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HOW TO DESIGN
WITH THE ANIMAL
CONSTRUCTING POSTHUMANIST ENVIROMENTS

by

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HOW TO DESIGN WITH THE ANIMAL
CONSTRUCTING POSTHUMANIST ENVIROMENTS
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ABSTRACT

How to Design with the Animal
Constructing Posthumanist Environments
by
Edward M. Dodington

Working with and designing with other, non-human, biological species is one of the deepest challenges facing architecture today and human development in general. Rather than to preserve, or cater to outside species “How to Design with the Animal” demonstrates that Architecture can actively participate in the life around it. By directing, responding and intervening in the sensorial (audible, olfactory, or haptic) ranges of individual species, architecture and infrastructure can become redefined as animal players in a much larger system. As a sensorial device architecture would become part attractor, part program container and part animal/architecture interface. Animals and ecosystems would then begin to influence the siting and design of individual buildings and they in turn would attract individual species while also being subject to larger migratory, or environmental patterns. And, more than providing a space for program, a new posthumanist architecture could offer the visitor with the experience of participating in a conversation with another animal.
Introduction. Factory Farmed Architecture; We are how we eat.

Part 1. The call...

Part 2. and Response

Introduction
... nature has not been natural, in the sense of pure and untouched by human works, for millennia. More provocatively nature’s malleability offers an “invitation” to the artificial.

-Paul Rabinow, Essays on the Anthropology of Reason
Fig 1. Typical American
subdivision street. Anywhere, USA.

Fig 2. Industry standard
for growing and processing
chicken meat and
eggs. Worldwide.
We build the way we farm. We factory produce our homes and we factory farm our food [Figs 1, 2, 5, 6, 7]. The way we build reflects our relationship to the beings that we farm and consume. We build walls, delineate one species’ space from another’s, give preference to some domesticated species (canine and feline) and reject the majority of others -- we house ourselves in private homes down cul-de-sac and keep to ourselves. Currently the two trends, farming and living, appear to mutually reinforce the other. Might a change in one practice influence a corresponding change in the other?

The combined idea of living well and eating well first appeared in western text in 1826 from the hand of Anthelme Brillat-Savarin who wrote in the *Physiology du Gout, ou Meditations de Gastronomie Transcendante* “Dis-moi ce que tu manges, je te dirai ce que tu es.” [Tell me what you eat and I will tell you what you are]. The phrase was later picked up by Ludwig Andreas Feurbach in 1863 who wrote “*Der Mench ist was er ißt.*” [Man is what he eats]. “You are what you eat” seems to have reached public consciousness in the 1940’s, 50’s and 60’s as the macrobiotic and organic foods movement began to gather popular exposure and, with a the successful arrival of businesses like Wholefoods, and growing numbers of farmers markets in major US cities, remains in the public mind. There’s little doubt that macro-biotic or “free-range” foods improve our health, but what about our living habits?

In 2007 the United States slaughtered 8 billion animals. Currently a mere four companies in the U.S. control the production of 81 percent of U.S. cows, 73 percent of sheep, 57 percent of

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1 http://www.phrases.org.uk/meanings/you%20are%20what%20you%20eat.html
pigs and 50 percent of chickens. 80 million pigs (out of 95 million) are killed each year on factory farms and according to the Worldwatch Institute, 74 percent of the world’s poultry, 43 percent of beef, and 68 percent of eggs are produced in an automated, factory farmed process. In addition to these staggering death figures, the concentrated amount of animal waste generated by factory farming threatens local ecologies and pollutes groundwater, lakes and rivers. However, despite these concerns and the growing movement in alternative foods, factory farming continues to be the dominant method of food production in this country and around the world.

Factory farming provides a clairvoyant view of exactly who we are. It not only reflects the ways we live, but underlines the way we live with others -- our current cultural position in relation to the beings we farm. Factory farming follows a Fordist model; efficient, driven by the bottom line and mechanized. Similarly, our houses are driven by real estate forces and speculative development. They are mechanized, isolated and rapidly reproduced. The relationship between our current method of farming and our current method of living is not merely a simile, and certainly not a chance occurrence, it is also not a Fordist tradition.

The historical link between agriculture and architecture is long and as old as society [fig.3]. Farming is only a viable method of food production for stationary civilizations. As a society

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2 Testimony by Leland Swenson, president of the U.S. National Farmers’ Union, before the House Judiciary Committee, September 12, 2000.

