“IAN INGRAM: NEXT ANIMALS”

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IAN INGRAM

Ian Ingram is a Los Angeles-based artist interested in the manmade object's future as a willful entity and the nature of communication. He builds mechatronic and robotic systems that borrow facets from animal morphology and behavior, from the shapes and movements of machines, and from our stories about animals. These systems are often intended to cohabitate and interact with animals in the wild. His work is usually playful, even humorous.

Ingram's recent works have been attempts to create a sort of messy web in the umwelts of specific non-human species and human beings by creating behavioral objects that–in scale, form, agency and gesture–make signals truly meaningful to the non-human species but often in a human-like narrative context. The robots are trying to communicate with the animals and, in part, allow human communion with those animals in ways that our own bodies and umwelts don't allow.

That human narrative stamps itself heavily onto the work is confirmed by these becoming things like a hermaphroditic sexbot for Pileated Woodpeckers and a NORAD equivalent for Grey Squirrels.

Ingram has exhibited his work internationally, including at the Andy Warhol Museum in Pittsburgh, PA; the Museum of Modern Art of Toluca, Mexico; Art Chicago; the Yada Gallery in Nagoya, Japan; Axiom Gallery in Boston, MA; Bedford Gallery in Walnut Creek, CA; Purdue University; Hasbro Headquarters; and eyelev-elgallery in Halifax, Nova Scotia. His sculptures are in the collections of the Carnegie Science Center and the Children's Museum of Pittsburgh. Ingram has a BS and MS from the Massachusetts Institute of Technology and an MFA from Carnegie Mellon University.

ARTIST STATEMENT

Rule #14, established in 2010 in Munich while searching for the Black Woodpecker, is to work with local and abundant animals. Else one pays the price of never having one's robot actually come beak to bolt or eye to camera with the animal it was built to commune with. Home in Los Angeles, application of Rule #14 has meant working with the Western Fence Lizards that live right outside my home and studio. Here in Copenhagen, it has meant the Magpie.

Although the territorial pushup of the lizard that my California robots also adopt is ubiquitous in lizard land and in the corner of my eye (as now I am almost irrepressibly attuned to it), the magpies here have managed to penetrate my senses more deeply in a couple of months than the lizards have in 4 years. They are truly everywhere--town, field, and beach--and are laughing all the time so when I lie in bed in the morning thinking about them and my robot, I can hear them already well along in their daily activities and nagging me to bring them the robot soon.

Or so I think. The magpies' laughter is perhaps truly neutral, but as usual we bring our projections, so our own mood makes it seem gleeful or, alternatively, forebodingly dark. This robot I have built that wipes its beak incessantly with an agenda and message that is part magpie, part human, and part robot, is currently relaying a more morbid missive than I usually find interest in. But as it is a robot, and not a deterministic machine, it too might shift its mood when attached to a different tree.

Lizardless legs (2014). Photo: Ian Ingram.

MIMETIC ENTANGLEMENT AND OTHER ANTHROPOCENTRIC MYTHS IN IAN INGRAM'S NEXT ANIMALS

JONAS JØRGENSEN
– Art historian, MA and member of ROCA (Robot Culture and Aesthetics).

Gravity pulls everything to the ground. One precise cut and intestines-liver-lungs-dung spill out and steam away in their shockingly blue-white and red hues this winter morning. The park ranger tells us that the pool of deer entrails normally stays there for a couple of days until it has been consumed by the area's birds and other wildlife.

Ian Ingram's current exhibition springs from this – literally – bloody mess at Kalvebod Fælled that took place during the early days of his Copenhagen residency. But also from a singular and committed practice that draws upon areas as diverse as biology, land art, mechanical automata, and computer vision research. Finding one's way in Ingram's projects and the interdisciplinary landscapes they inhabit can be as challenging as uncovering the connections in a tangled web of colorful organs. Where do the individual parts begin and end in an exhibition like this?

MAGPIE MYTHOLOGIES

Next Animals centers on a series of robotic interactions with local magpies. Culturally magpies are enveloped in a rich mythology that, interestingly, varies markedly among the different countries all over the globe where species of the bird can be spotted. Historically superstitions have cast magpies variously as bad omens, bringers of good fortune and news, sacred creatures to be worshipped, human helpers – even sorcerers flying to secret gatherings.

