fully account for hyperobjects' effects or their capacity to develop their own 'object-orientated ontologies' (as this strain of speculative realist philosophy calls itself). We can add robots to this list of hyperobjects: they can extend the performance parameters of human bodies and operate, as

Stelarc has noted, not only as extensions of human operational capacity but as entities interacting with human bodies where the human is the prosthesis for the robot and not the other way around (Stelarc 2005). Stelarc performed this in his *Movatar* project in 2000 in which the avatar was developing choreography for the human body – the artist’s body – to follow and to mimic. The capacity for robots to interact with each other and to function inter-objectively in complex relations with each other offers an image of distributed behaviour and possibly even agency that lies at the heart of much creative robotics and AI research at present.

In thinking of the robot as hyperobject we recall the climax of the 2001 Kubrick/Spielberg film *A.I.*, in which David – the little-boy android, and surely the most uncanny of all cinematic droids – sits abjectly at the bottom of the sea staring at the blue fairy, while an ice age covers the earth and an alien species inherits the planet. Björk video director Cunningham was for a time visual effects supervisor on the *A.I.* project and developed some prototype androids for the character of the little boy, but they were ultimately deemed too creepy: ‘We tried to construct a little boy with a movable rubber face to see whether we could make it look appealing,’ producer Jan Harlan reflected, ‘but it was a total failure, it looked awful’ (Harlan in Rose 2000). This is possibly not a case of the uncanny valley where the robots too closely resemble human form and thereby cause anxiety in human interactants (see Eckersall 2015) but simply some fairly ordinary visual effects. At the end of the film the aliens find David still waiting there at the bottom of the sea for the return of his mother. The unimaginable timescale of the film is evidenced in the depth of the ice removed to retrieve the little android and rescue from his hard drive the last vestiges of human life on the planet.

Similarly, as Gibson argues, the ‘Woman’ in Velonaki’s piece ‘has no sense of time passing – no day and night. With a robot, there is no mortal end. So she doesn’t fear death. Humans lack the comprehension to even imagine the possibility of an end of time, in a non-human world’ (Gibson 2014). This neatly summarises the complexity of reading the robot in this post-human way, as much hyperobject as protosubject. Clearly these terms share a valency around the extensions of agency and performativity across human and non-human actors, but they differ on the point of emphasis. While the hyperobject exceeds the physical parameters of the objective dimension to the point of broaching the condition of an actor (a bad actor) in the world, the protosubject remains object-bound but approaches the condition of the subject in its transmission of affect. While the hyperobject teems with an abundance of agents, the protosubject remains human-scaled. In this sense,

this latter terminology retains greater purchase in this discussion around robotic and object-oriented dramaturgy, and is possibly more in tune with Bennett's thesis as it searches for empathetic vitality in the inanimate world.

In vibrant materialist terms, the robotic hyperobject threatens to overwhelm the project of enlightened engagement with matter that lies at the heart of Bennett's thesis. It exhausts the anthropomorphic sensibility that allows the non-human actor to emerge as a player in its own right alongside the humans. The hyperobject, like Morton's example of the gyre of plastic bags and cups in the middle of the Pacific, is incalculable not in terms of its vitality (as Bennett asks of her objects) but in its sheer scale. Its presence does not seek anything from the human world; despite its size it does not demand attention. It is repellent. We look away. There is no hyperobjective dramaturgy as the hyperobject withdraws into itself and threatens to take everything else along with it. Ultimately the protosubject seeks to engage the human and so keeps alive the possibility of a non-deterministic encounter between human and object actors, an encounter alive with possibilities (Fig. 5.3).



Fig. 5.3 Mari Velonaki, *Fish – Bird* installation, Denmark 2009

(Photo by Paul Gosney)

HIRATA ORIZA'S ROBOT THEATRE

Hirata Oriza's robot theatre is very different in its manifestation of the machinic relation to the body. Hirata wrote the play *Sayonara* with roles for a human actor and a female actroid designed by Ishiguro's team in Osaka.³ Hirata's deployment of robots includes his play *I, Worker* (2010), in which androids that function as domestic help are reassured of their functional value by their human owners in a commentary on the advance of robots in domestic life in Japan. In 2013, Hirata also adapted Anton Chekhov's *The Three Sisters* for a cast of an actor, an actroid, and a non-human-like android in a version of the play set in a small city in decline. In these minimalist texts the presence of robots is seen as routine, with Hirata suggesting: 'It won't be that a robot replaces human beings on a drama stage, it's more as if a new type of actor has emerged in the theatrical world' (2010).