As populations increase civilizations move towards agriculture. Agriculture reinforces a stationary living style and the development of static architecture.

grows it outstrips available herding and foraging resources. The local human population is then left with the choice to relocate (nomads) or to begin to control the food sources around them (agricultural). With every early civilization, animal pens, and human houses arrive at the same time -- agriculture and architecture coincide and have progressed in near lock-step.

The burgeoning field of tissue engineering, a science initially pioneered for the medical industry is finding an audience in factory farming and has the potential to redirect the agriculture/architecture pair. Briefly, tissue engineering operates by seeding living cells harvested from a body into a biopolymer substrate. Over time the cells grow to consume the substrate and create a singular tissue that is the synthesis of both the underlying substrate and the seeded cells4 [fig.4]. Tissue engineering is at once terrible, promising and absolutely requires careful consideration. Tissue engineering offers a potential for reinvention, for redefining our roles vis

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a vis animals and particularly the animals we consume. On the one hand tissue engineering provides a potential source from which to grow and consume meat without the environmental and economic downfalls of factory farming. It also promises victimless meat -- meat without killing a single animal. On the other hand, it is extreme factory farming. Henry ford dreamed of a world where industrial products were made-to-order, where there was no surplus storage and the factory produced only what was immediately needed. Tissue engineering is Ford's dream applied to farming -- meat production without the burdensome problem of animals.

While some might take issue with its claim to victimlessness, tissue engineered meat is clearly not on the scale of the current victimization of animals and regardless of its ethical position, the greatest promise of tissue engineered meat is its unique position to other animals, its semi-living-ness.

The semi-living quality of tissue engineered meat offers a new way of considering what we eat, how we eat, and the way we live among other animals. This task of reinvention, and rein- engagement is, as Derrida and Donna Haraway stress, a question of how to enter into a conversa- tion with the animal⁵. Tissue engineering, by virtue of its conflation of the living and nonliv- ing, starts this dialog. The task then given to us is to extend this conversation into our daily lives. To this end all speciesist distinctions need to be erased. To this end architecture needs

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⁵ "My point is simple: once again we are in a knot of species coshaping one another in layers of reciprocating complexity all the way down. Response and respect are possible only in those knots, with actual animals and people looking back at each other, sticky with all their muddled histories." Haraway, When Species meet, 42. "To have a plural of animals heard in the singular." Derrida, "And say the animal responded," 39

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As tissue engineering demonstrates a controlled relationship between living and non-living material, so can architecture.

to become both active and reactive to animal and environmental actions -- animals need to be considered as design factors and most importantly a dialog between architecture and animals needs to be established.

fig. 4
Bottom: Scaffold tissue engineering diagram.
Top: Extrapolated and expanded argument for PolySpecies park.
We are the way we eat. The following project has been broken in to three small sections: “The Call; theory and engagement,” “and Response; Process,” and “Refrain.” The first section will discuss the ethical and philosophical arguments towards designing with animals and establish a theoretical set of tools to apply to the problem. It will discuss challenges of representation, conception and language and offer a number of techniques taken from different projects which may be broadly applied to the general problem. The second section will then show the application of the techniques outlined in the first section through three projects: The Terroir, Ovimex, and finally PolySpecies Park. Each project had distinct project briefs, sites and programs, and yet each achieved a high level of local ecologicial inclusion, particularly with the animals there-in. These projects not only strive for an extreme form of local specificity but also demonstrate that form has always, and is always more than simply aesthetic and/or functional. It is complex and dynamic. It is also always in a process of forming and being formed by the forces around it.

Perhaps the best way to mis-understand form is to isolate it from context and time (i.e. the Miesian / Corbusian Modernist ideal of timeless beauty and pure-aesthetic, ultimately rooted in Platonic discourses). It is in this spirit that, as Derrida spoke about painting6 I will speak about Architecture — about the frame, about the things around buildings, the weather, the air and the animals.

