The Return of Wonder:
Speculative Robotics and Re-enchanting the Machine
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Abstract

This paper tracks the critique/reconfiguration of wonder as a mode of critical engagement, with our contemporary condition and the current philosophical paradigm shift towards theorizing the nonhuman; a resurgence in speculative wonder. Comparing the aesthetic language and actions of the Steve Daniels' robotic art work *Device for the Elimination of Wonder,* 2015, this text unpacks the historical shift from enchantment during the pre-Enlightenment period towards the post-Enlightenment disenchantment of magic, wonder and speculative fiction. Employing Daniels' *Device* as a metaphor for an evolution of theory this text draws comparisons between contemporary philosophical trends and the lively, expressive and whimsical creations of robotic art.

Keywords

Wonder, enchantment, Robotics, Speculative Philosophy, Enlightenment, Metamodern, Art, Lively.

Introduction

A slow, sedimentary meditation on measurement, data and documentation; this was the inspiration behind Steve Daniels' creation of the *Device for the Elimination of Wonde*r, 2015, (fig. 1) hereon referred to as *Device*. The object is mechanical. Its cogs twist and turn as it is driven back and forth across a wire tightrope held at roughly torso level. A length of paper folds and snakes out of the machine before puddling on the floor beneath the device. The object is meditative; the slow and monotonous movements of its measurements hypnotize the viewer. *Device*'s mechanical arm swings forward and back holding a pencil, which marks the paper spool with lines of varying densities that represent its measured distance from the ground. A mass of drawing begins to form under the machine.
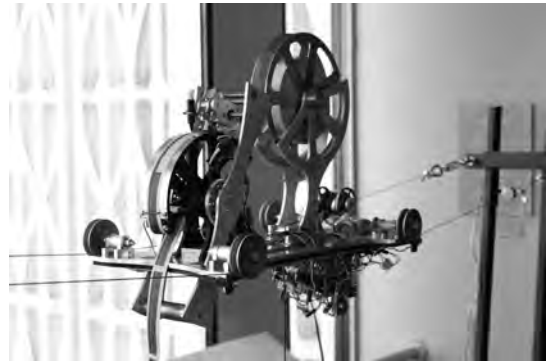

Figure 1. Steve Daniels, *Device for the Elimination of Wonde*r, 2015. Image courtesy of the artist
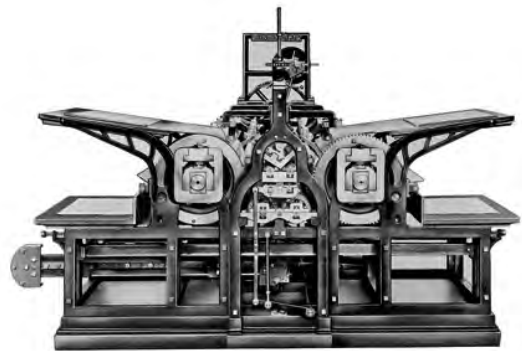

Figure 2. Koenig's 1814 steam-powered printing press

Device collects data through its calculated movements and diligent measurements of the environment. The entire *Device* drives itself along two parallel wires that suspend its body. When it reaches a randomized location on the wires it stops and a bob is lowered to measure the distance between its frame and its environment. The metal bob attached to the trunk of *Device* descends

toward the floor before being stopped by the detection of material. Initially this will be the floor. However, over time, as *Device*'s measurements are recorded and expelled by the machine, as paper accumulates on the floor, the distance between the ground and the machine will be gradually altered. Each new recording of data will transform the next. As paper rolls out of the machine's body and forms into a pile on the floor it will sense that its distance to the ground is diminished. This change will not be quick. It will occur slowly as the machine methodically draws and accumulates new data.

Device emulates the aesthetics of 19th century industrial machinery. The large metal structure and exposed cogs of both gold and silver hued material move and work together through onerous mechanical movements. The strain of the machine is apparent with each rotation of its drawing arm. The labored automatism invoked in the object's design is reminiscent of the Industrial Revolution. *Device*'s turning mechanical wheels and process of continuous printing parallel the industrial printing press, an object synonymous with the Enlightenment era and the demystification of the medieval epistemology in favor of rational and critical thought. In a sense, one can see elements of Koenig's 1814 steam-powered printing press (fig. 2) reflected in *Device*, with the metallic cogs, curving metal forms, and the long sensually curved gilded bob harkening to a 19th century-aesthetic (fig. 3). This allusion to the period is also indicated in the title of Daniel's work - '*The Elimination of Wonder*' -, referring to the kind of demystification or disenchantment often associated with the changes brought about by the mechanical revolution and mass production of the printing press. However, *Device* not only emulates but also seemingly critiques the 19th century elimination of wonder. As information became increasingly more accessible and the mechanical infrastructure began to regulate society, the medieval period's seal of mystique was broken and it is the sobering effects of this change that Daniels' work seems to point out.

