

“During a large part of the twentieth century, things seemed to be much clearer than they are now: there was the good and the evil and there was a third position said to be the bearer of authentic goodness, while both capitalism and communism had the monopoly on evil. Today, with one of the evils gone and the other razing the planet and procreating other evils, that third position seems to have been not so much prophetic as correct. It is not totally clear, however, if “being right” leads to victory and is of any use.

Meanwhile, the intersections of religious, economic, and military fundamentalisms managed to stop ethical values from being easily distinguishable. One has to dig as if they were raisins in a pie. The problem of the previous Manichean perception of the world is no longer that it eliminates any subtleties, but, rather, that, given the mixture of contradicting ideologies within groups of people, it hampers any understanding of reality.¹”

-Luis Camnitzer

¹ Luis Camnitzer, ed. by Rachel Weiss. “The artists role and image in Latin America.” *On Art, Artists, Latin America and other Utopias*. Austin: University of Texas Press 2009 (book) 2004 (orig. Essay). p. 77.

1.

I'm a luddite who loves robots and I have a love/hate relationship with technology.

I was raised by chemists. In my mother's loving cosmology, reality was something quantifiable and elegant, only briefly laid bare within chemical reactions. On the other hand, I never met my paternal grandfather, but heard about his half-copied, half-invented machines. In an age when service departments would've been on a different continent, he re-built assembly lines and industrial equipment on the fly. After his death, Cacharro, our old dog, slept in the last bell-shaped husk of a forgotten machine that had manufactured buttons, and the chickens roosted in the remnants of his underground workshop in the lush back garden of Llo-Lleo, until one day it collapsed after an earthquake.

2.

When I stumbled upon Hieronymus Bosch's *Ship of Fools*² I was still thinking of the galleries unfurling behind me: the rise of a different kind of collective community marked (artificially?) by the transition between galleries full of bleeding Jesuses and beheaded saints to massive oils of picnickers grinning at their children and eating herring; nordic festivals of plenty rife with symbols beyond me to decipher.

I'd spent hours as a teenager absorbed by Hieronymus Bosch, but this one had always been my favourite. It seemed simpler, smaller than the epic *Garden of Delights*. The sullen, fatuous, electricity that played across the surface of the painting seemed both a subtler, and more mysteriously charged expression of folly than his more fantastical creations. I'd never seen the real thing before. I still felt an affinity with this supposedly dead image.

The fool is one of those universal archetypes along the unstable spectrum of good and evil. Appropriation being a contemporary manifestation of an older, devious, sometimes brutal transfer of cultural information. The virgin, as the defender of purity, perfection and orthodoxy would seem about as far from the figure of the fool as you could get. But in South America, the virgin, like the Candomble god Exu³, combines characteristics of order and disorder, chaos and perfection. Like the trickster, she has the power of a shifting dual nature. In many Northern Chilean churches, statues of the virgin conceal older goddesses. Her devil dancers of the Diabladas⁴ are rooted in older myths of deities like Tiw and Anchoncho, protectors of the ancient silver mines of the Bolivian altiplano.

In Catholic traditions the fool as denier of god transforms into the wise fool who satirizes and deflates the powerful to expose corruption, as in Chaucer's tale of *The Summoner and the trial of farts*.⁵

The fool is not just a contradiction of disturbing energies held in tension – cunning, naïveté, ruthlessness, conceit, duplicitousness, honesty (in the way those with nothing to lose are honest) – to me the fool is also present in instability and absurdity, in unpredictable feedback loops, and unexpected blowback.

If you look over my projects you will notice no Art Historical leitmotifs – no ships, no fools. But they are always there.

3.

2 *The ship of Fools*, Hieronymus Bosch, painted 1490 – 1500. Flemish section of the Louvre Museum, Paris.

3 Exu, Legba, Èṣù, there's many deities from African, Caribbean and Brazilian traditions of this name. I was thinking of the Brazilian trickster god of chaos, cross-roads and divine messenger.

4 Originating in Bolivia in pre-Colombian times. In La Tirana, a town in the Chilean desert (named after a native rebel who converted to Catholicism), troops of dancing devils come to the shrine of the Virgen del Carmen each year during her feast July 12 – 16 .

5 Geoffrey Chaucer *The Somnours Tale. Canterbury Tales*. ed. Paul G. Ruggiers A facsimile and transcription of the Hengwrt and Ellesmere manuscripts. University of Oklahoma Press. 1979. p. 313 – 341.

2013 was a year of interesting failure. I wanted time to experiment and create interactive subtlety, but in the ensuing scramble everything got pared down. The 'robots' might only work for ten minutes and their LiPo batteries might die or catch fire. I had E.O. Wilson's dictum, 'think like a poet and work like a book-keeper' looping in my head. A cat with a hurt paw showed up. He swallowed up a lot of my money and stayed to watch me drill holes all day. I named him Hank. I didn't get out much, and felt guilty because I should be trying to find, or build a community.

There's three 'robots'⁶ and a miniature ferris wheel. I wanted thirteen, but money, time, and logic got in the way. I'm not sure if they'll be autonomous. They might be brainless. They acquired nicknames: 'Walker', 'Rocker', 'Porcupine'. Feelings lie in forms. My processes generate my aesthetics. But the processes are generated by cultural experience.

I had a dream about screaming metal maggots and decided to add them as the ferris wheel's 'carriages'.

4.

