Co-creating with Animals: Crossing the 'Narrow Abyss of Non-comprehension'

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This paper describes student work in a seminar and field school that use research through designing as a means to engage the more-than-human world in landscape architectural design practices. Students used an epistemology of engagement to observe, describe and co-create with animals, towards an applied end of transferrable design theories and practices that aim to make places for people and animals. Claire Waterton has described the large literature in anthropology, cultural geography and related social sciences exploring the idea that *how* we study the world is also a way of reinforcing, of *performing*, that world (Waterton, 2003). This field experiment sought to invert that structure: by consciously *performing* an inquiry, can we change how we perceive and conceive of the world and, specifically, the role of animals as co-creators of our landscape architectural designs? The field experiments were grounded in art practices, intentionally uncoupling and problematising notions of perception, landscapes and their human and non-human inhabitants (Jeremijenko, 2010).

Non-human studies

The field of non-human studies and inter-species interactions is robust in many fields, including philosophy, geography, sociology, anthropology, linguistics and literature, and the notion of animals as ecosystems engineers is similarly well studied in the biological and ecological sciences. Very little of this research crosses over to the field of landscape architecture, where landscape architects seek primarily to design *for* animals, not *with* animals. Designers create empathetic or educational zoo design, or landscape designs that facilitate ecological function or reduce negative impacts of animal–human interactions. This is not through a lack of interest – landscape architects spend a great deal of time studying animals within ecosystems, and understanding how animals move in the world and what their spatial needs are.

John Berger (1980) has described landscapes as 'extensions of people who happen to be invisible' (p 50); in his phrasing, physical landscapes are temporal arrangements of materials, people and processes, ephemeral artefacts of human occupation and use. This study seeks to connect across the gaps between various disciplines, extending the reach of landscape architecture to include *animals* who happen to be invisible, bringing to light the landscape-forming qualities of animals that can be ignored and undervalued in landscape design. We are, of course, also animals ourselves, and perhaps by revealing other animals and their agency in landscape formation, we may also reveal some invisible or disguised aspects of humanity in landscape formation.

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REFLECTION

Research through designing

While landscape architects and scholars continue to refine the overlapping categories of research and design practices within the discipline, there are four broad modes of synthesising the practices.[1] In research-based design practices, qualitative or quantitative research methods operate as catalysts for design innovations, creating a relationship of *designing from research*. In *researching from design*, drawn or constructed work is analysed to monitor and evaluate the design process or the effectiveness of a built work. In both cases, design and research practices do not overlap; one precedes the other. In two additional modes, design and research activities occur simultaneously: in *design through researching*, data collection methods are designed in a way to make them visible and interactive, to highlight the research activity as an art practice; and *research through designing* uses the design process as a research method.

Research through designing uses the design process – iterations through schematic design, design development, prototype and built work – to generate transferrable design principles and practices (Wang and Hannafin, 2005). It is a synthetic process where speculative design informs a research question, the investigation of which informs a design exploration; rigorously and iteratively establishing new facts, forming new knowledge and creating new forms, objects and places.

Performative fieldwork as a design method

The work done at the Overlook Field School[2] was performative, as defined by Waterton, with experiments and data collection operating in tension between '*accurate replication*; and … never-ending *improvisation and adaptation* to local contingencies, unexpected events or terrain' (Waterton, 2003, p 112). This is a variant on Lorimer's 'make-do' methodology, an epistemology of knowledge-in-practice, that is both 'practical and participative' (Lorimer, 2006, p 500). Lorimer describes fieldwork that begins by taking stock of resources at hand, including the researcher herself – the physical experience of a landscape, the subjective experience of animal encounters, and documentary evidence – and using mapping as a synthetic tool. In the Overlook Field School, students drew on field biology methods rather than documentary evidence, but similarly used the phenomenological experience of the landscape and animal encounters to build knowledge of the site.

Finally, the fieldwork was based on Tim Ingold's writings on knowledge construction through skilled practices: 'a coupling of the movement of one's own awareness to the movement of aspects of the world' (Ingold, 2000, p 99). In *On Making*, Ingold advocates for a research practice of engagement rather than detachment, of phenomenological being in the world. The application of research methods drawn from the physical sciences is well defined in landscape architecture, notably in the work of Ian McHarg and Richard TT Forman. Performative fieldwork, well defined in anthropology and cultural geography, provides an alternative method for research through designing that is active, engaged and iterative, like the design process itself.

