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Robotic and virtual figures have become increasingly visible in live performance, functioning more as actors than simply as objects, props, or décor. Dramaturgically they link new perspectives on technology, media, politics, and ideas of subjectivity and existence within hybrid performance events that blur the traditional theatrical borders between live and mediated effects.

Virtual figures mostly take the form of projections while robots are on some level autonomous machines with a history of being developed for use in industry and the military. Many artworks involving both robot and virtual figures evidence the different histories of these two technologies. In relation to the works by Kris Verdonck and Hirata Oriza discussed here, it is productive to think about how they utilize these technological agents in their experiments to replicate, augment, and/or replace human actors in performance. In both examples, human and nonhuman actors are virtually indistinguishable. While they are flattened to some degree by the technical requirements and operational parameters of the machines, there is also a fascination with how seamlessly these machines replicate human existence. Consequently both artists'

Figure 1. Johan Leysen performing with a hyperrealistic projected double of himself in M, a reflection *(2012) by Kris Verdonck, A Two Dogs Company. Kunstencentrum Vooruit, Ghent, 25 September 2012. (Photo © A Two Dogs Company)*

works confuse the experience of viewing live performance and provoke questions about the collapsing border between human and machine.

I am especially interested in the materiality of these virtual and robotic objects and their all too evident transforming presence, a presence that is also informed by a range of spectatorial expectations, ideological perceptions, and possibilities for these entities to address social issues. Before considering this, however, the question of how these figures/performative agents come into the discussion of dramaturgy needs to be considered in more detail.

Recent thinking about the object in art has sometimes emphasized the dematerialization of its form or its "passage from object to thing" (Hudek 2014:19). In dramaturgical terms, this idea gives rise to questions of how an object connotes meaning both for the creator/manufacturer/realizer of objects in the space of performance and also in the minds of spectators. The object becomes something that activates sensibilities and operates on the expressive dynamics of performance. It relates to the ways in which scenography has become more important in contemporary performance, moving from the two-dimensional background to a vibrant and dramatically transforming force within the theatrical spectacle. In relation to new media dramaturgy (NMD; see Eckersall, Grehan, and Scheer 2014), projections, screens, and media materials are often intrinsic to the experience of a work and thus become primary dramaturgical materials in a work's making and reception. Object-figures such as robotic actors drive the trend towards the primacy of new media in an expressly material direction.

Considerable attention has also been given to the relational, economic, and social dimensions of objects. As Michel Serres and Bruno Latour have noted, human-object relationships are interwoven, imbricated, feedback loops, a "double circulation of objects [that] create social relations [while] social relations...create objects" (Serres and Latour 2014:38). This is not just a matter of anthropomorphism or projecting human emotional responses onto objects; it is the beginning of an understanding of new modes of subjectivity. We might draw from what Maurizio Lazzarato terms (in the context of his work on the production of subjectivity) a machinic assemblage of "human and non-human flows, from a multiplicity of social and technical machines" (2014:51). To think about performative objects in this way stresses an expanded awareness of the machinery of theatre as something beyond singular functional things, incorporating a range of affective qualities that append transformative thinking to elements of light, flow, time, body, conditions of performance, and so on. Hence there is a need to think about these objects/forms in terms of being dramaturgical agents or, following Latour, "actors."

In contrast to modernist and avantgarde trends exemplified by scenic construction and the dramatic ideological rendering of the actor embedded in and alienated by a mechanical environment, practices of NMD reflect new technologies and appear as networks, micro-forms, and invisible operations that are evident in the everyday nature of the synthesis between human and media-tech. What was once speculative thinking by theorists such as Donna Haraway about the "lightness" of technology is now generally accepted. Her comment to the effect that these machines "are as hard to see politically as materially" is prescient (2000:294). The transparency and ever-increasing speed of technology is an energy force propelling the global economy. It is fundamentally transformative and unstoppable: not "augmented reality" but what Paul Virilio calls "an accelerated reality" that remaps our experience of place, identity, ethics, and power (2012:18). Communications, surveillance, and new forms of intimacy with machines are every-

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where and their effects are usually invisible or only revealed to make a point about control. This systematic realignment goes to the heart of not only the effects of technology on politics but also the aesthetic reorganization of art. It follows that art will adopt new mediums and engage in new forms of social critique, but it then also becomes imbricated in the techno-economic political infrastructure.