In a Scandinavian context the magpie has generally been seen in a negative light since the introduction of Christianity. One of the most strong-lived magpie stories is thus the claim that the bird is attracted to shiny things and routinely steals such

objects from humans, which has contributed to its reputation as a compulsive thief. Another popular observation has also been a factor in establishing its bad standing and led to perceptions of the magpie as ruthless and cunning by nature, namely that it routinely feeds on the eggs and young chicks of other birds. On the surface, it would seem then that Ingram has selected a quite unpopular animal without many redeeming qualities as his chosen interlocutor. That is, however, just one side of the story. Behavioral and physiological studies of the Eurasian magpie have led researchers to believe that magpies are among the most intelligent creatures inhabiting the Earth. And magpies are admired by bird watchers and animal scientists for their extensive tool use, ability to store food across seasons, episodic-like memory, and complex social conduct – the species was even the first non-mammal demonstrated to be capable of mirror-self recognition.[1]

Even as some of the claims put forth about magpies will today be written off by most people as backward superstitions with no purchase on reality, the contradictions and great variance found in the discourses on this omnipresent bird points to something worth keeping in mind: Speaking on animals is actually no easy task and a serious matter. What are we actually uttering, for instance, when we assert that a magpie is coldhearted and cunning?

ANIMAL TALK

Through Ingram's attempts at communicating with magpies an urgent question is reflexively posed, "How can we humans speak about animals?" This question obviously relates to the more

Magpie. Photo: Ian Ingram.

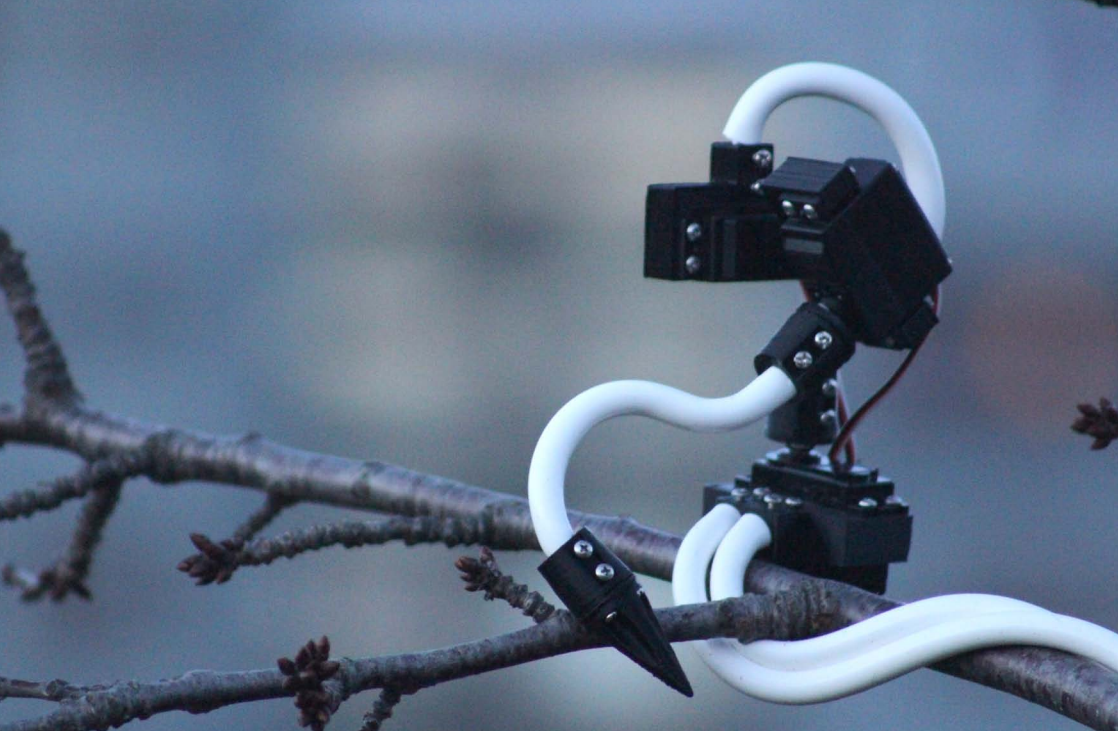
general philosophical problem of representation, and it begs of us to choose an epistemology: in order to say something about animals we need to know about them.