Figure 3. Gilded bob. Steve Daniels, *Device for the Elimination of Wonde*r, 2015. Image courtesy of the artist

The disenchantment that culminated in the 19th century is written about extensively. Much scholarship has been dedicated to understanding the processes that eliminated wonder during the period (Weber 1958; Foucault 1971; Bennett 2001). This body of writing also questions our current status as a society: are we maintaining the rigorous critical lens of modernity or is this framework slowly dissolving to make way for a re-enchantment that may still comply with modern rationality by celebrating a new type of 'secular magic (Landy and Saler 2009)? I will return to this question' later but first it might help to address the drastic social and cultural paradigm shift that occurred between the medieval period and the Industrial Revolution. In *The Order of Things*, Michel Foucault traces the differences between the epistemological assumptions of the Western world prior to the Scientific Revolution and our modern modes of thought. For Foucault, the cultural climate of the 16th century was marked by intellectual and artistic investments in the resemblance and similitude among things (making illusion and metaphor central to expression) - as opposed to the post-revolutionary interests in difference, exactitude, measurement, and classification. Magic and metaphysics were valid lenses of inquiry into phenomena as were the influences believed to stem from (far-from-epistemological) celestial bodies such as the planets and stars. Sixteenth-century knowledge, for Foucault, "condemned itself to never knowing anything but the same thing, and to knowing that thing only at the unattainable end of an endless journey" (Foucault 1971; 34). While there was room for rational thought, it was seen at the same level of importance as the supernatural; and consequently,

knowledge was not made concrete, defined, structurally sound, or classifiable: "sixteenth-century learning was made up of an unstable mixture of rational knowledge, notions derived from magical practices, and a whole cultural heritage whose power and authority had been vastly increased by the rediscovery of Greek and Roman authors," (Foucault 1971; 35). The Scientific Revolution and "the Age of Reason" disrupted these more 'unstable' modes of thought in favor of systematic modes of organization, leaving their charms and fantasies behind to prioritize difference over similitude.

The Medieval period is oft characterized by its interest in games, fables, magic and overall a sense of whimsical enchantment that was woven through the cultural essence. This particular quality was inherent due to the fact that Church and Nobility, whose word was taken as unquestioned truth, regulated society. This created a cultural climate that valued fable, mystery and superstition, and has therefore been often viewed as a period of ignorance amongst the greater public. While this description of the period might be myopic in certain aspects, it nevertheless serves as an entry point to understanding modernity (from the perspectives of its most common place critiques) as the highly rational and "disenchanted" period that followed. The Renaissance and Enlightenment period saw the movement towards rational scientific critique, which expanded into the Industrial Revolution when disenchantment took full hold on society. Secularization and the decline of magic from the end of the medieval period were primary sources of this change. As scholar Max Weber has noted, secularization, rationalities of science, bureaucracy, and the law and policy-making all contributed to this decline of speculative mystical thinking.

This modernist movement towards disenchantment - debunking of myths, negation of magic and deflation of similitudes - is echoed in the monotonous and methodical operations performed by *Device*. Aesthetically, the object makes reference to the period of the industrial revolution; specifically equipment-heavy and cumbersome mechanics. As a performative self-regulating being *Device* is able to eliminate wonder through its painstaking rigorous measurements and, like the disenchanting modernist movement, emphasizes the notion that everything can and should be quantified. While the machine seeks to eliminate wonder, its own regulatory processes project the image of a self-sustained mechanical being that has a whimsical or perhaps even enchanted quality as it observes and responds to its reality. This quality is generated by the machine's evocation of being an intelligent robot, lost in its own thoughts, which frames its actions not as mechanical operations but as lively traits of expression; the expressive flow of matter (Deleuze & Guattari 1987).

Traits of Expression

If the goal of the machine is to eliminate wonder by methodically measuring its surroundings, does it succeed? And for whom is the wonder being eliminated? We may believe that the machine's boundaries of existence are visible to us as humans; however, we do not know the perspective of a being other than our own. We can only speculate upon *Device*'s experience of the world around it, which it attempts to communicate through a stream of drawings cataloguing data in a language written by the machine. We may ask, what does the machine express to us? And how are these traits of expression constitutive of our own sense of self as we watch the self-sufficient machine perform the disenchanting and monotonous task of measuring and recording data?