Sayonara begins as a conversation between a terminally ill young woman, played by Bryerly Long, and her female robot comforter. They discuss art and the meaning of existence. The robot shows empathy for the young woman's condition and comforts her by reciting poetry. At the end of the short, 20-minute scene we assume the woman has died. In the aftermath of the Fukushima earthquake in March 2011, however, Hirata wrote an additional scene in which the robot is retasked to go into the radiation exclusion zone around the damaged Fukushima nuclear reactor to say prayers that might offer comfort to the suffering spirits of people who died there. There is a strong sense of irony in the fact that it is the robot that seems to have more empathy than the human characters in the play. The dying woman is pre-occupied with her own imminent death and the technician is a functionary. In the first part of the play and in the additional scene, the robot deals with spiritual matters and performs the rites normally in the domain of a Buddhist priest. The technician who retasks the robot says: 'You are going to a place where there are no people. ... We want you to keep reciting poems there. ... Many people died there, but we can't go there, and we can't recite poetry to them. ... So I'm asking you to do it' (Hirata in Eckersall 2015, 129).

The fact that a robot can perform these tasks may not be so unusual in Japan, where it is estimated that more than 50 per cent of the world's total number of robots are in use. Robots are, in Shinto terms, considered to be living things already, with a life force or essence of life called *kami*. As Jennifer Robertson writes in her essay 'Robo Sapiens Japanicus': 'Some *kami* are cosmic and others infuse trees, streams, rocks, insects, animals and humans, as well as human creations like dolls, cars and robots' (2007, 337).

For the roboticist Ishiguro, however, the robot plays are not primarily about the themes of life and death but are a testing ground in his search to make robots more like humans. His essay ‘Development of an Android Robot for Studying Human-Robot Interaction’ proposes engineering systems for making the robot establish eye contact, and for allowing contingent motion and reflex responses, all with the view of establishing greater degrees of interaction and intimacy (Minato et al. 2004, 424–443). For Ishiguro, the robot can be exactly like the human; it is simply a matter of making better actors, able to closely mirror human gestures and quirks. However, the assumption that human sensibilities or human likeness is reproduced in a range of proto-authentic feedback loops, gestural stimuli, and auto-response mechanisms might also be seen as too narrow and essentialist – as bad technoscience.

This situation is leading to a new set of questions about robots in society, many of them existential and political. For example, Robertson concludes that Japanese roboticists, on the whole, are uninterested in progressive social issues. Robots, in her analysis, stand in place of differences posed by women, ethnic groups, and foreign workers. She argues that robots are instruments of nostalgia for the ‘good old days’ of racial purity and hyperconformity (Robertson 2007, 381).

While Robertson’s findings are important, it is also true that Hirata demonstrates that robots are up to the task of performing productive roles for the good of society. Hirata shows that, given the right circumstances, robots can be good actors – they are functional, expressive, and able to create moments of reflection and critique. Thus, in his discussion of *Sayonara*, the theatre scholar Hibino Kei argues that it is the act of making the robot recite poetry that gives the play its sense of authenticity (Hibino 2012, 42). Moreover, tasking the robot to perform funeral rites is not a far-fetched idea, but is understandable for a society that needs to acknowledge and address the rights of dead people whose unrequited spirits continue to inhabit irradiated spaces around the Fukushima reactor.

The actroid is a complicated figure in this situation. It is very much a product of Ishiguro’s reductive ideas of human communication, a fact that lends itself exceptionally well to Robertson’s scathing exposure of the ideological basis of the robotics industry in Japan. Yet it is also a somewhat liminal and transgressive figure – a machine that seems to be able to deal with existential concerns such as empathising with the dying girl and, even more radical, dealing with phantasmic forces beyond the perceptible world.

A dramaturgy of robots and object-figures is noteworthy for the ways that it is extending the idea of performance. As Braidotti explains it in her book *The Posthuman*, 'I take the posthuman predicament as an opportunity to empower the pursuit of alternative schemes of thought, knowledge and self-representation' (2013, 12). Braidotti's concern with the displacement of the lines of demarcation between structural differences is exemplified in Hirata's theatre where, for him, directing human and non-human actors requires exactly the same approach. Hirata does not treat them differently in either his writing or directing. Yet, the irony is that his robotic performers sometimes seem more aware of their predicament than his human characters. At the same time, Robertson's critique of the utilitarian science work of roboticists can be applied to Ishiguro's actroids and his singular interest that theatre function as both a communications experiment and an improvement regime for his robot creations.