We can definitely study animals as objects of the natural sciences as we do when we dissect them and expound their inner workings to groups of school children. Or when we try to observe and map their migratory behavior as detached and objectively as possible to uncover patterns. This approach has clearly engendered significant insights – as when a team of researchers recently debunked the myth that magpies are attracted to shiny objects.[2] But will it lead to a genuine understanding of animals as possibly sentient co-beings?

In philosophy of science the endeavor to *explain* phenomena in terms of cause and effect characteristic of the natural sciences is often contrasted with a search for *understanding* within the humanities that have developed a wide range of hermeneutic methods all geared at uncovering *meaning* through interpretation. But the humanities' object of study is human culture and the field can only address animals as beings-in-themselves indirectly by querying human-animal relations and human representations of animals.

INTERSPECIES MIMETIC IMPULSES

Considerations similar to those above have led to the formation of the academic field of *animal studies* that posit interdisciplinarity as key in deconstructing the human drive to blindly anthropomorphize animals and spin human narratives around them. While this project is compatible with some of Ingram's interests, the interdisciplinarity of his practice primarily seems motivated by a deep-seated interest in exploring the many facets of a concept that itself defies disciplinary boundaries, namely *mimesis*. Mimesis – the imitative representation of the physical world or of a certain behavior – is of course the central operation of art, literature, and theater, but it also bears on other areas of human and non-human activity. Historically, for instance, humans have also engaged in mimetic relations with animals through cultic practices, and as part of the hunting techniques that later coalesced into technological aids such as bird calls, stool-pigeons, and fishing lures. In zoology mimesis is actually defined very narrowly, much in this sense, as one animal's mimicry of another animal or a plant.



Doctor Maggotty is Anxious about the End (2015). Photo: Ian Ingram.

Ingram's robotic devices never strive toward identity and complete replication– their mimicry remains far from the renaissance vision of art as a window onto the world. They are not imitations per se but rather simulacra that approximate reality while simultaneously untethering it, extrapolating its virtual lines of flight. Sometimes natural forms are distorted or exaggerated to function as superstimuli, other times jarring out of place elements are added to the mix. The magpie robot condenses features of the bird's physical appearance – its simple black-and-white dress and the overall shape of its neck, head, and beak – but augments these with, among other things, a whirled serpentine attachment that ties the creature to a branch. Whether this abstracted version of the magpie would be interpreted as magpie-esque by real magpies remained an unknown during the initial design process – it was missing the iridescent feathers, but could also be missing vital features imperceptible to humans (most birds have four instead of three color receptors in their eyes and are able to see ultraviolet light invisible to humans).

Besides appearance Ingram's mimesis is highly concerned with gesture as a biosemiotic means of communication. Learning to speak a foreign language always requires mimicry, and the magpie is known to accurately imitate and acquire the chirping of other birds as well as human speech. With animals we seem to be more attuned to the fact that certain actions imbued with communicative functions can also be innate rather than learnt through imitation. The central bill wiping gesture of the magpie robot seems to allude to this tension and ambiguity. Its function or meaning is not necessarily fixed but has been subject to discussion among magpie experts. The prosaic guess is that magpies simply use it to clean their beaks after having eaten for instance. Researchers have, however, also hypothesized that the gesture is performed to shape the beak so that it better fits the specific purposes required for food gathering in the area the magpie inhabits. A third interpretation is that the series of movements indexes indecisiveness, and that the magpie is in a nervous state unsure of what to do next. As magpies have been demonstrated to use their own experience to predict the behavior of their conspecifics, there has also been speculation that other magpies might be able to infer the affective state of the magpie performing the gesture simply by watching – whether that then be well-fed bliss or anxiousness.

ENTANGLED MAN

Through a strategy of "mimetic entanglement" *Next Animals* probes the aporias of understanding and communication. Rather than seeking an illusory common ground between human and animal Ingram's project revels in a desire for technologically mediated communion combined with an acute eye for the incommensurability of human and magpie experience, bound as they are to the species' respective *Umwelts*. The "successful" interactions we see in the video are but a small subset of the actual encounters between birds and the robotic system. On the one hand this speaks to the difficulty as well as the marvel of communication – how everything needs to coincidentally align just right for anything to occur. But it could also imply that human decisions and human normativity will inevitably be the privileged organizing principles when magpie, man, and technology are entwined into a post-biological assemblage.