Inquiry and method: Co-creating with animals

> The animal scrutinizes [a man] [sic] across a narrow abyss of non-comprehension ... The man too is looking across a similar, but not identical, abyss of non-comprehension. And this is so wherever he looks. He is always looking across ignorance and fear. And so when he is being seen by the animal, he is being seen as his surroundings are seen by him. His recognition of this is what makes the look of the animal familiar. (Berger, 1980, pp 2–3)

Through prototypes designed and installed as a mode of artful landscape architectural practice, the University of Oregon's Overlook Field School reveals some of the challenges and successes of design-based research. The 2016 field school, *Co-creating with Animals*, examined the role that animals play in shaping the current and future landscape at multiple scales, from puddles to forests. The field school and a preparatory seminar asked students to consider both animals and landscape architects as form makers, place makers and ecosystem engineers; and to question their role and capacity as design collaborators with other organisms. Through iterative critical mapping, schematic design, prototype construction and design installation, students tested the potential of designing as a research method.

The programme had three goals: to engage landscape architects in the large discourse around non-human worlds; to build knowledge through material engagement, or performance; and to merge research and design practices in a hybrid praxis.

Design engagement in a more-than-human world

The first goal, engaging landscape architecture in the discourse on non-human worlds, framed the overall inquiry for the student work, as we sought to forge a way of designing *with* animals rather than *for* animals, which is the current norm in the discipline. Tactically, we used a deep engagement with real animals (Hinchliffe et al, 2005; Johnston, 2008), not one where a pre-existing notion of an animal presages a design project. Rather than prescribing solutions at a distance, the design project and the animal knowledge built each other over time, something that can only happen through fieldwork. Students accustomed to studio work, to mapping and remote site analysis, would need to learn new engagements and new ways of sensing (Hinchliffe et al, 2005).

Philosophically, we sought to shift our way of thinking about animals from one where animals are perceived as 'other', strange to the human experience and vice versa (Berger, 1980; Derrida and Wills, 2002; Ingold, 1994), and perceived as without agency in the creation of the landscape (Low, 2011). Drawing on extensive work in animal geographies (Hinchliffe et al, 2005; Ingold, 1994; Johnston, 2008; Wolch, 2002), students framed their design research as a way to 'journey across the species divide' (Wolch and Emel, 1995, p 632), understanding the co-constructed quality of environments, viewing landscape as an emerging expression of mutualistic relationships, and knowing animals as active and perhaps more-than-equal partners in the ongoing emergence of places.

Normative landscape architecture practice still views animals as clients for whom we design. That design may take such forms as ecologically accurate and stimulating zoo enclosures, habitat restoration and connectivity projects, safe highway crossings or national parks to serve as refuge.

Several designers have explored the idea that their artful projects could provide critical habitat for vulnerable species (Fritz Haeg, Animal Estates, 2008; Jamie Hutchinson, Bee Station, 2011). Many of these projects have serious questions behind them: can design raise awareness of threatened species, increase understanding of the animals' needs and provide habitat for them in hostile environments? Yet many others are speculative works without the backing of an explicit research question or method. Designer Geoff Manaugh (2011) has explored possibilities for 'architectural ecology' research projects: do ornamental details from particular eras attract certain species of birds, and does their guano create unique ecotypes within those buildings? Projecting forward, could buildings be designed to foster the emergence of an ecosystem? Moreover, he has speculated on the use of animals as 'biological 3D printheads', with unbuilt projects guiding bees or silkworms to create objects or enclosures.

These speculations raise questions for material science and product design research about the possibility of material engineering using animals, genetically altered or otherwise (Manaugh and Becker, 2014). Perhaps the most robust current work in this realm is that of Natalie Jeremijenko, who has studied artful monitoring and the notion of cross-species communication in projects such as Bat Billboard (2011) and Amphibious Architecture (2009). Many of her projects provide ways that animals can 'speak' to humans, trying to break beyond Alice's observation in *Through the Looking Glass*:

> It is a very inconvenient habit of kittens … that, whatever you say to them, they *always* purr. 'If they would only purr for "yes", and mew for "no", or any rule of that sort,' she had said, 'so that one could keep up a conversation! But how *can* you talk with a person if they *always* say the same thing?' (Carroll, 1871, p 269)

These works show the power of design speculation to reframe the discourse and the sense of possibility in an emerging inquiry.