As we have argued, the significance of Hirata's work in the present is to pose existential questions about technological society. If in the future, however, he does achieve the complete verisimilitude he anticipates of the android theatre, one might well begin to wonder what the purpose of this might be. If robots and humans are equally good actors, then, given all the expense of the robot, why would one bother to use one? Acting and theatre do not operate in an economy of the same scale as the manufacturing industry, where it is efficient to replace a lowly human wage-labourer with a machine. And Hirata already has a company of well-trained, capable actors who are able to translate his exacting directorial requirements into successful performance outcomes.

In the final analysis, then, it is not the competition between objects and humans for existence that is important here. There is no such binary any more. Rather it is the materiality of objects that can tell us, as can also be seen in the work of Verdonck (discussed below), things about what they do and how they exist within us and around us. Moreover, the constantly changing relations of objects and humans is such that one displaces the other only to find itself displaced in turn. This suggests that a dramaturgy of robots and object figures is always in motion and in a state of rearrangement and adjustment. The artist and spectator are both implicated here, embedded in a politics of engagement/displacement that is ever more responsive to the needs of the machine.

ACTOR#1: EMOTIONAL CONNECTIONS

For Verdonck, objects are ‘sincere’, they are ‘the perfect actors. They are able to create a level of theatrical tension that is real’ (in Van Beek 2010).⁴ The dramaturgy of his *ACTOR#1* mobilises this ‘theatrical tension’ in each of its three phases through the use of the figure of the actor as symbol, as projection, and as machine. Putting to one side for a moment our new materialist inclinations, how does this set up spectators to experience an emotional connection with objects? Verdonck believes this does indeed occur because, as he goes on to argue, objects ‘define us’ (in Van Beek 2010). *ACTOR#1* returns us to the question of the relationships and interplay between the subject and the machinic other. It explores whether and to what extent Verdonck’s thesis that ‘objects define us’ is valid.

We have argued in this chapter and throughout this book that NMD proposes a complex set of relations between human and non-human actants, and stages the extent to which these entities are now integrated. Yet it seems that, for Verdonck, things are not always as clear-cut. He explains that it is important to use the ‘dream machine’ of the theatre to ‘talk about technology and its influence’ on our lives (Verdonck 2014a). Van Baarle et al. argue that Verdonck’s work explores the ‘dualism or symbiosis’ of our relationships with the machine (Van Baarle et al. 2013, 54) – perhaps acknowledging both the ways in which the machine might define us and at the same time considering how we might engage in an exchange with the machinic other. In effect, by putting dualism and symbiosis together, they highlight the complexity of the relationship we are still in. However, a dualism suggests that there is tension, opposition, and perhaps the potential for exchange, (possibly even) politicisation, and response. With symbiosis it seems that it is all over: the battle has been fought, tensions resolved, and we have merged or have a relationship that benefits both elements – in this case subject and machine. When we think about this in relation to *ACTOR#1* we see both options at play – the idea of the machinic other and the subject in negotiation, and the notion of submission to or maybe incorporation of the object – via an extension of the figure of the actor.

As Van Baarle et al. argue, ‘Humanity’s identity is at stake when the real and the virtual become interchangeable’ (2013, 54). Drawing on the work of Agamben, they suggest that this might be productive because it might lead to a crisis of the subject, one in which it encounters the ‘other’ (61). But surely we encounter the other all the time? Is it that we are no longer noticing or considering this encounter? Is it that we are not paying enough attention to

the encounter because we have given up? Or is it because we have accepted Verdonck's proposal that objects do indeed define us? The strength of the work lies in the ways in which it exposes this process of negotiation between the subject and the machinic other. *ACTOR#1* opens up the (apparently) resolved world of subject-object relations and suggests that we need to look again. We need to consider not a triumph of one over the other, not absorption or morphing or a sense of interchangeability, but a political landscape in which advances and retreats occur as we reflect on our relationships with and understandings of the other – as manifested in the work through the figure of the actor as symbol, as projection, and as machine.

As we engage in this process, however, Verdonck's dramaturgy also reveals for us that, although this question of the subject-object relationship is known and has been carefully negotiated in the abstract (and in the theoretical realm), we have not yet developed the tools with which to activate a process of exchange that allows us as humans, for the most part, to experience a sense of connection with the machinic other. Despite the rhetoric, we still often fall back on emotional responses that uncover our reliance on a framework that attempts to decode, control or understand the 'thing-ness' of the object rather than creating alternative ways of encountering and engaging with it. As Bennett points out:

[W]e need not only to invent or reinvoke concepts like conatus, actant, assemblage, small agency, operator, disruption and the like but also to devise new procedures, technologies and regimes of perception that enable us to consult nonhumans more closely, or to listen and respond more carefully to their outbreaks, objections, testimonies and propositions. For these offerings are profoundly important to the health of the political ecologies to which *we* belong. (Bennett 2010, 108)

Although Bennett develops a complex object ontology through her writing about relationships between the human and the non-human within the framework of political theory, these ideas and concerns are similar to those reflected in his dramaturgy. For both Bennett and Verdonck there is a need to reconsider relationships between subjects and objects, humans and machines. While *ACTOR#1* points to the limits of our existing frames, it also encourages us to think beyond these and, as Bennett maintains, to 'listen and respond more carefully' to 'out-breaks' from the machinic other, outbreaks that demand a response and at the same time call us to reflect on how it is that we respond. Or as one of the actors in Verdonck's

company puts it, we need, as actors – and we would add as spectators – to ‘listen to the bloody machine’ (in Van Kerkhoven and Nuyens 2012).

In considering the robot dramaturgy in *ACTOR#1*, we find the proto-subjective account ultimately more useful than the hyperobjective for analysing the work. This is partly because the dramaturgy of *ACTOR#1* is infused with the conceptual apparatus of protosubjectivity as it deals with the historical notion of the homunculus in three ‘acts’. This concept belongs to an extended discourse around the creation of artificial human life, of which the humanoid is only a contemporary manifestation. In *ACTOR#1*, the first act, *MASS*, presents a kind of shaped cloud, a staged chora, an amorphous space from which forms are made (see Chapter 4, and Grehan 2015). The second act, *HUMINID*, features a stage space for the recitation of disaster spoken by a two-thirds-size projection of a human actor, looking like a hologram but actually a virtual performer (see Chapter 2). This act directly links the work with the notion of the homunculus as virtual subject. The third act, *Dancer#3*, features a cute, R2D2-like, 45 centimetre-tall robot dancer with manic, pogo-ing dance moves that reach such intensity that the creature cannot sustain its own verticality and repeatedly collapses, only to start again. This act is accompanied by a video projection of a documentary on the history of the homunculus in European thought and culture (Fig. 5.4).

DANCER#3: AMPLIFIED INTIMACY

The little robot in Verdonck’s *DANCER#3* looks like something you might see at a roadworks site or in a mechanic’s shop, except that it seems to have some human-like qualities. It jumps and bounces and then falls, and as it falls there is an audible gasp from the spectators. However, there is no need to worry as it is pulled upright again and continues – the dance of jump-and-fall is repeated over and over. As it jumps and falls it makes beeping noises as if it is communicating with the winch that repeatedly pulls it upright and the computer that is operating the system. Verdonck added these sounds so that the robot had a ‘voice’ and so that we could imagine a conversation between robot, winch and computer (Verdonck 2014b). Again, perhaps it is the fact that the robot has a face (of sorts) and a voice that allows us to experience a stronger sense of connectedness to it than to the smoke in part one, despite the fact that it also lacks consciousness and therefore fails to meet my understanding of agency.

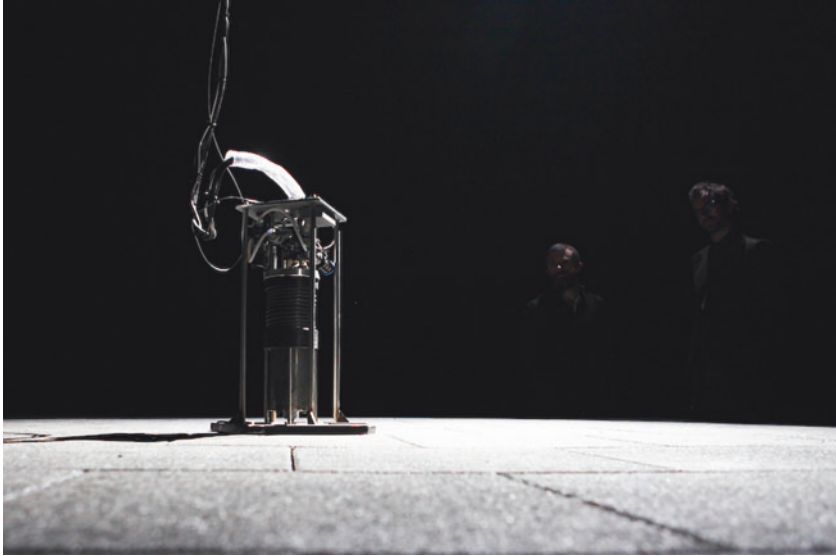


Fig. 5.4 *DANCER #3* by Kris Verdonck/A Two Dogs Company, 2010
(Photo by Reinout Hiel)