Next Animals openly rejoices in such ambiguities, and the fact that the observer always affects and is affected by the system

Stuttering Magpie Machine (2006). Photo: Ian Ingram.

she studies. Its messy mimesis unfolds a modest and provisional working out of human fantasies about animals and reality through robotic technology, which is quite remarkable considering the anthropocentrism that clings to the word "robot" (originating in Karel Čapek's sci-fi play *R.U.R.* (1920) the word referred to artificially produced humans). Perhaps robots really could be future allies of animals, as suggested by Ingram, with whom they would share secrets we humans cannot possibly understand.
In another work by Ingram, *Stuttering Magpie* (2006), a robotic creature performed a shadow play relating a codified message of the whereabouts of its nest in letters from a secret magpie alphabet constructed by the artist. Maybe the robot in *Next Animals* has similarly acquired a language that is possible to decode yet manages to slip by unnoticed? Perhaps it speaks of the true meaning of a quite extraordinary phenomenon in which the magpie also uses its beak: When a magpie dies several members of its species will gather round the dead body and tend to it in a kind of funeral rite. They will gently peck at the dead body and preen its feathers while cawing away, as if lamenting and grieving their dead. This phenomenon we currently refer to as a "magpie funeral" – an anthropomorphism if ever there was one.

1. Helmut Prior, Ariane Schwarz, and Onur Güntürkun. "Mirror-Induced Behavior in the Magpie (Pica pica): Evidence of Self-Recognition", PLoS Biology 8 (August 2008): 1642-1650.
2. T. V. Shephard, S. E. G. Lea, and N. Hempel de Ibarra. "'The Thieving Magpie'? No Evidence for Attraction to Shiny Objects". Animal Cognition 15 (August 2014): 1–5.

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IAN INGRAM'S ROBOTS: COMMUNICATION BETWEEN INTERACTION AND INSTRUMENTALITY

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The first commercial robots have been developed in the early 1960 in the United States, and ever since appeared in the majority of industrial units around the world. This line of development sees a robot as an 'advanced computer-controlled electromechanical appliance'.[1]

Parallely with this streamline of development, so-called robotic art appeared roughly at the same time, often addressing the very definition of what a robot is.[2] Robotic art, (or robo-art) covers a range of production and technological practices and usually either features a robot and/or a product of robotic activity. Simon Penny refers to this area of research as cultural robotics – it attempts to take into consideration the broader cultural realm when thinking robotics, and is often carried out outside the formalized institutions. As Simon Penny noted: 'Cultural robotics is a highly charged interdisciplinary test environment in which the theory and pragmatics of technical research confronts the phenomenological realities of physical and social being in the world.'[3]

The most interesting aspect here lies in the fact that the figure of robot is as much a cultural as it is a technological phenomenon. In fact, 'man's alternative' [4] has been anticipated in literary fiction for centuries, providing examples of fictional objects that appeared to have intelligence or a will of their own: e.g. mechanical servants in Homer's *Illiad*, self-assembling dry bones in the Book of Ezekiel (Old Testament), Mary Shelley's *Frankenstein* etc. On film, the idea of an artificial intelligent creature was present for about one century, starting with Herman Raymaker's short film *A Clever Dummy* from 1917, ten years before the famous movie *Metropolis* by Fritz Lang, where the appearance of

Danger, Squirrel Nutkin! (2009). Photo: Kuan-Ju Wu.

gynoid Maria has been excessively quoted and reflected upon in popular culture.[5] These examples from film and literature clearly show that the cultural and technological imagination[6] of robots have been long present in popular and folk phantasmagoria – thus, artists that used robotic technologies in their practice often referred to this pregnant set of meanings that orbits around the figure of a robot.

IAN INGRAM'S ARTWORKS

Early on, robotic artists started experimenting with the medium itself: in a normative sense, robotic art can be seen as a successor of kinetic sculpture[7], where interactivity[8] becomes a central attribute of an artpiece. For example, two now classical pieces: Nam June Paik's and Shuya Abe's *Robot K-456* (1964) and Norman White's *Helpless robot* (1985) commented on these stereotypical ideas about robots, presenting them either as helpless or too demanding when interacting with humans. This line of research leads toward another aspect, which comments on the instrumentality of a robot. In his article *The Five Robots – A Taxonomy for Roboethics*, Steffen Steinert develops a taxonomy that draws from the ethical discourse. The first-level, instrumental view sees robots as a means to an end, where technology is neutral towards its purpose.[9] Those

belong to the first class of artificial agents, that are seen as an instrumental artifact – a perspective that Ian Ingram's robots persistently challenge. Admittedly, Ingram's robots have the fascinating ability of simultaneously being an artifact of its own, as well as the pure mediator of communication – McLuhan-esque machines that are a message themselves.