Looking at my scraps of writing over the past year I see headings for:

Arduino	Conceptualism in Latin America	Parasites
The Industrial Revolution	La Diablada	<i>Popular Mechanics</i> Magazine
Cancer	The Luddites	Functionalism in Architecture
Capability Brown	Midwest farm boys inventing the car	Zapatistas and collaboration
Cybersyn in Allende's Chile	industry	Technology vs. Individual agency
The DIY movement	Mary Parker Follet	Functional Beauty
Ignorance and failure	Taylorism	Personal memory
Interactivity	The Trickster and the Fool	Mother Jones

Really, these are navigational points of departure, archeological digs through the pores of hegemony. I was looking for social histories of machines and people. They were born while I was hammering away at my robots, but they are splintering off and becoming narratives in their own right. Abandoning this mess of colloidal histories would ascribe to a kind of false, futurist purity, and to a destructive cultural amnesia.

It's a truism that new media cannot be understood in terms of old media, and that meaning is dislocated from form. But this applies to the syntax of creating with new media, not to the stories we make up within and against technological change.

5.

Eso no se Dice

I grew up on the Canadian prairies, and, prior to that, in Chile during the last years of the Pinochet regime. It's something I usually don't speak to directly, though it's shaped everything.

By age nine my family was in Alberta, with its self-obliterating prairie light and rich kids on motorbikes. It was an alien pop culture of social hierarchies based on money and contempt I couldn't understand. I still spent most summers in Chile with my grandparents. Those memories revolve around acacias scenting smog sunsets that stained the Andes violet; around joyful family gatherings, curfews, beaches, soccer...our normalcy sometimes breaking down amid street demonstrations-turned-state-of-emergency; riot gear in front, dogs in back; guns held perpendicular waiting for the TV. crews to leave; El Guanaco⁷ soaking the pamphlet-paved streets; university students running

⁶ I'm working on simple code as I write this. If it doesn't work, I have hunks of pretty metal that swing around wildly, not real robots.

⁷ Nickname for the water cannons.

chanting *y va caer* through to the cathedral square - a sudden collective flinch as tear gas hit and rolled down the metro steps into subway cars; a police dog lunging after a girl's throat much smaller than me while I huddled in a doorway and watched her. Just watched. *Eso no se dice*,⁸ was the most commonly used phrase in my family, which in that era, silently split along political lines.

As far away as I am from those visions they've stuck with me. Of course, the problem with personal narratives is that they lend themselves just as easily to avoiding an analysis of cultural processes as they do to illuminating them with their input from day-to-day social experiences. But I will try.

6.

“A robot is like a VCR on crack.”⁹ A perfect vehicle.

Robots are not invisible algorithms of control, like those that manage the daily running of the stock market. They exist in everyday fact and fiction. This is what gives them their charge. This is what makes them social animals as well as cost-effective machines for production and war.

Whatever I might come up with has to reckon with the images you already have in your mind. Sorting through the unstable mangle of scientific research, military engineering, high craft, DIY electronic backyard tinkering, industrial apprenticeships, and art, is slow and emotional.

It's not just that there's something uncanny about machines that are anthropomorphic or zoomorphic. There's an entire culture embedded within: From Roombas and cyborgs to the Golem; from fantastical automata like Kempelen's chess player¹⁰, Vaucanson's shitting duck¹¹, or Tipu's tiger forever mauling an East India Company officer¹², to robot armies, sumo robots, robot soccer competitions, to the new small industrial bots that learn by watching humans.¹³ Collectively – from *Metropolis* to Robbie the Robot, to replicants, to the Mars Rover – our utopic, dystopic visions about robots crumble only to be resuscitated.

7.

“In Pakistan, things fall out of the sky all the time.”¹⁴

While robots have roots in mythology, ancient automatons, and science fiction, fact has mostly evolved out of military research and industrial manufacturing. While the first robotic platforms by companies like iRobot and Foster-Miller¹⁵ that went to Iraq were designed to defuse bombs, handle hazardous materials, and carry out reconnaissance, it didn't take long to add weaponry. Robotic armour, bionic limbs controlled via chips implanted in soldiers' brains (do they have to return their limbs when they leave the army?) are also being tested right now.

8 *That is not to be spoken* ...taboos littered our social landscape.

9 P. W. Singer. *Wired For War -- The Robotics Revolution and Conflict in the 21st Century*. New York: Penguin Group. 2009. p. 195.

10 Wolfgang Von Kempelen's 'Turk' was a complex automaton, and a hoax, he didn't actually have the ability to play chess that Kempelen claimed. Exhibition site. 2007. http://www.kempelen.hu/index_en.html

11 Jacques de Vaucanson (1709 -1782) inventor of automated loom and many automata, his most famous being a mechanical duck (1739) that ate and “shat”; and a flute player (1738). Destroyed during the French Revolution. His work on textile looms led to the creation of the Jacquard loom.

12 Tipu (1750 – 1799), the Sultan of Mysore died fighting against the East India Company. His near-life-size automaton was stolen in the ensuing looting. It is now in the Victoria and Albert museum in London: <http://www.vam.ac.uk/content/articles/t/tippoos-tiger/>

13 Rodney Brooks. “Robots as Part of Daily Life”. TED2013. Describes his new adaptive industrial robot, 'Baxter': <http://blog.ted.com/2013/02/26/robots-as-part-of-daily-life-rodney-brooks-at-ted2013/>

14 Comment made by Pakistani president Musharraf in 2004 during negotiations between the ISI and the CIA to trade access to Pakistani airspace for a drone strike against a rebellious Pashtun leader. Mark Mazzetti. “Rise of the Predators – A secret Deal on Drones, Sealed in Blood”. New York Times, April 6, 2013. <http://www.theglobeandmail.com/news/world/revealed-the-secret-deal-that-launched-drone-assassinations/article10828181/?page=2>