My work on robotics and new media dramaturgy responds to collapsing borders between the human and the vibrant object-machines of NMD (see also Grehan 2015; Scheer 2015). Instead of an assumed dramaturgical or ontological hierarchy or difference separating performance elements, NMD is a response to what Rosi Braidotti describes as the "unprecedented degrees of intimacy and intrusion" that characterize contemporary relations between humankind and non-human forms:

> The posthuman predicament is such as to force a displacement of the lines of demarcation between structural differences, or ontological categories, for instance between the organic and the inorganic, the born and the manufactured, flesh and metal, electronic circuits and organic nervous systems. As is the case of human-animal relations, *the move is beyond metaphorization*. [...This is] replaced today by a more complex political economy that connects bodies to machines more intimately, through simulation and mutual modification. (2013:89–90; emphasis added)

This statement offers further insights into the propositional dramaturgy of robots and object-figures. It acknowledges the materiality of objects and the fact that they are now beyond metaphor, giving rise to a complex political economy of simulation and mutual modification. Following from this is a sense of aesthetic entanglement and composite bodies that hint at themes impacting theatre such as ecology, politics, evolution, and technoscience.

For these reasons, we also need to persist with questions about who makes objects, how they are made, and under what circumstances they come into the performative environment. NMD is predicated on the rapid development of ever cheaper, more powerful and reliable computer and projection technologies, as well as portable interface mechanisms. How much do these objects—more media than materials—retain the trace of their histories of assemblage, or their uses and abuses in other fields? How do we avoid techno-fetishism, or work with degraded technologies and localized networks and systems? These questions are dramaturgical in that dramaturgy anticipates that artistic processes and their outcomes are interconnected. Dramaturgs work to make the invisible more visible in the creative process and to make that a problem for consideration. Meanwhile, contemporary performance very often anticipates a critical and dramaturgically aware audience. In other words, contemporary performance is inherently dramaturgical in its insistence on a dialogue between theory and practice, and artistic process as/and artistic event. In relation to NMD this mode of dramaturgy is "beyond metaphor," as Braidotti would have it; the works don't necessarily suggest allegory or symbols, but are actual machines and objects that perform tasks.

For example, Belgian artist Kris Verdonck has repurposed electric drills as hapless suicidal performers (*DANCER #1*, 2008) and featured an unmuffled petrol engine onstage, belching fumes and noise as a comment on environmental catastrophe (*END*, 2008). He built dynamic sculptural robots, intended to work as uncanny performative "figures," as a commentary on existence, belonging, and citizenship (see Eckersall 2012; Van Baarle et al. 2013; Grehan 2015). Verdonck has a company called A Two Dogs Company to produce his work (previously he produced work as Stillab). A Two Dogs has been a company in residence at the Kaaitheater in Brussels since 2010.

Many of Verdonck's performance and installation works are made with light, haze, and projections, performance elements that he terms as "figures" along with machines and live actors (Eckersall 2012:68). Verdonck explains that his "creations are positioned in the transit zone between visual arts and theatre, between installation and performance, between dance and

Figure 2. Kris Verdonck's GOSSIP *(detail). The projected figures are life-sized, but manipulated to all be the same height. Originally produced in 2010 at Theater der Welt, Essen,* GOSSIP *was re-installed for the 2014 new media dramaturgy workshop at Carriageworks, Sydney, Australia. (Photo © A Two Dogs Company)*

architecture" (n.d.). Many of his early works featured objects controlling the actions of live performers or interacting with the audience. In *BOX* (2005), the audience enters a white space to observe what looks to be a sculptural object on a metal stand. The work begins to glow ever more brightly and looking at it becomes impossible. People need to wear dark safety glasses to protect their eyes. The light becomes so bright that it makes the world disappear. Marianne van Kerkhoven, the renowned dramaturg who worked closely with Verdonck, writes:

> Kris Verdonck plays deliberately with the ambiguous behaviour of man when faced with a machine, which fluctuates between panic, the panicky fear for the uncontrollable and the unknown on the one hand and on the other hand the empathy, the tenderness almost, with which man proves capable of assigning human characteristics to machines. (n.d.)