Seminar

A multidisciplinary spring seminar prepared students for the summer field school by refining the inquiry and problem of designing for the non-human world. A three-part methodology over the term would be compressed into a much shorter timeframe once we landed in Pennsylvania. Students selected an animal for study, prepared two critical maps about the animal and devised speculative design-based research experiments. The seminar collaborated with scientists, and water resource engineers, terrestrial ecologists, conservation biologists and foresters introduced design students to biological and ecological field research methods and critiqued early iterations of the students' speculations.

Students prepared two critical maps, drawing on the rich literature of the agency of cartography (Corner, 1999; Crampton, 2009; Harley, 1988; Wood and Fels, 2008). Mapping, James Corner reminds us, is a project of 'creating and building the world as much as measuring and describing it' (Corner, 1999, p 213). Maps are simultaneously what is – specifically the physical world – and what is not, namely an ideological ordering of that world. They have power and agency; the author of a map exerts power by constructing our understanding of the world. Critical mapping explicitly engages this power structure, asking students to

critically construe and construct the world. The maps, rather than re-presenting an existing condition, act as a mode of experimentation, of calling a reality into being. If maps are constructions of an ideology (Wood and Fels, 2008), the goal of the seminar was to construct an ideology of equal agency with an animal.

The first critical map detailed the animal's umwelt, what we think we know about its own perception and conception of its world. These maps documented the animal's modes of perception, whether through sight, scent or magnetic orientation; its primary concerns and needs for food, migration, reproduction and shelter; how those concerns play out over the landscape and through time; and how the animal shapes its environment to better suit its needs. The second critical map documented human cultural demands on the animal and how those demands create unintended consequences and conflicts. Damming rivers for hydroelectricity, for example, impacts on the nutrient cycle of Pacific Northwest forests, as salmon returning upstream to spawn and die bring nutrients from the ocean to the headwaters of streams, and predators distribute carcasses, along with nutrients, to the surrounding forests (figure 1). Students used the two maps to identify both their research problems and their design concepts to investigate those problems.

The final project in the seminar was to propose a speculative design based on the critical mapping work. Students were asked to design either a monitoring station or an artwork co-created with the animal. The former option is an exploration of design through researching, where data collection on the environmental actions of an animal is conducted artfully, in a way that is legible to site visitors and could provoke aesthetic, ethical and intellectual engagement. The latter option is research through designing, where the design process is the research method. Because the seminar set no constraints on the animal studied or the topics explored in the final design, the speculations were often unattainable within the constraints of a one-month field school: they were too large, too long-term, too expensive to construct. With reviews from designers, restoration ecologists and conservation biologists, we narrowed the scope of the projects from large spatial scales, or multi-year research projects tracking ecological change, to projects that could yield results in a single month. Based on the viability of the projects, we entered the field school with a narrowed set of concerns and a clarified set of possibilities.
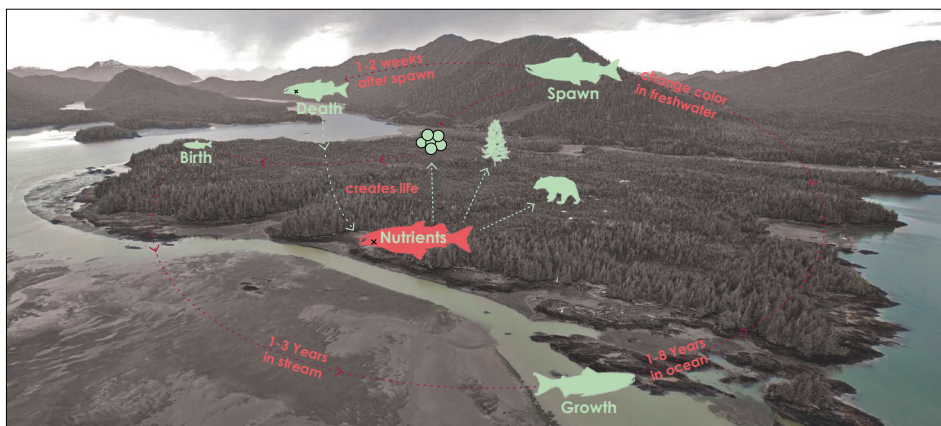

Figure 1: Critical mapping from the seminar showing the migratory movement of salmon. (Image: Margo Barajas.)

Field school

The field school reiterated the mapping and design methods, and added prototyping and installation of built works that investigated questions of either the animal or our relationship with it. Students used critical mapping to understand the animal and our cultural demands on it; design visualisation to posit the research question and method; and prototypes and experimentation to refine and revise the question and method as new information emerged through interactions with the site and animals.