15 Robotic companies in the Boston area who deal extensively, but not exclusively with, the US military.

Experiments in subatomic circuitry are trying to use magnetic charges instead of electricity to control electron flow. It would mean machinery could power itself as long as it kept a magnetic charge. In future, there might be no way to pull the plug.¹⁶

Predator. Grey Eagle. Global Hawk. Reaper. Shadow. Fire Scout. Sentinel. Dragon Eye. Pointer. Scan Eagle. Raven. Drones are now ubiquitous in the US military. But nothing is officially confirmed about the CIA's program. A study by Stanford and NYU schools of Law¹⁷ that calculated *minimum* casualties by tracking and investigating weekly strikes in Pakistan FATA border region between 2004 – 2012, estimates that 2 562 – 3 325 people have been killed, including 176 children¹⁸. But with the program managed by a secret intelligence agency rather than the US military, no one really knows how many innocent bystanders have been anonymously blown up by people sitting in cubicles in Nevada or California¹⁹. In December 2005, Hayatullah Khan, the first journalist who managed to gather evidence by photographing US Hellfire missile shrapnel in the rubble of a strike that killed two kids, was himself kidnapped immediately after submitting the story²⁰, and found in a ditch shot execution-style six months later²¹.

New designs include a tiny models like the Wasp Micro Air Vehicle – to fly over neighbourhoods, peek through windows, or attack in giant swarms. I wonder what kids dream of in other parts of the world as they hear drones overhead.

Reading about military researchers brings to mind joyful beagles hot on a scent: brilliant at their specialized tasks, strategically focused, and with no clue as to where they're headed. In his first company, roboticist Rodney Brooks was just as ready to design a robot doll, roaming nanobot vacuum herds, or robot soldiers²². Yet as the writer Ralph Peters pointed out commenting on US military technology, "The great paradox of this hi-tech age is that its security problems arise from the human heart and soul, domains which remain opaque to technology (and to those who worship it)."²³

8.

The Uruguayan conceptual artist Luis Camnitzer, in an attempt to clarify the role of the individual artist faced with the socio-political sphere, uses the terms 'redundancy', 'originality', and 'banality' which he borrowed from information theory.

...in art there is a careful balance... The originality is the contribution of the artwork. The redundancy, technically a waste of repetitive information, ensures the intelligent reception of the message by the public. The banality is the frame of reference or the collection of known elements which the originality needs as a vehicle in order not to die in hermeticism and incommunicability.²⁴

These distinctions are useful because they succinctly illuminate the context in which work is produced; balancing

16 P. W. Singer. *Wired For War*. p. 107.

17 International Human Rights and Conflict Resolution Clinic at Stanford Law School and Global Justice Clinic at NYU School of Law, *Living Under Drones: Death, Injury, and Trauma to Civilians from US Drone Practices in Pakistan* (2012). <http://www.livingunderdrones.org/>

18 The Stanford/NYU study p. 43 – 54 includes an analysis of the aggregates' methodologies for gathering information on casualties: The Bureau of Investigative Journalism, *The Long War Journal*, and the New America Foundation (most often quoted by CNN). Figures seem to differ according to whether they use data provided by the US or Pakistani Military, or journalists and witnesses on the ground, and whether they bother to correct their figures when new information is discovered as investigations are carried out.

19 US government automatically counts all adult male victims of drone strikes as 'militants' without investigating their identities. This is assumption is usually reported as fact by most media.

20 *A Journalist in the Tribal Areas*, *Frontline* (Oct. 3, 2006), <http://www.pbs.org/wgbh/pages/frontline/taliban/tribal/hayatullah.html>

21 Cable from Ambassador Ryan C. Crocker, US Embassy Islamabad, Subject: Fata: Missing Pakistani Journalist Found Dead in Waziristan (Jun. 20, 2006), http://www.cablegatesearch.net/cable.php?id=06ISLAMABAD11675&q=hayatullah_khan.

22 *My Real Baby* was developed by iRobot for Hasbro in 2000. iRobot produces both vacuums like Roombas and military robots like Packbot and SWORDS: <http://www.irobot.com/us/robots/defense/warrior.aspx>

23 P. W. Singer, quoting writer and retired US. Lieutenant Colonel Ralph Peters. p. 296

24 Luis Camnitzer, ed. by Rachel Weiss. "Contemporary Colonial Art." *On Art, Artists, Latin America and other Utopias*. Austin: University of Texas Press 2009. p. 10.

individual production, information, and the collective social frame of reference. And they do this without staking out a particular square of territory and validating it over the others.

9.

Playing the fool:

I'm not being entirely flippant in calling myself a luddite. I learned to type on a typewriter; spent part of my childhood in a new development next to chicken farms, a shanty-town, a canal, cross-roads, and an eucalyptus forest. Only one house on our block had a phone. We had septic tanks. Water-outages and power outages were weekly occurrences. My first encounter with a mechanical escalator ended in tears, and colour TV was almost worse. I helped my grandmother peg laundry on the line, grind meat, and make marmalade.

Years later, at ACAD, it was to artisanal culture that I was initially drawn, chopping wood, formulating new clay bodies and firing kilns.

'Technology' was truly the Other.

10.