In 2014, Verdonck's work *GOSSIP* (2010) was featured in the new media dramaturgy workshop held in Sydney at the Performance Space at Carriageworks and the University of New South Wales.[1] Verdonck was a guest at the workshop and *GOSSIP* was installed as a public component of these activities, presented in partnership with Performance Space.

The work uses four synchronized projectors to show a six-minute performance of a life-sized row of people whispering to each other (fig. 2). The sound modulates and is more or less indistinct: people laugh sharing some private joke, and then they are suddenly silent, a decision seemingly made by some unwritten social code. A diversity of bodies is depicted, varied by gender, ethnicity, and age—but they have been digitally manipulated to make them all the

1. This event was developed by Edward Scheer, Helena Grehan, and Peter Eckersall as a way of exploring NMD in a practice-led research setting, and was produced in collaboration with a group of artists who work with new media in performance. We gratefully acknowledge support for the event from The Australian Research Council, The Performance Space, and the production staff at the Io Myers Studio at the University of New South Wales (http://newmediadramaturgy.wordpress.com).

same height. The effect is to make a row of different expressions of embodiment also appear regulated and truncated. *GOSSIP* shows a line of "personages" in a state of insistent happiness. Verdonck states that these are depictions of "pseudo-happy men and women, young and old, all grown-ups" (2014). Inspired by Franz Kafka and taken from his short text *Fellowship* (*Gemeinschaft*, 1909), *GOSSIP* deals with the contemporary problem of exclusion and border panic. Kafka's story describes five friends and their rejection of an outsider who is persistent in his need for inclusion. With hard-hitting relevance to contemporary politics, Verdonck's use of the text explores the formation of an intolerant community. "Deformed but equal to each other and extremely satisfied. Representatives of a society that stands at the edge of an abyss. They have suppressed their fear, confusion and sense of *Unheimlichkeit*" (Verdonck n.d.).

GOSSIP mixes the faces of humanity with the machinery of intolerance and fear. The figures are rendered in extraordinary detail so that everyday features and expressions are magnified. Faces twitch and bodies jostle in uncomfortable ways in an expression of unease, more a *dis*ease of their own making. The enlarged effects and endless cycle of gestures spotlight the ugliness of mediatized self-satisfaction, which, rightfully so, has to be repressed and hidden, as when the spokespeople for the politics of fear make their public statements in expressionless, bureaucratic speech. But *GOSSIP* captures the trauma in this by showing telltale signs behind the flattened exterior. In the jarring smiles, shifty looks, and slight unsynchronized movements of their bodies we see hysteria. The personages are fixed in their fears, foreshortened by their discomforting and anxious alignment with each other; they cannot move but merely endlessly repeat the same hubbub, like a machine. One way to think about *GOSSIP* is as an operative projection of fears and the registration of its effects on a body. The scale of the projection and replication of the human is intended as a distorted feedback loop of our own condition: one image of fear feeds another.

Verdonck's *END* (2008) and *M, a reflection* (2012) are also interesting to consider for the contrasting ways that they utilize machines and virtual forms. *END*, which stages a processional

tableaux of images of ecological devastation and presents a variety of human behaviors at the "end times," includes a sequence showing an exposed automobile engine slowly traversing the stage, belching fumes and un-muffled noise. Here Verdonck emphasizes the materiality of the machine and its devastating impact on society. The engine has a raw expressive beauty, yet, while it is firing in the performance, it makes carbon monoxide and flames. For a brief moment is it actually poisoning the audience and stage technicians? Its naked machine state is shocking and destructive, yet it is also commonplace, visceral, and prosaic in the same instance. Societies often hide their killing machines and yet something like a car engine is so much a part of the everyday that its existence is unquestioned. The engine is sited here as a medium of global apocalypse that we cannot resist—a fatal attraction.