The fieldwork, with its prototypes and installations, was grounded in design and art practice and drew on mixed research methods from dwelling-inspired animal geography (Finnegan, 2002; Ingold, 2000; Johnston, 2008; Lorimer, 2006; Shapiro, 1997; Wylie, 2003). This design-based research was iterative: students prototyped data collection tactics, deployed them, refined their study question and revised the prototype design multiple times over the summer. This process drew on practice theory, especially de Certeau's (2011) recognition that when we seek to understand the world, we cannot passively use an autonomous method, but instead we are active agents, 'unrecognised producers' of the very world we seek to understand. The work was 'improvisatory, situated, and, importantly, embodied' (Waterton, 2003, p 114). Recognising that we build our mental world as improvisations, as situations specific to the moment and participant, the field school intentionally sought to collect embedded and experiential evidence (Bourdieu, 1977; de Certeau, 2011; Hinchliffe et al, 2005).

This inquiry ended with the creation of eight student-designed, site-specific art installations that were co-created over time with the animal as collaborator, and that set a framework for monitoring the animal. The design work was only possible thanks to collaboration with a large group of experts, most notably ecologists and biologists from State University of New York College of Environmental Science and Forestry (SUNY-ESF), under the guidance of Dr James Gibbs. Dr Gibbs has led teams of biology students on bio-blitzes of the field school property, documenting the variety of mammals, birds, fish, insects, amphibians and reptiles on site. The work of his students helped the University of Oregon design students narrow their focus, selecting animals for study that would be plentiful during the summer and would be likely to cooperate with intrusive designers. Dr Gibbs critiqued initial propositions and design prototypes, grounding the speculative work of the students in the tested practices of field biology.

Field school experiments

In the field school, students' research questions, which co-evolved with the prototypes, fell into three categories – study, collaborate and reveal – which correspond to three installation types.

Many students found some aspect of the animal or its behaviour that they wanted to *study* further. These projects drew on the seminar's design installation proposition of artful monitoring of animal activity in the landscape. Here students would ask a research question about the animal, set up a monitoring process and design the experiment – the monitoring process or station, or the results after the fieldwork – as a work of site-specific art that would persist as an aesthetic and revealing element in the landscape.

A second inquiry was to *collaborate* with an animal's environmental alterations to improve ecological structure or function. These projects used the seminar's second proposition of co-creating artworks, in which students either used the actions of the animal as a starting point for their own artistic interpretation or created a framework for the animal's activity, resulting in the animal creating an art object or land art installation over time.

In the third inquiry, students sought to *reveal* significant aspects of the animal or its behaviour through an act of design. Typically they used a hybrid design method, combining co-creation and monitoring.
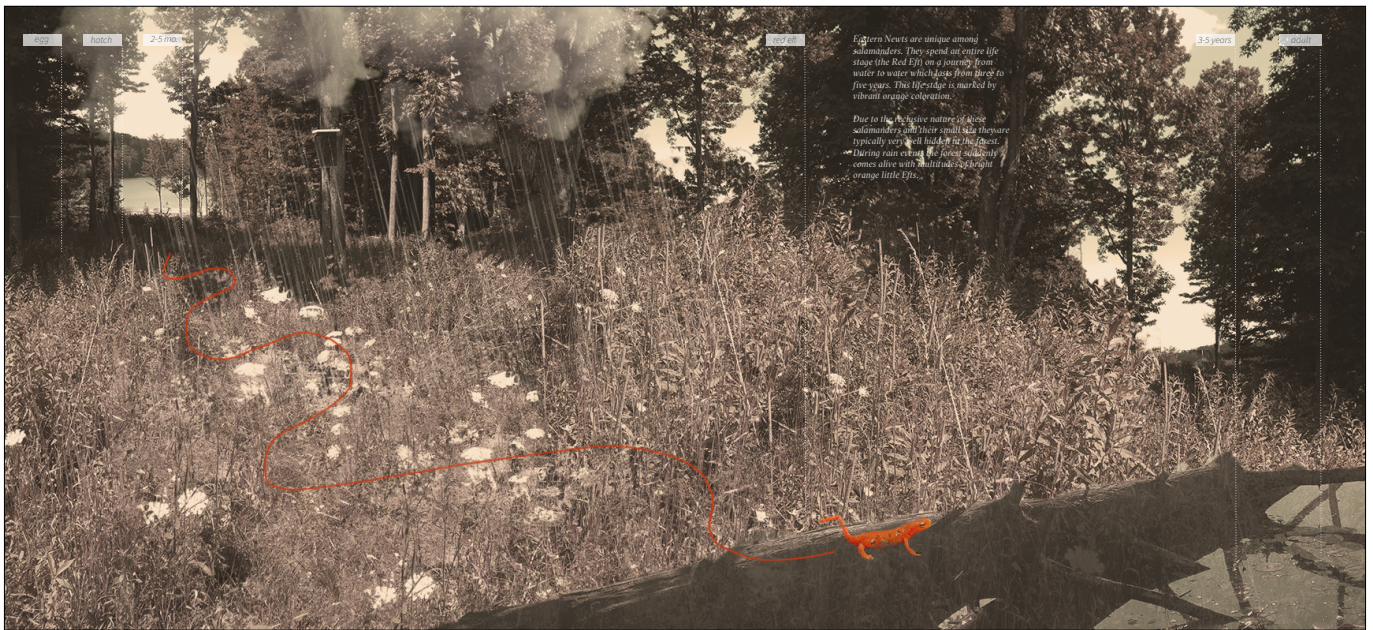
Study: Artful monitoring of animals