Device takes on the quality of a sentient creature with its lively, responsive, self-sustaining mode of existence. It is fascinating to watch the machine's curious and quizzical behaviors. As it comes to life and then records its interactions, the machine becomes a cybernetic system. In comparison to a human body, which is controlled by a number of cybernetic regulatory systems that sustain breathing, cognition and movement, the *Device* is propelled and regulated by a simplified systemic form. The system that sustains *Device* begins with its initial measurement of the distance between its *torso* and the floor. As it measures and records this data through a minimalist line-based drawing and expels it towards the floor, (fig. 4) *Device* begins to change its own surroundings. This requires a new measurement between its body and the floor as they grow closer together with the expanding pile of paper. Control and communication of the machine are regulated by its internal structures; its programmed desire to measure. It has been created to act as a quizzical and curious entity that observes and interacts with its environment through a particular methodology of measuring and recording data. In other words, it acts and engages with the world through a specific type of access to being. The construction of its body and its software programming serve a specific purpose and circular logic.

The sound of the machine as it whirs slowly across the metal wires which support it, offer the sense that the machine is purposeful and determined. The clicking sounds of struggle expelled by the large cog that rotates the pencil across paper communicate the machine's commitment to the task of measuring its surroundings. With each new measurement it is as if the 'proud' machine expels its drawings before returning to check its data one more time, and then one more time as the growing pile of paper keeps altering the environment. The tedious process goes on until the machine is finally shut off.

The work invites the viewer to imagine the machine's motivation as it returns to the spot from which it initially recorded data to check its reading before retiring. *Device* methodically lowers its bob to check its measurement and to its surprise, the environment has shifted! This imagination animates the machine; increasingly, it looks like a be-wildered scientist lost in her own calculations and questions: have I moved closer to the ground or has the ground moved closer to me? *Device*, perhaps not knowing how to respond, continues its cycle of recording in order to catalogue its experience of the world around it. Though the scope of the machine's observation is limited, its ambition to collect data and catalogue its experience is strong. Its thirst for measurement will never be satiated as each measurement necessitates the next.

On a macrocosmic scale we can understand the *Device* as expressing some form of agency through its traits of expression; Deleuze and Guattari's preoccupation with metal's expressive traits stem from their interest in Gottfried Wilhelm Leibniz's monadology and discussion of substances. Leibniz's theory of monads, his best-known contribution to metaphysics, offers a definition for substance. Monads are elementary particles, the fundamental elements of the universe, which are not fully apparent or accessible to one another. They are eternal, indecomposable, individual, subject to their own laws, and uninteracting; each reflects the entire

Figure 4. Pencil and line drawing. Steve Daniels, *Device for the Elimination of Wonde*r, 2015. Image courtesy of the artist

universe in harmony. Leibniz asserts that monads are centers of force - or substance - as opposed to space, matter, and motion, which are only phenomenal. The monads are not linked to or reserved for our sensory perception of the world around us. We cannot see, smell, taste, or touch monads - they exist without being perceptible to us. The monad is invisible and indivisible; it has no parts and is not located in a particular visible aspect of matter.

Now let us return to Deleuze and the undulating flowing matter-body as it unfolds its traits of expression in order to explore the self-contained monad as the fractal elements of the universe in all their complex relations. In his last major work The Fold, Deleuze foregrounds Leibniz's fractured universe of monads as they weave and fold amongst one another. This baroque conception of matter - characterized by the billowing layers and folds of baroque fabrics, and designs composed of smaller and smaller parts that spiral on infinitesimally - illustrates the flowing body as it changes states and traits of expression (Deleuze 1993). According to Deleuze's reading, "Leibniz's most famous proposition is that every soul or subject (monad) is completely closed, windowless and doorless, and contains the whole world in its darkest depths, while also illuminating some little portion of that world, each monad, a different portion. So the world is enfolded in each soul, but differently, because each illuminates only one little aspect of the overall folding" (Deleuze 1990; 157). While a monad may be pregnant with a multiplicity of expressive traits only a number of such traits may be actualized or 'illuminated' at a given time. Like the metal in its

soft liquid state, compared to that same metal hardened and formed into a sword, the monad (that represents all things in itself) may only be actualized in a particular form at a time. The infinite unfolding of the monad and its complex wealth of traits spill out and hug in to the compressed bodies of time and space. Each holding a self-sustained universe. A single self-sustaining thing. A closed system that can open its self-up at will.