By contrast, *M, a reflection* makes machinery almost invisible. Based on letters by Heiner Müller, the work features the actor Johan Leysen performing with a hyperrealistic projected double of himself (fig. 1). The performers are indistinguishable from each other, and, in fact, in some scenes, the live actor is not present and instead is replaced by two projections in dialogue. We simply don't know who is acting here. Following an initial moment of disorientation and the inevitable attempt to spot the difference, the impression that there is an original and a copy no longer makes sense. Of course, Müller's work is already known for its assembled fragments of images and unstable transhistorical references, and is entirely suited to Verdonck's NMD setting.

For the artistic team, *M, a reflection* draws attention to the fact that "virtual reality is capable of replacing the real, effacing its traces and creating an auto-referential system [...] that claims to be real but hides its ontology" (Van Baarle et al. 2014:60). This creates a productive image of the subject in crisis: "new opportunities emerge from the ruins of disrupted identities [...and] humanity could come to terms with its history and future" as an outcome of this work (61).

But this effect requires a kind of dimming of presence and what might be termed a dialing down of the live agent so that it matches the lower intensity and the softer focus of the projected images. The semi-porous scrim shows the projection of bodies while also enabling the spectator to see behind it. The images on and behind the scrim are in balance when the projection matches the intensity of the live body, a balance that is achieved through lighting and masking. For this effect to work, the scrim dims and remediates the live actor. This shows what Verdonck and his team describe as the violence of the confrontation between "two identical machines, human and the virtual" (in Van Baarle et al. 2014:60). Both the awareness of the proliferation of hybrid subjects and the violence of the encounter are finely balanced here. One comes at the expense of the other.

Hirata Oriza's robot theatre is very different in its manifestation of the machinic relation to the body (see Seinendan 2010). Hirata wrote the play *Sayonara* with roles for a human actor and a female "actroid," a type of robot designed to *act* like a human by showing strong visual likeness and ability to perform with apparent ease of rapport and sense of agency. Actroids are the brainchild of Hirata's Andoroido Gekijô (Robot Theatre) collaborator Ishiguro Hiroshi, founder of the Intelligent Robotics Laboratory in Osaka, Japan. Hirata's deployment of robots include his play *I, Worker* (2008), 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 Chekhov's *Three Sisters* for a cast of an actor, an actroid, and a nonhuman-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. Then, in the aftermath of

the Fukushima earthquake in March 2011, Hirata wrote an additional scene in which the robot is re-tasked 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 preoccupied 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. As the technician who re-tasks 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 2011).

The fact that a robot can perform these tasks may not be so unusual in Japan, where it is estimated that more than 50 percent 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. 2004:424–43). For Ishiguro, the robot can be exactly like the human; it's simply a matter of making better actors, that is, 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—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 shows how 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 farfetched 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 then 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 empathizing 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. 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 nonhuman 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.

Verdonck's projections show in exact detail the prognostication of social and political problems, creating an imaginative space for the viewer to think about the uncanny experience of being human and connected to a world. Yet there is also a dwindling of the register of the human form in these works. Human or nonhuman, object or material figure: the forms are not equally balanced. They appear to be interchangeable to the eye of the spectator but only if the vibrancy of both is moderated.

The differences between Verdonck's and Hirata's uses of these figures in performance is also instructive. As Edward Scheer has commented, the visibility of the machinic relation in Verdonck's work is hypersensitive (2015). *GOSSIP* and *M, a reflection* are both mirrors in the sense that they reflect back to the spectator distortions and uncanny states with a bright clarity. By contrast, Hirata hopes to arrive at the point where there will be no difference between human and robot actors. His is a proposition for total intimacy between machine and human with both becoming actor-entities that, in performance, have identical qualities.

As I 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-laborer 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 anymore. Rather it is the materiality of objects that, as Verdonck's work shows, can tell us 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.

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