There's a classic scene in the fifth book of Douglas Adams' series *Hitchhiker's Guide to the Galaxy*: the main character, Arthur Dent, is stuck in the planet Lamuella, in a backward proto-civilization. First he imagines a kind of *Connecticut Yankee in King Arthur's Court* scenario, materially advancing his society with all the knowledge he can hand down... only to realize that only thing he can actually offer are his sandwich-making skills...²⁵

So, what actually happens when I flip a switch? Or, what's actually going on in my computer? Do I understand how *anything* is put together?

11.

We already have too much of everything, including language, including technology.

Our daily throw-away culture filters every imaginable human experience into tidy categories and discrete packets – served up, flung out, forgotten by all except a few experts and the people involved.

You already know this. Do you remember that war last year? I sort of remember the tidy/ugly diplomatic switch and bait that made us all look in the other direction at the exact critical moment, but not what actually happened, or whether that Youtube video was real.

We treat events as if they are flowing by at an incredible rate, but in spite of our amnesia, there's still threads of reality that continue to flow at their own pace. As thoughtful animals we're also tied to our mating, breeding, and aging cycles.

A human lifetime and a human heartbeat is still our rough measure. But our language, our myriad paths of communication, don't quite match up. And because of this, the players in our lifeline can wreak havoc by craftily switching roles: Once, while watching a documentary about the Jim Crow laws in the Southern USA, my ex paused the program, switched to a news story on a congressional debate that day, pointed out two politicians yelling, then

²⁵ Douglas Adams. *Mostly Harmless*. London: Pan Books. 1992.

switched back to the documentary – where he pointed out the younger versions of the same angry politicians in the crowd – protesting desegregation.

We all already know this, theoretically; but emotionally, we tend to slip up. If all our knowledge is context-bound it is also imbedded in practice. I abandoned a certain form of direct language in my practice, not because I'm disconnected or apathetic, but through an urgent sense that I was simply playing along and adding to the dross. I started to feel exhaustion with the predictable default settings that filter our reality. There was a point at which I became repulsed by my own absolute ignorance of the technological mechanisms that structure the world.

12.

In Lev Manovich's words, “If traditional cultures provided people with well-defined narratives (myth, religion) and little “stand-alone” information, today we have too much information and too few narratives that can tie it all together.”²⁶

Without understanding its logic, we can't imagine its consequences and build new narratives to critique its purposes and limitations.

I chose to resist my dependence upon technology by trying to build my own. I'm producing ridiculous, clumsy, keening objects, meant to function as antennae to catch what's murmuring around me.

13.

user ≠ client.

14.

Luis Camnitzer's explanations about creating contemporary colonial art are somewhat dated; the developing world is no longer as isolated, nor is the cultural, imperial hegemony quite the iron-clad behemoth he portrays. But he has still helped me clarify the pitfalls I spent years negotiating in my mind about how to produce art in-between two cultures.

He notes that artists from the developing world are restricted to three tactics:

International Style (confusing term)
Regional and picturesque “folklorism,”
Subordination to political-literary content...²⁷

In addition, he clarifies the stakes of the game; even when artists from the periphery work outside the artworld's commercial system of “mercantile profit” they usually have much to gain from manipulating what he calls “bureaucratic profit” made up of networks of grants, posts and appointments.

So, either pursuing the 'International Style' of the contemporary artworld; willfully ignoring it in order to seal oneself up in a nostalgic vision of one's own past culture; or limiting one's practice to the didactic illustration of political theories. In the last case the work is not problematic *because* it involves political content, but rather because by

²⁶ Lev Manovich. *The Language of New Media*. Cambridge: MIT press, 2001: p. 217.

²⁷ Luis Camnitzer, ed. by Rachel Weiss. “Contemporary Colonial Art.” *On Art, Artists, Latin America and other Utopias*. Austin: University of Texas Press 2009. p. 12.

subordinating the artistic process to politics, the ratio of 'redundancy' to 'originality' becomes unbalanced, tipped towards redundancy.

He does not leave much wiggle room for maneuvering around clichés and dead tropes.

15.

The political forms of discourse that I grew up with are dead. Intuition, perception and emotion aren't stunted, but they have a tendency to get taken over by dead rhetoric, or misconstrued as irrelevant or quaint. I don't feel apathetic, I feel the need for a new language.

It's the nature of models to collapse, it may only be what Nicolas Bourriaud describes as the 'idealistic and teleological' versions of those forms that have collapsed. But, they have collapsed in an era when the dislocation of meaning from information has simultaneously crystallized as a realization.

The corpses of failed utopias should not engender simple contempt but rather mournful ironic anger, and a recognition of knowledge that needs to be scavenged and passed on.

16.

I loved a term used by the artist Allyson Mitchell – 'collaborating with ghosts' – because a symptom of collapsing assumptions is that the panorama that stretches back in time is as open as the present and future.

I'm not being abstract. I'd heard of Mother Jones²⁸ and of the American labour movement, but hadn't realized the brutality under which workers lived: private mining towns and factories run like feudal empires: a single company store, company-owned high-rent shacks, 12-16 hour days 6 days a week for all, even children and pregnant women, payment in company coupons instead of cash. Private armies kept company law and killings were often hushed up with the tacit agreement of local governments. It took events like the April 20th, 1914 Ludlow Massacre²⁹ in Colorado to affect public opinion.

Reading the unfolding of events from the 1880's to the 1930's is to read a fifty year history of an underground, unofficial, war with a body count that finally forced factory owners to change. Yet, in an interview³⁰ the writer Richard Florida summed up the accepted notion of how events unfolded like this:

It's the same problem we faced with manufacturing in the early 20th century. We treated our manufacturing workers like crap, workers worked maybe 5, 6, 7 days a week 12...16 18 hours a day and could barely put food on the table. And then during the great depression some industrialists like Henry Ford... and finally, of course the great FDR said, hold on a second; if we're going to create the demand that Keynes says stimulates the economy, how can we do that? Government can only fund so much. We're going to have to boost the wages of the workers who make the cars, so they can buy the cars."