The first design tactic was to understand the actions of animals in creating their environments and design monitoring stations. One function of these stations was to track the animal's interventions and alterations of the environment. In addition, they were to form an aesthetic moment in the landscape, engaging visitors with the artwork and creating an opportunity for education, exploration and discourse. Students worked with several local animals, including monitoring deer as they browsed and the impact of an exclosure fence, and creating gardens to draw groundhogs away from the farm fields and monitor their preferred foods throughout the year (figure 2).

In *3 Newts: 180 Minutes*, Justin Kau monitored the movement of red efts, the terrestrial life stage of the eastern newt. During the red eft phase, the middle stage of its transformation from aquatic larva to terrestrial eft to aquatic adult, the salamander undertakes a three- to five-year overland journey from water body to water body. In the terrestrial phase, the salamander is a brilliant red-orange, spotted with ringed, dark-red spots, a warning colour to predators indicating that the salamander is toxic. Using magnetic orientation, the newt moves from one water body to another, in this way dispersing genetic material between communities (figure 3). The salamanders are small, reclusive and rarely seen. Yet when a rainstorm occurs, suddenly the forest comes alive with dozens of bright-orange efts, their colour a striking contrast to the browns and greens of the forest floor. In monitoring their activity, Kau recorded their movement and

Figure 2: Monitoring forest growth inside and outside a deer exclosure fence. (Project: John Maxson. Image: Justin Kau.)

Eastern Newts are unique among salamanders. They spend an entire life stage (the Red Eft) on a journey from water to water that lasts from three to five years. This life stage is marked by vibrant orange coloration.

Due to the exclusive nature of these salamanders and their small size they are typically very well hidden in the forest. During rain events the forest suddenly comes alive with multitudes of bright orange little Efts.

range in the forest, and then marked those locations with orange stone lines to preserve them for future visitors. He sought to develop a way of monitoring the number and range of efts in a given population over a given period, while also creating a landscape installation that would permanently mark the ephemeral presence of the eft.

Tracking the efts was a time-consuming process. Early prototypes for tracking devices included non-toxic, phosphorescent paint powder that the efts would walk through, leaving a trace in the forest visible under black light, and several iterations of spools or vests that would unwind thread as the eft wandered (figure 4). Both proved more difficult than simply watching the animals, who move rather slowly, and marking their paths in the forest with survey flags. Kau was able to observe a dozen efts for the three-hour period, and mark their movement across the forest floor (figure 5). For a typical ecological monitoring project, this would have been the data collection phase, and could be repeated as needed to track several efts over a desired period, or the movement of a generation of efts from one water body to another. As a designer, Kau was interested in revealing the secret life of the forest to later visitors, exposing the presence of animals usually hidden beneath leaves and logs. The small stone walls record the progress of three efts over a three-hour period, and hint at the presence of animals moving over roots and under outcrops, invisible on most days (figure 6).