Ian Ingram's specific artistic focus sheds light on a particular type of interaction – between human and non-human animals. In a process of defining this framework within which he operates, he questions different kinds of relationships and communicational challenges that a robot might have with animals, often resulting in an unexpected outcome. An example for this is his work *Lizardless legs* (2014) which features a robot that imitates the pushup gesture of Western Fence Lizard – that gesture lizards normally use to claim their territory. However, this robot performs a hyperbolic movement, a double pushup, which serves as an even stronger alert to the neighbouring animals. This way, the robot is seen as a gesture itself, movement as such, which represents a very clear communicational code to the species it attempts to communicate to. This robot has been very successful in his attempts, because shortly after, the lizards abandoned that territory.

Ingram has explored this communicational aspect in several other works, experimenting with various animals. In his artwork *Danger, Squirrel Nutkin!* (2009) he made a robot that uses computer vision to detect squirrel predators and then warns the nearby squirrels of the possible danger. This robot operates with an amplified signal as well, given that the robot regulates three 'squirrel' tails that flick independently and often together. In this work however, there are two combined elements: a gesture and (partial) objects that are at interplay. Again, a hyperbolic alarm denotes the state of a great danger, or as a substitute for several squirrels that alarm about the same intruder.

Another of Ingram's works that developed this idea is *The Woodiest* (2010), featuring a robotic system that consists of male and female sub-system. The robot detects territorial 'drumming' of Pileated Woodpeckers and responds with the male sub-system, by drumming to declare its own territory; male and female sub-systems then continue drumming to suggest a good nesting place. In this work, we again see the robot that is essen-

tially communicating with a targeted animal via signal: in this work the robot operates with audio signal, whilst in the other two works it communicates through visual signals.

These three works are just an example of the communicational challenges that Ingram's artworks depict. Even though exceptionally sensitive to the processes that normally occur in nature, his robots do represent a point of disturbance. At the same time, they provide an additional knowledge about the reality of 'being in the world' of an animal[10]: even though the notion of 'culture' and 'society' is typically presented in anthropocentric light, Ingram's works remind us that the very mechanisms of interaction, communication and instrumentality are all around us.

1. Eduardo Kac, "Foundation and Development of Robotic Art," *Leonardo* 3. (1997): 60.
2. Kac, "Foundation and Development of Robotic Art," 60.
3. Simon Penny, "Art and Robotics: sixty years of situated machines," *AI & Society* 2 (2013): 147.
4. J.P. Telotte, *Replications: A Robotic History of the Science Fiction Film*. (Urbana and Chicago: University of Illinois Press, 1995).
5. The design of humanoid robot character C-3PO featured in the Star Wars Trilogy is heavily based on the gynoid from *Metropolis*. The most famous scene from this film: the transformation of Maria, is quoted in the video for the song 'Radio GaGa' by Queen; It also made a strong influence on some fashion designers, notably Thierry Mugler.
6. As noted by Anne Balsamo: 'the wellspring of technological innovation is the exercise of the technological imagination'. Furtermore she defines technological imagination as a 'creative resource that is evoked in the designing process; it is culturally and historically shaped, and imperfect as a source of prediction.' Anne Balsamo, *Designing Future: The Technological Imagination at Work* (Durham & London: Duke University Press, 2011), 6, 202.
7. Kac, "Foundation and Development of Robotic Art," 61.
8. 'Interactivity' in this sense refers to the communication between the two entities in a broad sense, including non-human agents.
9. Steffen Steinert, "The Five Robots – A Taxonomy for Roboethics." *International Journal of Social Robotics* 2 (2014): 250.
10. An interesting study made by Shoshana Magnet finely grasps the modes of cultural communication between two distinct species: in this case, a robot and a cockroach.

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IAN INGRAM AND ROCA

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By fortunate coincidence, the artist and roboticist Ian Ingram has been affiliated with the Robot Culture and Aesthetics (ROCA) research group at Copenhagen University from the very beginning. One of ROCA's founding members had met Ian at a robot conference a few days before the first ROCA seminar was to take place in May 2013. And because Ian was on his way to Copenhagen for other reasons, he agreed to join the seminar and present his work. Ian's robotic artworks and his approach to robots align with the topics and methods applied by ROCA research group, which provides the foundation of the collaboration: practice-based experiments, cross-disciplinary and collaborative explorations, and democratic access to technology.