Lehmann talks about the ‘aesthetic of repetition’ that operates alongside the ‘durational aesthetic’ in postdramatic performance. He makes the point that:

it is the spectators’ impatience or their indifference that becomes visible in the process of repetition; their paying attention or their reluctance to delve deeper into time; their inclination or disinclination to do justice to and make space for differences, for the smallest thing, and for the phenomenon of time by immersing themselves in the self-alienating act of seeing. (Lehmann 2006, 157)

In response to *DANCER#3* all of our frames of response (or attempts to read this work) come together in a clash or jumble. The work engenders an emotional connection between us and this little machine because it appears vulnerable and falls. But this response in itself triggers worry about whether this is about attempting to contain or decode the figure, rather than to engage with it on some level. Why do we feel connected to this figure? There seems to be a dramaturgy of manipulation at play here.

Verdonck explains that the focus was on developing a robot that was ‘on the edge between falling and not falling’, and that again, despite their best efforts, this machine (like the smoke in *MASS*) developed its own rhythm (2014a). For Verdonck, its dance of jump-and-fall had a rhythm similar to that of a ‘Spanish peasant dance’ (2014a), which was something they had not anticipated. The dramaturgy draws us in so that we respond to the figure emotionally. Yet, as we do so, we realise that this is perhaps a limited mode of response, one reliant on the trope of subject/object in crisis (as well as a particular idea of agency) rather than one that is capable of listening to the machinic other. Still, it is this move beyond dualistic thinking and response that the work urges us to consider. It transpires that we not only need what Eckersall calls an ‘expanded dramaturgy’ (2006, 283) but also an expanded notion of spectatorship in response.

Verdonck has indicated that the question of a robot’s capacity to act was central to the dramaturgy of *ACTOR#1*: ‘Can robots play theatre? Can they lie? Can they pretend? Can they entertain? Can they build tension? Can they perform whatever it may be? How is text involved with it? Can they speak? Do we believe them? Do they lie?’ (Verdonck 2014b). The robot dancer is the most lively performer in all three acts. Its behaviours are ridiculously limited, but it generates a curious empathy with audiences and seems to express a kind of enthusiasm for its project of jumping up and down with increasing power and velocity. The functional design of the robot does nothing to inhibit the formation of an empathetic connection with spectators who seem amused, absorbed, and even delighted by its persistent attempt to ‘be’ – its ‘conatus’. It gets carried away and forgets that it cannot handle the intensive act without periodic rebalancing. Of course we cannot help but anthropomorphise our relation with it, which is precisely the point. The *DANCER#3* robot itself does not need to mimic human actions or gestures because the HRI is where the real action in this work lies: the circuit of affect between robot and audience that forms the basis of an oddly satisfying theatrical experience, with no live actors in sight.

Bennett argues that the anthropomorphic ‘perception’ is a productive and vital aspect of vital materialism itself and a key point of difference with existing modes of materialist discourse. What she means by her use of the term is simply that ‘we need to cultivate ... the idea that human agency has some echoes in the nonhuman nature’ (Bennett 2010, xvi). This does not mean that our representations should reproduce human features; such an assumption would reflect precisely the kind of narcissism Bennett wants to displace. Rather we should acknowledge the agency of non-human actors

in the world. It is a performative rather than a representational problem since we may identify an actor as non-human, but our engagement with it may produce a different sensibility, one that short circuits the representational disjunction.

Verdonck points out that his conversations with roboticists in his preparation for *ACTOR#1* show that:

actually it doesn't really matter if robots have emotions or whether they can think – it doesn't really matter, because our projection towards them is so big . . . the most intimate thing that you can have is your teddy bear. It is an object. You take it to bed and it is your closest friend for years, and you tell it all your secrets, so that it becomes the most intimate relationship, and you can feel love for your teddy bear, I think . . . objects don't need to produce our emotion. We will project emotion towards them. (Verdonck 2014b)

Perhaps this effect of intimacy is reproduced, even amplified, by the stage environment, as all players – both robot and non-robot actors – are all in some way reflecting or at least refracting the projections of the spectators. In this way they all operate as proto-subjects, as ontologically indeterminate entities dependent on a specific context for their meaning and function. In theatre, this feedback loop of projection and refraction of emotional investment means that the ontological gap between robot and human actor is no longer relevant, even if it remains perceptible.