Collaborate: Co-created artworks

A second design tactic was to understand the environmental actions of an animal and design a way of co-creating artworks with it. In one mode, the artist acts first, creating a framework to guide the animal, and the animal creates along that initial structure in an unpredictable way. In the reverse mode, the animal acts first in its quotidian life and the artist responds to the animal's activity, using it as a framework for artistic creation. Students explored using movable electric fences to guide pigs to clear thoughtfully designed paths, leaving materials such

Figure 3: 3 Newts: 180 Minutes *prototyped a method of monitoring the movement of red efts on their movement from one water body to another. (Image: Jill Stone, based on image by Justin Kau.)*

Figure 4: Early prototypes of vests for newts and spools of threads, to unwind as the animal moves through the forest. (Project: Justin Kau. Image: Author's own.)

as stone or metal around caddis fly larvae to encourage them to incorporate those elements into their shell construction, and building structures to guide spiders as they spun their webs.

These pieces tended to be less about incorporating field research within landscape design and more about using the work of biologists and ecologists to inform the work of landscape architects, and to design installations that use the activity of animals to complete the work. With the short timeframe of the field school, these tended to be small-scale and speculative, prototyping and testing the concept of co-creating with animals. In a longer timeframe, these could themselves be speculative research stations, asking design-based questions. Can we subcontract invasive plant clearing to pigs? Can we subcontract replanting forests to squirrels? How effective are pigs in restoring microtopography for wetland restoration?

In Transition, by Rachel Spencer and Jillian Stone, monitors the shifting maple-ash forest of northeastern Pennsylvania. It co-creates striking forest paintings with the emerald ash borer, while harnessing the power of the eastern grey squirrel into forest reclamation and monitoring their progress over time. Contemporary maple-ash associations in the region are largely successional forests that have grown in since farming operations ceased. The forest at the field school, for example, moved in rapidly to reclaim the land after grazing or haying ended in the mid-twentieth century. More recently, the emerald ash borer has also arrived in the region; the insect bores into the tree to lay its eggs, and the larvae move through the tree, feeding on the inner bark. Eventually, the infestation will girdle the tree, preventing the inner bark from distributing nutrients, and the tree dies. Given that approximately 70 per cent of northeastern Pennsylvania's forests are ash, the region faces a devastating loss, along with an opportunity for a new ecological chapter for the forest (figure 7). *In Transition* looks both backwards and forwards, simultaneously revealing the forest's history and proposing its future. The work co-creates with the ash borer, revealing the trails of the borer beneath
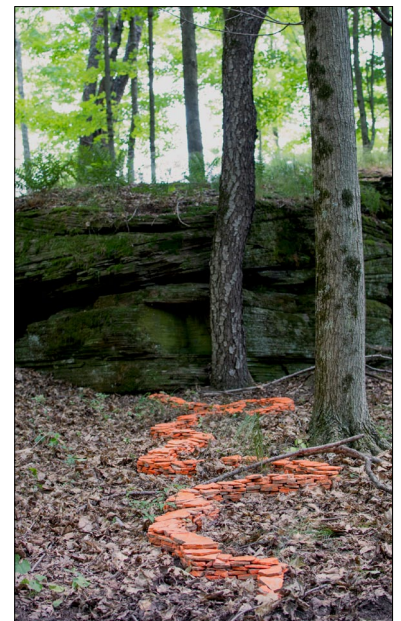
the masking bark and marking the act that killed the tree. Opposite, a squirrel feeder holds seeds of cherries, hickory, basswood and other native trees, with the intent that squirrels will cache the seeds for the winter, planting seeds that can grow, thrive and change the shape of our forests once again (figures 8 and 9).

In a project from a previous year, when the field school was studying forestry as a design practice, Patty Hines' *Preview* studied the potential impact of the ash borer on the forest and marked the future devastation the insect was likely to cause (figure 10). At that time, the borer had not been observed in the ash-dominated forests at Overlook. The arrival of the borer and the consequent death of the ash trees would dramatically alter the landscape, eradicating the ash and opening large swaths of forest to new species of animals and plants. Hines designed a simple black band across the ash trees, arranging it to converge from two vantage points into a linear void across the forest. The black armbands, signs of mourning, marked the high volume of ash in the forest, highlighting the vulnerability of the forest to the borer's assault, and the potential void the insect would create. Three years later, with the arrival of the borer confirmed and the ash trees beginning to die, *In Transition* reveals the process of destruction and projects the next stage of the forest, working with the local fauna to replant a diverse, robust community. Students in the next year's field school will survey the forest around the installation, marking seedlings that have emerged in the area around the dead ash stand. By expanding the temporal frame from a single month to multiple years, we can return to determine the utility of subcontracting squirrels for forest restoration planting.