I don't think this is a conscious rewriting of history. But, because the early industrial labour movement didn't fit the pattern of a socialist revolution, its impact has been downplayed or forgotten.

28 Her autobiography is a riveting, rambling compilation of oral anecdotes: Mary Harris Jones, ed. Mary Field Parton, intro. Meridel Le Sueur. *The Autobiography of Mother Jones*. Chicago: Charles H. Kerr. 2005.

29 Colorado National Guard and private guards of the Colorado Fuel & Iron Company, owned by John D. Rockefeller Jr., attacked a tent camp of striking miners and their families.

30 Steve Inskeep interviewing Richard Florida. "Cities Must Strategize to Boost Service Worker's Pay". NPR Morning edition. Feb. 06, 2013: <http://www.npr.org/2013/02/06/171257463/cities-must-strategize-to-boost-service-workers-pay>

It's not just that something interesting has been forgotten. The change we are caught up in is huge. But accepting the most simplistic form of our own histories, and solely focusing on the new and the avant-garde – damns us to be sheep perpetually surprised by the sunrise every morning.

17.

Computational ken

Five years ago, doctors discovered a tumour and a couple of cysts on my ovaries. While my tenure on the waiting list for surgery stretched from weeks to months, I kept track of the tumour's growth.

I came to think of cancer as an extreme form of fetishizing individuality at the cellular level: a wild and unauthorized diversion of valuable resources; a sudden refusal of a rebellious collection of cells to be subsumed into the prime directive; a refusal to follow the rules; an attempt to introduce complexity and growth at the wrong level? Fascinated, I kept digging for more information on this bleak black joke of creation (though it was much funnier when I was the one on the slab).

Bubonic plague, (which wreaked as much havoc in the crumbling Mongolian rule in China as it did in Europe), typhus; life cycle of the louse; the plague of ancient Athens; the smallpox brought to Mexico by the Conquistadores; parasites – twists and turns of life-forms beyond anything logical human efficiency might envisage: sex-changers, unborn infants, already pregnant and packed tight in each other's uteruses waiting to emerge... chemical exchange chambers hollowed out inside animals, nest stealing...male worms whose semen formed a hard protein seal over the female's vagina that only dissolved as she releases her fertilized eggs.

Before my tumour, I was diagnosed, and struggled for seven years, with a severe immune deficiency disorder. At times, walking and even talking required laborious, conscious commands to limbs; the simplest acts were reduced to a mechanical orchestration of stubbornly unwieldy inputs and outputs. My identity, my sense of self as something homogenous, independent, and in control completely collapsed. I watched, engrossed, as if from a distance, as language stopped making sense and a set of forms disappeared; with it went a set of meanings.

These illnesses directly disabused me of any notion of human 'specialness'. Many of the readings on artificial intelligence and robotics draw a parallel between people who resist the idea of truly intelligent machines and flatlanders, or the geocentrists of Galileo's era. They imply that we believe humans to be too sacred to be enmeshed and bound by the physical rules that govern other animals' structures. They claim there is no special 'soul' thing or ghost in the machine. In a sense, I couldn't agree more. But it does not follow therefore, that we are at the top of the cognitive pile of evolution, and that understanding all of creation is a simple matter of increasing our computational ken. We don't know what else there is coming down the pipe.

We seem to have gotten a lot of things completely wrong so far.

By the time I was called in for surgery, the tumour had grown to the point of giving me a barren little pregnant belly. I wanted to see what the ball that twisted and shifted inside me actually *looked* like. I begged and nagged the doctors to let me keep the tumour after it had been removed from my body, or at least a photo, I needed a visual.

They refused, but a kind of sympathy for the non-living thing living inside me had already developed.

18.

So logically, from sympathy I arrived at Beauty: organic beauty, vital beauty, functional beauty.

Or, it seemed logical, in spite of Ruskin's insistence that mechanical understanding of any system completely destroyed

its sense of beauty. He was against the study of dissection, for example, and went on at length about the loss of wonder for everything from an ostrich's speed to a shark's fin as soon as one understood *how it worked*. He wrote that the food of art was an ocular and passionate study of nature, in opposition to what he termed a telescopic, scalpellic, and dispassionate view³¹.

But isn't it precisely that breakdown in our assumptions, the suddenly observed detail that leads to the discovery that any homogenous form or system, is far more strange and incredible than we might at first realize? Isn't that the sense that gives rise to appreciation and beauty?

In the summer of 2011 during a workshop, Theo Janzen showed us the elements from which his Strandbeest creatures are built. I realized that the section of pipe, rubber, and tie wraps I was holding in my hands was really a logic gate, it just happened to be powered by wind and water rather than electricity. Beauty.

19.

...beauty came in the twentieth century to seem like a flimsy and obsolete or even trivial value...In a world dedicated to industrial production and its critique, in a world beset by war, genocide and nuclear holocaust, beauty as an occasion for pleasure seemed frivolous and politically suspect...banal.

...And now we face a crucial decision: whether to regard beauty as something that has been superseded, or to try to recover a sense of beauty or inflect an understanding of beauty into something we could still use to decipher our experience. Either beauty died around 1895, except to refer to movie starlets and chrysanthemums, or it became much more difficult and strange, kept developing in a subterranean way.³²

-Crispin Sartwell

We're pattern-seeking animals, and beauty is one of the hints that tie us, sacs of meat, to the patterns that order our reality. If it refuses to die for us, it's because it's part of the landscape, as we are.