The conative performativity of the robots – in *Fish – Bird* to interact and communicate, to stay together but not too close; in *ACTOR#1* to jump and fall over, to get back up and jump higher and faster – is responsive to specific instructions and design parameters. It is not self-authored activity; however, the effects of the actions can supersede the systemic or programmatic characteristics of the event. This is a specifically aesthetic excess, which is discharged in the performance environment. In fact, this is one important argument in favour of a theatrical (virtual) dramaturgy of objects: it is a safe place for the production and reception of the kind of assemblage of human and non-human actors we see in Verdonck's and Velonaki's works.

This sort of work does not seek machinic perfectibility either aesthetically or in what the robots are doing or trying to do. It therefore remains open to a messy and very human processual performativity crafted from the differential forces of technical and organic means. This technical and

organic difference placed in dialogue is one of the keys to the importance of the creative robotics work of both artists as art in which falling asleep or falling in love or failing to pogo might well prove central to the development of a deconstructed robotics.

The video work in *The Woman and the Snowman* and the abortive choreography of *ACTOR#1* are perhaps finally readable as a form of critical commentary on robotics as an industry. In capturing the robot as it falls asleep, the video reveals a certain blind spot in the field of a 'real' robotics based in equal measure on realist aesthetics and phantasmatic projections. It is a blind spot for an industry that does not recognise the limits of its own model of empathic engagement, nor how uncomfortably the development of friendly helper robots sits alongside its core project of superhuman transcendence. *The Woman and the Snowman* suggests that only when this system shuts down does the possibility of empathic engagement become tenable. The dancing robot in *ACTOR#1* achieves a similar act of deconstruction in which human frailty becomes the key actorly trope. It proposes that, rather than the successful completion of its task, the robot's most profound and moving gesture might well be, paraphrasing Beckett, to fail and to fail better.

We have come a long way from Bennett's ecological focus on the world of things and its seepage into human domains, but her core argument about thingly affects and agency still applies to this analysis of robots in terms of a new media dramaturgy infused with vibrant materialist aesthetics. In any case, it is only in the virtual domains of art and theatre, where the ontological values of all the actants are less fixed, that we can truly ask whether the dreams of the roboticists, of an indistinguishable boundary between human and machine, are realisable.

The Tiller Girls

The *Tiller Girls* is a machinic dance performance created by Louis-Philippe Demers (2010). It was developed to explore the 'shifts in perception of *machine performers* on stage' (Demers 2010, 16). Demers is interested in finding a new language with which to consider the 'animate machine' and its impact on audience responses in performance. The idea for the work came to Demers when he visited Zurich's AI Lab and encountered 'Stumpy', a robot developed by Fumiya Lida and refined by Raja David and Max Lungarella. Demers points out that he was interested in the 'performative values' of the machine. Once he

began to explore these potentialities he found further inspiration in Philip Auslander's work – of particular interest was Auslander's analysis of the actual Tiller Girl dancers of the 1930s (2006, 87–103). Demers developed his own version of the *Tiller Girls* and has explained that the 'Tiller Girls' robots in his work possessed a 'singular flair' for interpretation and that they could be used to 'demonstrate the interpretative potential emerging from morphological computing' (2010, 156). His is a live 'robotic performance comprising . . . identical autonomous robots' and it has been performed in groups of 12, 21 or 32 configurations, with the performances lasting approximately 30 minutes. This work has, to date, been performed at least ten times in various locations around the world. As a spectator, when you know the reference and have watched the 'actual' Tiller Girls dance with incredible skill and precision and in perfect synchronicity, seeing Demers' version is a humorous, inspiring, and slightly perplexing experience. It is humorous because of the ability of the machines to perform routines that mimic or perhaps exist in homage to the original Tiller Girls, with such similarity in movement (at times), and because of the unlikeliness of the dancers. It is also a little discomfiting as there is a certain inevitable anthropomorphism that accompanies this – and with this a potential concern arises about the limits of our frame of reference for interpretation. We smile at their ability to kick up their legs, which is no mean feat as they are on stands that do not have independent parts (or legs). We are also impressed by their ability to dance in formation, like the original Tiller Girls, as well as their capacity to flip on their sides and perform a series of scissor-like movements in unison before returning to an upright position.⁵ Demers is helpful in terms of reflecting here on the pull of anthropomorphism in response to this and other machinic works. He points out that the 'major appeal of machine performers to their viewers is the sense that they are conspecific with them' (2010, 207). He goes on to explain, however, that this does not mean they are necessarily 'structurally anthropomorphic' but are instead '*metaphorically* anthropomorphic in gestures and traits' (207: our emphasis). The anthropomorphic perception, again after Bennett, can be a productive point of view, promoting an expanded repertoire of empathic engagement rather than an unconscious privileging of the human over non-human forces. This reading goes some way to answering questions raised earlier, in response to *DANCER#3*, about the process of anthropomorphism and response (on an emotional level) that we often engage in when we watch these objects perform (Fig. 5.5).