Reveal: Hybrid experiments

Several projects blurred the line between artful monitoring and co-creating. Students created human-scaled, illuminated kaleidoscopes, drawing nocturnal insects into both an observation station and a performance. A geometric garden drew a friendly groundhog away from the crop fields of the farm, providing an opportunity to observe the animal's eating habits and preferences. An additional opportunity to emerge, as artist Robert Smithson sought, was to work with the entropy of a groundhog's browsing, slowly shifting a highly regular vegetal display into a homogenous pattern over time.

Jamie Willeke was inspired by the impact earthworms have on soil structure and composition. Ingesting, processing and expelling organic materials, they change the nutrient composition of the soil and create space for oxygen and water to travel through the soil. But these processes occur underground and remain largely

Figure 7: In Transition *inserts itself into the continual emergence of the forest, from ruderal plants colonising abandoned farm fields to ash stand die-off, and speculates on a future forest condition. (Project: Rachel Spencer and Jill Stone. Infographic: Jill Stone.)*

Figure 8: In Transition *uses the ash tree to simultaneously look backwards and project forward. One side reveals the traces of the ash borer that killed the tree; the other side holds seeds of the future forest, for distribution by the local squirrel population. (Project: Rachel Spencer and Jill Stone. Image: Justin Kau.)*

invisible to most. In *Earthworks Exposed*, Willeke worked with earthworms to reveal their tunnelling patterns as they travel through the soil. After testing several techniques focused on their actual tunnelling – casting tunnels in plaster and wax, among other media – Willeke turned to the centuries-old technique of cyanotypes and directed the earthworms' movement across glass plates, replicating rather than exposing their underground movement (figures 11 and 12). Like Kau's walls, Willeke's cyanotypes reveal the hidden actions of the animals around us, opening discursive space for designers and viewers of the artworks.

Developing a hybrid praxis of research and design practices

> To think more realistically about the world, we should acknowledge the power of nonhuman agency … But most people, including experts, are so reluctant to recognise nonhuman influence that animal agency is regularly attributed to people. (Low, 2011, pp 122–23)

The student work from the field school tested two ideas: the possibility of collaborating with animals in creating the landscapes we share; and the process of collaborating with biologists and ecologists, integrating scientific field research within an artful, critical practice of landscape architecture and vice versa. The work was intended as a series of prototypes to test both collaborations and to form a foundation for future work. The prototypes and installations reveal two broad realms of lessons for future work: emphasising the impact of hybrid methodologies; and revealing ongoing gaps in landscape architecture discourse related to animal agency and the more-than-human landscape.

Hybrid methods

While the short, one-month duration of the field school limits the possibility of deep research, the methods used provide models for hybrid praxis. The work at the field school highlighted how art and science are never far removed. While collaborating with ecologists and biologists, the landscape architecture students were frequently inspired by the beauty and emotional impact latent in many scientific field methods. As Dr Gibbs showed tactics for monitoring different species of animals, the students rapidly transformed the images into floating islands, hanging gardens or site-specific sculptures, drawn and watercoloured in

their sketchbooks. Images of Dr Gibbs' students completing a three-day bio-blitz at the field school site inspired the landscape architecture students to reimagine the observation and documentation process as performance.

The combination of art practice and field research practice allowed two developments. First, the use of ecological and biological field tactics in design made the practice of design 'strange' to the students, as often occurs when using another discipline's methodology. When our own method is strange to us, we can interrogate our own practice as we interrogate the new practice (Waterton, 2003, p 115). This 'naïve experimentation' can reveal aspects an expert takes for granted and can also provide a fresh perspective on one's own assumptions (Waterton, 2003, p 124).

Second, as the students gradually developed the requisite skills for scientific fieldwork, they also became sensitive to the animals themselves – to their lived experience, their phenomenological world (Hinchliffe et al, 2005; Ingold, 2000). Understanding the lived experience of the animal, even for a brief encounter, enabled the possibility of far richer art practices to be imagined than would have been possible without the hybrid praxis of research through designing.