Programmed Desires

In a sense, *Device* operates inside a closed system. It exists for, and is informed by, its own programmed desire to measure and record its environment. While it measures it also shapes its own experience without the provocation or necessity of any outside forces to interfere upon it. *Device* participates in its own closed network, thus the machine is autopoietic. Autopoietic machines are generative. The machine is able to reproduce itself. Their reproduction - of their own conditions, expressions, and materiality - transcends their original construction at the hands of a human agent (or maker). Autopoietic machines are closed, self-regulating systems that continuously spawn and specify their own bodies in an endless loop of creation; such as a living cell that produces its own components, continuously using them to manufacture more. The piling paper, which influences *Device*'s operation, has a determining power on the next components that it will produce. For primary autopoiesis scholar Humberto R. Maturana and his collaborator Francisco J. Varela, an important characteristic of the autopoietic machine is that it produces and is affected by its construction. They also tell us that autopoietic machines are autonomous, as they function independently of intervening relations; they are self-contained and monadic yet they are unities, because they operate within their own constructed boundaries in a processes of self-reproduction, and finally they are constant in their self-regulating actions.

    Device's physical being and the autopoietic system that self-regulates its actions limit the machine's engagements with its environment. It becomes bound and confined to its own impulse to measure and record. However, considering that its desires are programmed adds another element (a two-tier problem) to its construction. On one hand, the machine is a product of human design, in this case the artist Steve Daniels, which potentially implicates him in the system and troubles *Device*'s self-contained appearance if not the

word desire itself. On the other hand, the notion of desire is often characterized in ways that are specific to human emotive and cognitive capacities. Can we speculate that perhaps the machine is compelled by a desire, which we can define in this case as the motivation to perform a specific task - that of measuring and recording - that it will continue to follow until it is somehow stopped by interference in the closed system? Is this a whimsical and wondrous though, or a jumping off point for theory?

The Beginning and End of Wonder

Wonder can be characterized in a multitude of ways; however, I would like to be specific in categorizing my understanding of the phenomenon. Wonder is a feeling of uncertainty or questioning that is incurred when confronted by an engaging thing. For Whitehead "If philosophy begins in wonder and ends in wonder then... its aim should be not to deduce and impose cognitive norms, or concepts of understanding, but rather to make us more fully aware of how reality escapes and upsets these norms" (Shaviro 2011; 67).

    While some may consider the banal processes of measurement to be the antithesis of liveliness or agency, the object's apparent struggle provides the viewer with a feeling of empathy that grants a lively quality to the object. While the task performed by the object is uninspiring, the drawings it produces, the method by which it categorizes its environment, and the uncanny quality presented by a behaving machine all point to a wondrous inner life of the object. The object is engaged in an act of play with its components and the environment, through measurement, and with others through its physical movements and performativity in front of the viewer. The object expresses individual traits as it engages in the activity of measuring its surroundings from a particular vantage point and embodied experience of the world around it. The act of measuring is recreational in this instance in that it technically does not serve a serious or practical purpose - such as measuring the distance of a body of land in order to allocate its resources to a particular individual. This gives the actions of the robot an element of play, however banal we may consider it, and represents a whimsical quality within the machine. The quizzical being is obsessed with the play of collecting data. *Device* is interested in the site that it inhabits and uses its embodied actions of play - buzzing about on suspended wires, dropping a bob to measure its environment and sketching the data that it

collects - creating a visual narrative of experience for the viewer. A viewer can observe that the object is fixed within a system of behaviors that dictate its experience of the world insofar as there exist no outside forces to affect the object's life.