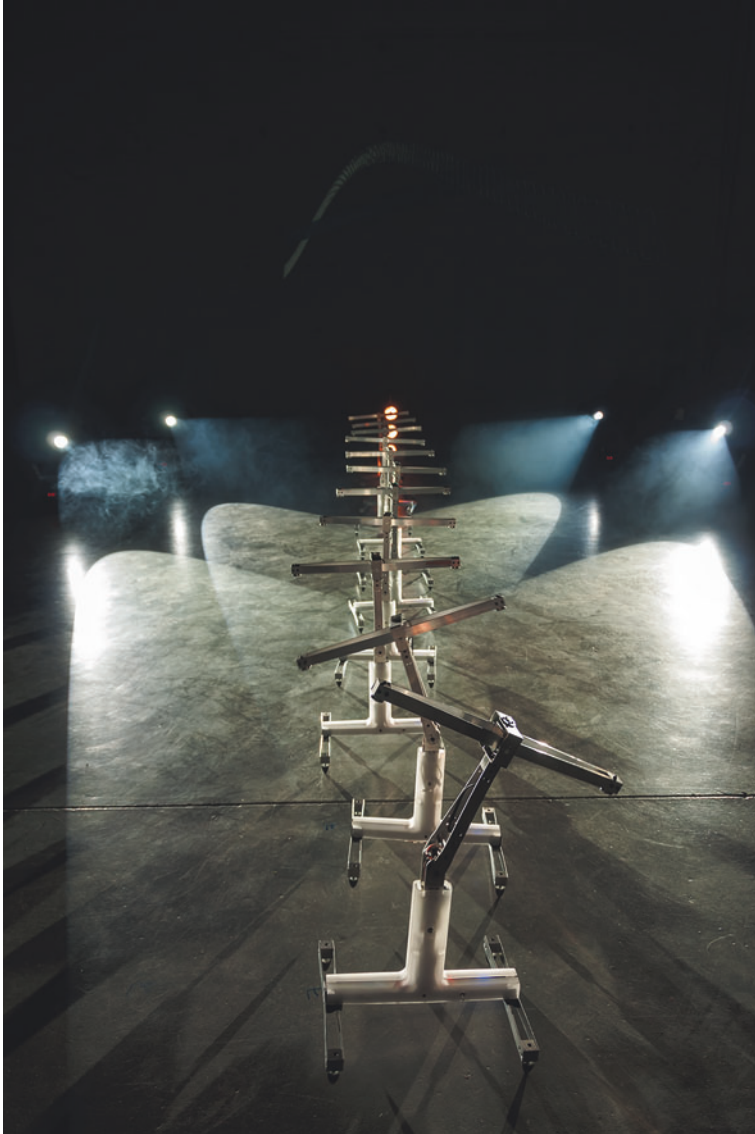


Fig. 5.5 *Tiller Girls* by Louis-Philippe Demers, 2010
(Photo by Ed Jansen)

These figures or machines are excellent dancers, but of course things can and do go wrong from time to time and, as Demers explains, the context is important. The space needs to be very large so that the machines have room to move. The floor and the ‘atmosphere’ also play a role in the ability of these figures to successfully execute their performance – factors which would also have likely been a concern for the original Tiller Girls. The dancing machinic figures are impressive for their agility – the kinesphere of the robot seems to far outstretch that of the human, and yet this sits oddly against the fact that these are figures made of metal. However, these dancers also point to the complexity of synchronicity as they at times demonstrate small yet perceptible – and sometimes large and very obvious – mis-performances. They may vibrate out of line slightly, or dance vigorously to the extent that they fall off the stage or to the point where, as Demers explains, one ‘protagonist throws the other on the floor’ (201). This ability to mis-perform, or indeed to perform in a way that the artist had not intended, is discussed in detail by Demers in the context of his understanding of atmosphere. It is also worth thinking about this in relation to *DANCER#3*, as discussed above. With this pneumatic figure the emphasis is on jumping and pushing the boundaries of the jump. As Verdonck reminds us, however, this machine often did not perform in the way he imagined or planned, and it seemed, much like the real Tiller Girls, to have a mind of its own, continuing to ‘dance’ in a particular pattern or rhythm.