Drawing will always form a central part of my practice because it's literally connected to how I think... there's a correlation between our visual system and the other cognitive perceptions we use to confront and theorize about existence. I think that is what Crispin Sartwell is grasping after when he calls for an understanding of beauty as something potentially difficult and strange, developing in a 'subterranean' way.

Similarly, during a lecture about the physicist Paul Dirac, Graham Farmelo³³ told of Dirac's passionate insistence that physicists trust the beauty of ideas: that if a theory was unwieldy and ugly (ugly?!) there was certain to be an error, or a falsity about it.

In regards to pleasure, the interdisciplinary artist Gordon Pask³⁴ saw a particular form of pleasure as being necessary for an interactive installation to 'work'. The viewer needed to share a frame of reference with the piece, they needed at least the possibility to 'come to grips' with the experiences, "...interactions required various levels of abstraction, improvisation and synthesis, which he believed were basic to human pleasure."³⁵

In his works, Gordon Pask also marked a vital shift in interactivity: from observed systems to *observing* systems. His 1968 installation of computer-controlled mobiles *Colloquy*, was reactive and adaptive³⁶. Unlike a straight action/reaction model, his mobiles were imbued with symbolic genders and desires, they communicated, pursued and

31 Paraphrasing a quote from "Eagle's Nest" lecture viii, Readings in *Modern Painters*

32 Crispin Sartwell. *The Six Names of Beauty*. Routledge New York. 2004. p. 13-24.

33 *Paul Dirac and the Religion of Mathematical Beauty*, lecture, Royal Society, London. 2011: <http://royalsociety.org/events/2011/paul-dirac/>

34 Gordon Pask was a UK. theatre designer, cyberneticist and artist, designing interactive installations and self-organizing systems in the 1960's.

35 Maria Fernandez. Gordon Pask: "Cybernetic Polymath". *Leonardo*, Vol. 41, No. 2, April 2008. MIT Press. p. 166.

36 The *Colloquy of Mobiles* was created for the 1968 exhibition "Cybernetic Serendipity" held at the ICA in London, <http://www.medienkunstnetz.de/works/colloquy-of-mobiles/>

learned about one another even in the absence of a human presence.

When I thought of the title *Humo, Leche y Miel*; Smoke, Milk and Honey, it was of the *Colloquy of Mobiles* that I was thinking, because it created a kind of ethereal, beautiful exchange between unusual machines that I'd hoped to echo.

20.

I'm not interested in nailing down a set of rules around what constitutes beauty. I don't believe it is a fixed thing. But I am interested in why my forms are relentlessly organic and zoomorphic. What are the implications of 'Beauty', or 'Ugliness' when working with robotics and new media, which are functional and interactive? Why do I seem to follow a certain aesthetic form?

I became drawn to 18th and 19th century aesthetic theories. They required the viewer to withdraw from everyday life, contemplating the object as “divorced from its interrelations with other things³⁷”.

I love Lancelot, 'Capability' Brown³⁸, though in his way – ripping up ancient groves, flattening insufficiently picturesque villages, flooding pastures to create fake lakes, ruins, and carefully orchestrated vistas, he wreaked as much havoc as a coal mine or saltworks on the landscape. In his lifetime (1716 - 1783) he and other landscape architects were hired by the landed gentry and aristocracy to invent the bucolic myth of the natural English landscape on their great estates, at the same time that their factories, large-scale mining, marsh-draining, canal-building, urbanization, enclosure, and de-forestation were beginning the cycles of pollution, ecological disaster, and disappearance of traditional husbandry in the rest of the UK.

I've patiently waded through dialogues on qualities of 'smoothness' and 'roughness', on wildness, natural beauty and the sublime... but nowhere is there mention of the broader aesthetic sense of how the 'natural' manufactured landscapes of the gentry sat against the 'unnatural' landscape of industrial manufacturing, bolstered by their networks of military and economic imperialism. If this was the model for thinking about beauty and pleasure I can see why it got discarded. Or, as Dave Beech wrote, “It is not that babies, flowers and diamonds have stopped looking good. The critique of beauty is never a critique of beautiful objects but always of ideas, ideologies, social practices and cultural hierarchies.”³⁹

In all this, to a huge extent, arguments hinge on how much we're willing to take in. How tightly do we rein in our focus on a visual experience to the exclusion of other cognitive, conceptual knowledge, or to visual experiences we're not willing, or able to acknowledge?

21.

In the 1990's Nicolas Bourriaud tried to tie art production back, not just to the artworld, but also to everyday social relations, describing art as, “Artistic activity is a game, whose forms, patterns and functions develop and evolve according to periods and social contexts; it is not an immutable essence.”⁴⁰ In the 1960's, designing self-organizing systems, Gordon Pask created what he called 'aesthetically potent environments', designed to stimulate pleasurable interaction.

There's much I love in Bourriaud's theory of form, a kind of joy of making based on the relations drawn out of living. But in defining relational aesthetics he seems to be constructing a dichotomy: a binary pitting private, symbolic spaces against relational, social interactions; pitting the dated corpse of object-oriented aesthetics against his own relational

37 Jerome Stolnitz. *Aesthetics and Philosophy of Art Criticism: A critical Introduction*. Boston, MA: Houghton Mifflin. 1960. p. 52.