Conclusion: More than human

As a discipline, landscape architecture is still far from fully integrating animals as collaborators within a landscape design process. Expanding animal agency in landscape architectural research and design has clear value. It is a direction that has been called for at least since Aldo Leopold (1949) described the land ethic as enlarging 'the boundaries of the community to include soils, water, plants and animals, or collectively: the land' and redefined our role in that community 'from
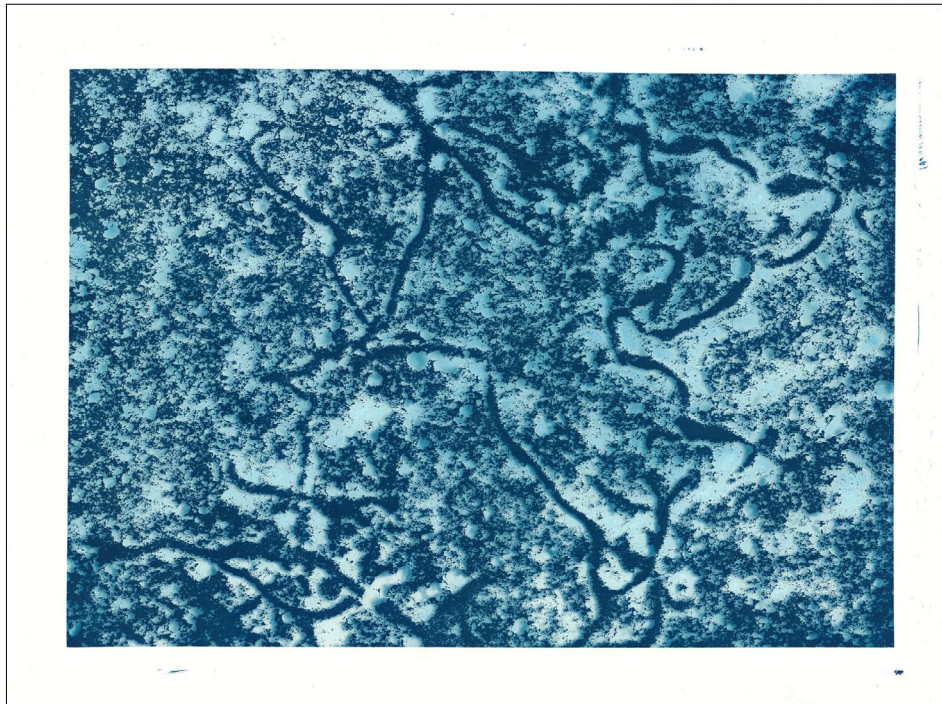
Figure 12: Earthworks Exposed *reveals the tunnelling patterns of worms as they travel through the soil. (Project and image: Jamie Willeke.)*

conqueror of the land-community to plain member and citizen of it' (p 204). By taking non-humans seriously as members of and agents in a co-created landscape, we enable a nuanced understanding of our environment as 'interconnected phenomena, processes, and presence' (Lorimer, 2006, p 506) and as a web of mutualistic relationships on which we depend. This nuanced understanding can enable a more ethical expression of our position in that community, through the works of landscape architecture we design and build, so that the concept of co-design, from its current focus solely on human communities in current theory and practice in the discipline, expands to include co-designing with non-human communities as well (Jones, 2000; Lorimer, 2006; Matless et al, 2005; Wolch et al, 2003).

The student work engaged a way of designing – co-creating with animals – that has a long history in vernacular and agricultural practices, but fewer precedents in landscape architectural design practices. Humans have long worked with other animals, whether accidentally or intentionally; the often-told story that Boston's disorienting street system was not designed but rather overlaid onto cow paths is a humorous example. The projects of the Overlook Field School propose a conscious collaboration with animals and begin to develop another intentional design process and a mode of monitoring its success.

Acknowledgements

(Nelson Byrd Woltz Landscape Architects), James Gibbs (SUNY-ESF), Nathan Reynolds (Biologist, Cowlitz Tribe), Alex Felson (Yale School of Forestry and Environmental Studies and School of Architecture). The field school is supported by the Fuller Center for Productive Landscapes, and Mort and Sue Fuller generously open their property to the University of Oregon and allow us to use the landscape as our classroom and laboratory.

Thanks are due to the anonymous reviewers, whose comments greatly strengthened the ideas and clarity of this essay.

NOTES

1   These four categories are a synthesis of ideas from several presentations at the American Society of Landscape Architects national conference in October, 2017, in which practising landscape architects, scholars and educators in landscape architecture explored the relationship between researching and designing within the discipline. These sessions included 'Endless questions: The heart of research' (C Dehlavi, J Cain, J Long, H Whitlow); 'Making research relevant and applicable: Three models for defining research in practice' (S Jacobs, L Elachi, E Schlickman); and 'The academy's disciplinary contribution: Research, cases, and connections' (B Cantrell, K Hill, E Meyer, T Way).

2   For more information on the Overlook Field School, see its website: http://fuller. uoregon.edu.

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