A DRAMATURGY OF OBJECTS AND NON-HUMAN BODIES

Our argument here is that it is the performance space, par excellence and dramaturgically contingent, that affords us the opportunities (and freedoms) to engage with and respond to both human and non-human entities in the way Bennett proposes (as figures ‘enmeshed in a dense network of relations’, for example [2010, 13]). This occurs through the potential for empathetic engagement engendered in the context of the performance environment. It is important then to return at this juncture to the question of the actroid, as a non-human agent especially designed for empathetic engagement. As we have seen, the actroid is designed to achieve a strong human appearance and to have the ability to act ‘naturally’ in a variety of encounters with humans. In their attempts to respond to humans in a spontaneous way, actroids are therefore in the process of a long-duration or evolutionary actor training, a pathway that is troublingly predicated on the idea that they can transcend human/machine differences by simply

becoming better actors. This assumes, among a great many things, that the totality of human communication is concentrated on stimuli such as spontaneous facial expressions and an ability to be responsive to a range of interactive situations. This is an imperfect evolutionary trajectory, not to mention an inadequate understanding of acting techniques built on a data-driven understanding of consciousness. The roboticists in Ishiguro's lab are like stage managers responding to the conditions of an individual performance event – they want to generate the actroids' ability to articulate an appropriate response to changing conditions.

This whole stage-managed encounter may be a manifestation of a Goffman-like presentation of self as the basis of predicting group behaviour – that is, social dramaturgy – yet it says nothing about the unique qualities of the performance (Goffman 1959). For example, it does not consider the critical perspective or aesthetic innovation of the artwork, nor does it consider whether or not the work has something interesting to say to an audience. This is demonstrated in Velonaki's *The Woman and the Snowman*, which shows some of the unintended consequences of this approach – that it is only in the meta-performative moment, a moment of rest after the official 'robotic' operation has ceased, that the robot can approach the natural behaviour of a human actor. As a result, her work challenges the whole idea of performative perfection based as it is on the belief within the robotics industry that robot behaviour can be optimised if only more data can be incorporated into the schematic program of the actroid.⁶ In this instance, more data does not equate to better dramaturgy – rather, Velonaki's work highlights the need to think about the moment that science cannot predict.

CONCLUSION

The various robotic actors we have examined here all translate 'between the informatic and the organic' but in different ways and with differing political valencies (Munster 2006, 66). Velonaki's projects focus on establishing an affective circuit that links human and non-human actors in a new sense of interrelationality, while the Ishiguro lab and the Hirata plays focus on the robotic as a hegemon to counteract and finally replace human incapacity. The robot dramaturgy of Verdonck's *ACTOR#1* itself opens up similar questions about the lines between a dramaturgy of objects and the questions such a dramaturgy might raise for spectators. As we have argued here, performance is the ideal laboratory in which to experiment with (and perhaps

reflect models for) the ways in which the power relations between humans and non-humans might evolve in a society described by Braidotti as ‘beyond metaphorization’ (2013, 89). Taken as a whole, these examples also show how an aesthetics of vital materialism can influence a dramaturgy of objects to connect thinking and practice in this most dynamic of cultural spaces.

NOTES

1. Aspects of this chapter are drawn from and extend our three linked essays on new media dramaturgy in *TDR: The Drama Review*, June 2015. Full citations can be found under Eckersall (2015), Grehan (2015) and Scheer (2015).
2. The robots were sculpted in clay, and built by Paul Catling.
3. A significant influence on the development of robotics in Japan is Mori Masahiro’s uncanny valley theory (*bukimi no tani*), first proposed in 1970. Mori’s thesis states that a fully lifelike robot would cause discomfort in humans and that retaining some aspect of the non-human as a visible reminder creates a greater sense of ease in its interactions with the living (Mori 1970). Something like a prosthesis that is lifelike in look but not in feel or temperature would generate feelings of uncanniness and distance. His famous uncanny valley graph puts a human response to a prosthetic hand at the same level of disturbance as a zombie and a corpse, whereas the *Bunraku* puppet is located much nearer to a healthy person on a scale of familiarity. Actroids, though lousy actors, are designed around strong human likeness as if in disregard of Mori’s thesis.
4. We attended a performance of this work at the Festival a/d Werf, Utrecht, in July 2011.
5. For footage of the *Tiller Girls* see Filonov (2011). Of note here is the series of complex movements carried out at about 2.15.
6. To borrow a further reference from *Blade Runner*, reaction time is a factor in the fictional ‘Voight-Kampff’ test that decides who is human and who is not. As the film suggests, the ultimate determination of this state of desiring human likeness is measurement and this is an imperfect mechanism that is unable to account for processes of cognition, sensation and cultural complexity.

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