38 Lancelot Capability Brown, (Baptised 30 August 1716 – 6 February 1783) landscape architect.

39 Dave Beech, Introduction. *Beauty*. London: 2009 Whitechapel and MIT press. p. 12

40 Nicolas Bourriaud. p. ?

vision, or at least dissolving what he saw as an arbitrary distinction. Tellingly, both Camnitzer and Bourriaud assert that all forms of individualist self-expression are simply aggregates compiled from broader collective forms. In this they're echo the 20th suspicion of formal beauty. Finally, they both level the accusation of Social Darwinism and elitism at those who disagree with their theories because they can be used to support artworks that are formally dull or unresolved.

As an artist, this is the moment where the conversation stops being useful or interesting to my work: If arguments simplistically stake their stance along dichotomies, for or against, valid or invalid, in order to argue for analytical structures of supposed greater complexity and balance... then they are no longer theories that clarify our production, but rather tools for legitimacy to be manipulated.

22.

Once, trying to explain what I do to my 97 year-old grandmother, I invoked the binary of knitting. Programming is not reductive, I said, think of knitting; you only have two stitches to build the universe out of: knit and purl. I also pointed out that knitting stitches couldn't care less about content and meaning, that it was all down to counting and order, and whether that data was a braided shawl or a flat cloth incorporating a poem, it was all still knit and purl.

Binary indicates two variable values, high, low, 0, 1, but in actuality, those two variables act as placeholders onto which we piggy-back hexadecimally packed patterns that can carry many, many, communication protocols and weave many, many, languages.

23.

Re-building the first robot for the fourth time I realized I had ignored the reverberations of motion through three-dimensional space, the flow of energy that would lead to a break, or metal fatigue if I didn't provide meshes through which to dissipate it. I was building things badly because I was ignoring something implicit to motion, a function in motion.

But, I'm also tinkering – building things badly on purpose – so I can poke three-dimensional space with questions and try to work through its myriads of logical responses. Such as: mechanisms that run perfectly for hours when propped up on blocks might only work for five minutes under load. The first time I flicked the switch on 'Walker', she kicked out gorgeously, insect-like for a few seconds, then... boom... toppled over, crushing a leg. It (She? He? I think of them as hermaphrodites really) was slightly top-heavy.

When I plugged a battery onto 'Rocker', his lack of ankle joints made him twist like an over-excited puppy for about thirty seconds, then his feet got caught in his wheels and the motors jammed. Just as in cooking, I want to reach a measure of implicit understanding of the forces at work, even if I have no explicit knowledge of the rules of physics underlying those forces.

I might completely disagree with Alfred Loos' rejection of decoration but my work this year has shown me that even if I'm seeking an aesthetics of organic excess it needs to rise out a logic of space or place, it cannot be arbitrarily slapped on, if it is to ring true⁴¹.

In this project this has meant realizing when the structure is just completely wrong; like those terrible buildings by architect super-stars that look wild and organic but don't function at all. It's a variation of the old mantra, 'form should follow function', originally coined by the architect Louis Sullivan in his 1896 essay, "The Tall Office Building

⁴¹ I found that Arthur C. Danto expressed this with more clarity when he drew the distinction between beauty as something internal to the meaning and context of the work not simply to appearance of the object.

Artistically Considered”.

...when the known law, the respected law, shall be that form ever follows function; then it may be proclaimed that we are on the high-road to a natural and satisfying art, an architecture that will soon become a fine art in the true, best sense of the word, an art that will live because it will be of the people, for the people, and by the people⁴²

It seems incredible that this is the form that the original call to arms took, and how much barrenness parading as elegance has been inflicted upon our urban areas because of it. I'd always imagined that 'Function' in this context was to obliterate the expressive excesses of the human animal – a command and control structure gone awry. Architecture fascinates me because it offers a spatial equivalent of systems organization on a mass scale, in which human bodies represent data flow.

In constructing forms, I think *efficiency*, and *functionality* get conflated. A degree of efficiency is a necessary means to an end, not an end itself, not a tactile thing. Functionality is not fixed, or simplistic. It is not a matter of stripping something down to its meanest essence, to a single cause, or a single vision. Just as with cooking and eating, where the religious, economic, political and human rituals have complex functionalities that cannot be reduced to rules of caloric intake, functionality needs to rise from the everyday because that is where it plays its part.

This may seem to have nothing to do with machines or robots. It has.

24.

The claim of interactive art is that the user is creating something unique, and that this unique contribution represents a radical break with past, inert experiences of image gazing.

In *The Language of New Media*, Lev Manovich notes the confusion arising from mistaking physical interaction with psychological interaction. This confusion occurs again and again, whether in texts dealing with conceptualist art or in manuals on programming.

A much-cited, early work is *Möbius Strip (Caminhando, 1964)* by the Brazilian artist Lygia Clark, in which she invited visitors to cut a möbius strip out of paper. Without using digital technology her work drew the viewer into concentrated moments of activity without which the work wouldn't have existed.⁴³ Design concepts of interactivity speak of users creating content by choosing which elements to display, or which paths to follow. Whereas they consider watching a movie, looking at art, or reading a book as too passive to be considered interactive.

But this 'passive' experience is what Manovich calls psychological interaction, and in a 2001 analysis which manages to sound both hyperbolic and prescient he wrote:

...By choosing a unique path through the elements of a work, she supposedly creates a new work. But it is also possible to see this process in a different way. If a complete work is the sum of all possible paths through its elements, then the user following a particular path accesses only a part of this whole... the user does not add new objects to a corpus, but only selects a subset. This is a new type of authorship that corresponds neither to the premodern (before Romanticism) idea of minor modification nor to the modern (nineteenth century and first half of the twentieth century) idea of a creator-genius revolting against it.⁴⁴

42 Louis Sullivan. "The Tall Office Building Artistically Considered", *Kindergarten Chats and Other Writings* [1918]. New York: Dover. 1979. p. 208.