A World without Us

It is nearing the end of the day for the many employees, gallery attendants, janitors, monitors and security guards working at the Museum of Vancouver. Only a handful of visitors remain in the museum aside from all of the workforce who are required to remain in the museum until all of the lights have been turned off and the doors locked. The room that has become home to *Device for the Elimination of Wonder* is deserted. The gallery goers have all made their way towards the exit and are in the process of picking up their parcels and coats. So what is taking place inside the museum, apart from human interaction or spectatorship? We can imagine quite definitively that *Device* is still performing. It continues to struggle and strain across the parallel cables that suspend it in air inside the gallery. It continues to measure its environment. And it continues to draw line images representing data it collects as it acts and interacts with the space around it. Shaviro's reading of Eugene Thacker's nihilistic and pessimistic philosophy stipulates that "it is not enough to just consider the (objective) world-in-itself in its difference from the (subjective) world-for-us. We must also actively explore what Thacker calls the world-without-us: the world insofar as it is subtracted from, and not amenable to, our own concerns. We learn about the world-for-us through introspection and the world-in-itself through scientific experimentation. But we can only encounter the world-without-us obliquely, through the paradoxical movement of speculation" (Shaviro 2011; 67). Considering Thacker's view of the nonhuman perspective we can posit the experience and existence of *Device* whether we are standing in a room with it or we imagine its continued existence without us - with the underlying implication that while this object might have been created by humans it is already also entangled within a web of other, nonhuman factors that impart upon its existence.

How does the object exist outside of human interference? The object exists to perform a task that has been encoded into its behavioral system. *Device*'s purpose, outside of the human and for itself, is the quantification and collection of data. We can "obliquely" read the goal of the machine to pose a philosophical question that will pertain to both the human and nonhuman. What does the quantization or categorization of the machine's experience have to do with our understanding of history or temporality in an increasingly digitized age? As the past is virtualized, history is converted into material (or immaterial data) that is read and experienced by computational technologies - as opposed to the written word which is understood and relayed by humans - "erasing the material and cultural differences that constitute the differential rhythms of temporal experience" (Munster 2006; 94). As computational technologies proliferate and information is translated to computer-based communication through programming languages, which are designed specifically to prioritize objects such as object-oriented-programming (OOP), it may become easier for us to consider an existence outside of the world-for-us model problematized by Shaviro and Thacker. *Device*'s physical production of drawings, which may mean more to it than to us, and function as a catalogue of experience, can perhaps draw us closer to understanding that there exists an ontology outside of our own.

The knowledge of nonhuman agency can enable us to develop a curatorial methodology, which considers robotics as evocative (and lively) entities and acknowledges their repetition, habits and behaviors. The activation of the object's functioning and their scope of opportunity and action may be used as a method of inquiry to explore human/ nonhuman relations through Speculative Realism. This method might also find application outside the curatorial discipline, with robotics being employed as an accessible access point to consider ethical, environmental, aesthetic, and political implications of our human-centrism. Sherry Turkle describes the computational object as evocative due to its ability to raise new awareness about the potential of aliveness in nonhuman beings (Turkle 1984). Using the example of a children's fascination with behaving objects such as robots, we can employ this methodology as an entry point to posit the agency of objects that do not always express themselves in ways that are obviously legible to us as lively behavior.

Re-Enchanting the Machine

Where does this leave us in relationship to disenchantment and the 'elimination of wonder'? Through the elimination of enchantment during the Industrial

Revolution we were left the modernist celebration of industry, rationality and grand narratives. Post-modernism saw the dismantlement of unified narratives in favor of pluralism and incompleteness; celebrating irony and social/political criticism. Today, have we seen a return to wonder? In relationship to modernism, post-modernism and the illusive post-post-modernist (any many other sub-categorical) movements where do we stand? Though there is little literature exploring the 'metamodern' era I would like to propose this as one possible movement that could explain, and be used explore, our contemporary condition. In the Metamodern Manifesto of 2011 Luke Turner proposes that the meta-modern is: "the mercurial condition between and beyond irony and sincerity, naivety and knowingness, relativism and truth, optimism and doubt, in pursuit of a plurality of disparate and elusive horizons" (Turner 2011). So what lies between irony and sincerity, naivety and knowingness, relativism and truth, optimism and doubt? I am interested in this 'inbetweenness' in relationship to the robotic objects presented in this thesis and my probing into the question of wonderment.

The metamodern condition celebrates simultaneity and the adoption of lenses that may criss cross, mingle and diverge in certain instances but can still be held in unison. A 'making messy' or troubling that is echoed in both generative methods such as Donna Harway's staying with the trouble and harmful paradigm shifts such as the turn to 'post-truth' politics. In oscillating between perspectives in a liminal space these human and nonhuman, animal and mechanical, cold and biological, lively and robotic mechanisms may be celebrated for their reintroduction of wonder; a re-enchantment of the machine. In this instance art can be magical relief, wondrous future proposition or unbounded critique of our contemporary moment. Through *Device* I hope to have tracked a simplified narrative of major cultural shifts in the Western world that may allow us to point to the future through speculation. A speculation that is equipped with fantasy and wonder and a troubled sense of our present moment.

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