The ROCA research group focuses on robot culture and aesthetics. This focus is a response to the increasing attention on robots many places in the Danish society and elsewhere: in industry, in health care and educational sectors, and in public debates. Science and engineering projects focus on developing new innovative technologies within robotics, or designing smooth and efficient human-robot interaction. Anthropologists look at social interaction between humans and machines when robots are installed in hospitals and schools. Public debates display both positive attitudes towards new technologies, as well as concerned voices fearing loss of jobs in the industry or cutbacks in the public sector.

In this vast field of robot research and application, one crucial element seems to be missing: the role of art and culture. Numerous films, books, artworks, comics, toys, games, and many other cultural products have been created around the theme of human-robot relationships. In fact, because only few people have actually encountered a real robot, most of what people think about robots derives from the imaginaries created through art and culture. Knowing more about the cultural background for

robot imaginaries leads to better understanding of what defines the notion of a 'robot', and what people expect in their encounter with robot technology.

Robot imaginaries from culture also influence the way in which robot engineers and designers develop new robotic technologies. Engineers and designers read science fiction too, and try to apply elements from art and culture directly into the robots they construct in the science labs. Some robots are even designed to resemble popular robots from fiction, such as R2-D2 or Astro Boy. However, learning from art and culture is not a question of copying robotic figures or principles from fiction. It is the ability to ask critical questions about how humans use technology to shape their everyday life and to challenge the ideologies behind.

One of the research projects in the ROCA group is to map robot imaginaries. We can trace the ways in which culture at specific moments provides the fuel for technological development - not just in a historical perspective, but in the future too: artists continue to create new robot imaginaries and provide alternative models for conceiving and envisioning robot technologies. ROCA researchers provide critical interpretations of art and cultural products as a means of promoting awareness and reflection in society regarding technological developments and applications.

Ian's robotic artworks are based on cross-disciplinary research and collaborations into various relevant fields. Ian seeks the expertise from biologists and ornithologists for advice concerning animals and birds; he visits maker spaces and artist studios in search of materials and tools to be used in the artistic process; and he interacts with other roboticists and artists for inspiration and technical advice. Such cross-disciplinary engagement and collaboration provides a model for the way in which all types of robotics could carry out their projects. Because robots are complex systems, robot scientists and engineers should seek challenges outside their own domain and engage in collective work processes with those who think and create in different modes, such as makers, activists, and artists.

Many people know how to handle the user interfaces of various devices used in everyday life, but have often only limited insights in the electronic or mechanical functions going on behind the surface. Ian's robotic artworks display another trajectory on

this paradox because the mechanics of his robotic artworks are always fully visible, and they make up an important part of the aesthetic dimension. Ian's robots respond to limited stimuli and carry out only a short series of basic movements, but they do so in a manner that is comprehensible and unconcealed. This kind of robotics contains elements of openness, participation and sharing - concepts that trive in the global movements of D.I.Y (do-it-yourself) and maker culture. They represent the potential for making technology a more democratic domain where people may shape and influence the devices surrounding them, rather than the other way around.

Ian's robots imitate specific animal's movements that are conceived as having a communicative purpose: the flickering motion of a squirrel's tail, the push-up gesture of a lizard's front legs, or a magpie's sweeping movement of the beak against a branch. However, whether or not a communication actually takes place between Ian's robot and the animal species in questions is not the main point. Ian's robot is first and foremost an artwork for humans, and it calls upon the human being's ability to imagine, reflect, and create meaning. Ian's robot invites the human viewer to reflect on the relationship between the live and the artificial. Ian's robotic artworks are appealing because of their unexpected, surprising and humorous elements. They make people want to know more.

The Woodiest (2010). Photo: Ian Ingram.

By collaborating with artists such as Ian Ingram, the ROCA group aims at promoting cultural and artistic insights into the area of robotics. Studies in art and culture articulate and make visible the creative processes that robot engineers are involved in too, but not always formulate explicitly as part of their science methods. Whatever kinds of robots we will meet in the future, elements such as curiosity, imaginary power and reflexivity will be important tools for dealing with the increasing complexities of technologies in everyday life.

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