43 Lygia Clark (1920 - 1988) carried out several interactive experiments involving the viewer's body, creating helmets, nose-bags, mirror lenses, bags of air, elastics all designed to confuse, dissolve or sharpen one's bodily sensations.

44 Manovich, p. 128

...While previously the great text of culture from which the artist created her own unique “tissue of quotations” was bubbling and shimmering somewhere below consciousness, now it has become externalized...One does not have to add any original writing; it is enough to select from what already exists. Put differently, now anybody can become a creator by simply providing a new menu, that is, by making a new selection from the total corpus available.⁴⁵

He notes this leads to a reality of whims and fancies where identity is no longer unique in any way.

I don't think it's this simple or dire. The tissue of quotations is not completely externalized. Art's always been a trickstery mutant caught up in a dance between creation, action and reaction to its context. Each of us has our own particular set of filters to gobble up, then collectively mix and macerate the bones of reality.

25.

The first time my grandparents returned from visiting my uncle in Canada they brought back an incredible item: something called 'kleenex'. I marvelled at the clever wastefulness of it. Two recurring motifs in our conversations about the strangeness of Canada were the empty streets, expanses of asphalt with meridians absent of garbage, children, shacks, or wild dog packs; and the disposability of absolutely everything: no deposits or returns on pop, water, or milk bottles; no tinkerers, smiths, or knife sharpeners; no seamstresses or shoe-makers to clutter the neighbourhood or hawk their services on bicycles.

The mark of the first world wasn't just that they had snow, pets on leashes, and reliable electricity. The mark of the first world was that no one knew, or needed to know, how to save or repair anything. It wasn't in the least bit efficient to fiddle with motors belts, dull knives, loose seams or broken pots, everything, everything my grandmother assured me, was *thrown out*.⁴⁶

26.

Aluminum, which my robots wear for lightness, shimmer, and strength, makes up 8% of the earth's surface weight, but was wildly scarce and expensive till the process of ore extraction was perfected. Napoleon III ate off aluminum plates, while his guests had to settle for solid gold.

Collectively, we're expected to float through the every-day having no clue how anything reaches us, from our electricity, to our bedclothes, to the food that we buy. Our digital inter-connectedness floats on a seeming-safe cloud of data we mostly don't understand and can't imagine living without⁴⁷. Even the generation that has grown up with the internet tends to be adept at navigating and manipulating, rather than creating and coding. We're equally divorced from the final destinations of our garbage, shit, and tax money—with no sense of whether it's sustainable.

Maybe that's why a painting depicting the figures of madmen on a ship of exile gathered round the tree of knowledge – standing in as a ship's mast – started me off on this project.

But the truth is, without smart phones and other mass-produced consumer electronics, the sensors and micro-controllers I use wouldn't be so ubiquitous and cheap. I might be laboriously hand-assembling these in isolation, but the same components I'm using to make them move and react to people, someone else has already used (and posted videos) to build themselves a robotic lawnmower: hot air balloons, to hack into a drumming toy to keep the cat off their couch... or, my absolute favourite, a hobby-level hack into a cockroach's nervous system using easy-to-find

⁴⁵ Manovich, p. 127

⁴⁶ My young, digital-native-hipster cousins in present-day Santiago would never believe this story, and they wouldn't know what a tinker was.

⁴⁷ Southpark episode no. 6, season 12, *Over logging* says it best.

components and a little ice-water as anesthesia⁴⁸. I'm riding on the backs of other people's experience in a happy wave of perpetual theft. And all of our uses are completely contrary from what the technology was originally designed for.

It's easy for technological optimists to appear ridiculous and hubristic, it's been going on for a couple of hundred years. But in spite of the critique that the techno-DIY movement just produces gadgets and gizmos for affluent geeks, it's still an incredible pooling of practical knowledge available to anyone. More importantly, it's possible for non-specialists to begin to have an idea about what is being created. How it might be used and abused.

27.

I can't get excited by the myth of modernity, or new media, or some other brave new world entirely cleaved from all of previous human experience. I can't value speed for its own sake. And it's too late for me to learn proper engineering or physics. But I still want to understand how the world is built – as an artist.

There's always been a sense that the stuff of the world might be watching, reacting along with us, like the singing buildings of Silly Symphonies, or a mechanical hurricane acquiring malevolent consciousness. It may not be in the cognizant, anthropomorphic sense of our imaginings, but of course it is: motor coils spin in reaction to magnetism, electronic components and sensors work because minerals and alloys have exact and reproducible sensitivity, shifting and changing in response to their environment.

Technology insists on its complicated antecedents. It is not alien. Nor is it solely to drive biomimetic tanks, give us shiny toys, monitor seniors, or gut our organic selves into some quasi-mechanical aberrant beings. We're already quasi-mechanical aberrant beings that taste of metal languages that live in earth's ores and stone. Electricity is inside us, articulated into nerve pulses placed just so. We have room to explore through the interstices between data, flesh and machines. And the exploration of those structures should not preclude a critique of myth and meaning and a...hyper-emotive kind of tense tunefulness to what's unfolding in the world right now.

48 Backyard Brains – Neuroscience for Everyone! RoboRoach Surgery, June 2012: http://wiki.backyardbrains.com/RoboRoach_Surgery