The work collected here began roughly three years ago with my work in Chris Hight’s studio

and in conjunction with short though frequent conversations with Sanford Kwinter. It reflects my own obsession with a few particular strings of arguments in Architecture as well as what I see as a general frustration with the biomorphic architecture developed mainly in the mid to late 1990’s. The project is also heavily indebted to Cary Wolfe, who’s insights into the posthumanities are nothing short of transformative and to countless conversations with Matthew Wettergreen, my closest friend during this period, and who at the time was finishing his degree in bioengineering at Rice University. His research into the architecture of bone, at both the micro and macro-scale is as influential to my work as anything else.
Part 1. the imperative
The animal, what a word! The animal is a word, it is an appellation that men have instituted, a name they have given themselves the right and the authority to give to another living creature [a l’autre vivant].

Derrida, "The Animal that therefore I am;" 392.
“Chippetty Flip – Flippetty Chip

My only name is the Scroobius Pip.”

-Edward Lear, “The Scroobius Pip”

CITIES ARE LIKE LIVING ORGANISMS. Though it’s hard to pinpoint when this analogy first came into vogue it’s clear that it’s been around for a while; disappearing and reappearing as cultural tastes shift between the techno-focused and socio-focused. Paris, with its ancient ring-road boulevards has appeared to be both organic and inorganic multiple times in its history. New York, the most rigidly gridded city of the 19th century has also seen public opinion sway between the supremely planned machine of urban living and an organic, perpetually expanding and contracting organism. Though it may be easy at first to agree with, it’s always slightly unclear what exactly the “city as organism” means. At times the city appears to act or behave in life-like ways -- eating certain things (produce and imports) and wasting others (garbage) and there is, say in New York and Paris a palpable vibrancy that feels very much like life. But is the city really ever alive? Alan Berger in his essay “Drosscape” uses biological terms such as “nature,” “natural,” “organic” and “living” half a dozen times in the span of two pages while

1 Moshen Mostafavi in his essay in “Landscape Urbanism: A manual for the Machinic Landscape” quotes the 18th century planner Abbe Laugier: Whoever knows how to design a park well will have not difficulty in tracing the plan for the building of a city according to its given area and situation…great order in the details, confusion, uproar, and tumult in the whole. Though probably not the first analogy to landscape or living qualities, this is certainly an early mention of the city as an organism.

2 The city as an entity has had many analogies but seems to regularly fluctuate between the machinic and organic. For example Sigfried Giedion, writing in the 50’s and 60’s espoused and supported the kind of logical rationalism of urban planning which Ian McHarg, seeing it as more of a biological model, reviled against in the 70’s. Charles Waldheim, in a lecture a lecture at Rice University speculated that the fluctuation between machinic was due to larger social patterns and may even be tied to periods of boom and bust or even more directly to relative periods of war and peace.
describing the state of the American city\(^3\). Berger's goal however is not to suggest that the city is in fact a literally living organism but operates similarly to an organism.

Cities are not static objects, but active arenas marked by continuous energy flow and transformation of which landscape and building and other hard parts are not permanent structure but transitional manifestations. Like a biological organism the urbanized landscape is an open system\(^4\).

The strength of Berger's essay is his ability to see beyond poetic and literal analogies of organismism. His weakness is that he never questions what constitutes an organism in the first place. It's a tight line to walk. Cities in their unfathomable complexity, have certain apparently organic qualities, yet it's difficult to consider them as living. But what if we were to think of a city, of a landscape, or the whole messy conflagration of land, buildings, roads and pasture, as a living organism. More over, what would happen if we included all of the things that actually live in the city into our civic-organism; the people, animals, insects and ecological systems? Such a perspective would force upon us a new conception of a city. Such a perspective might help us to become better planners, thinkers and actors in our new landscapes.

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\(^3\) Berger, 200-203 in the Landscape Urbanism Reader, Waldheim ed.
\(^4\) Berger, 203.
OF ANIMALS AND MONSTERS

Between his birth in 1812 and death in 1888 writer/poet Edward Lear produced an astounding array of limericks and poems marketed mostly towards children, though many have a more than slightly off color content. By in large most of the works fall squarely into a category best described as nonsense. The poems are filled with lobster coiffed men, women who play the harp with their chins, and trees that grow silverware. Gibberish and fictitious characters abound in Edward Lear’s world of non-sense. His most famous poem and my personal favorite is the Scroobius Pip.

The Scroobius Pip is a poem in four stanzas about a particularly peculiar animal. The pip, presumably the only one of its kind is a strange beast indeed. For those unfortunate to not have previously encountered the pip, he (if we can say “he”) is made/composed/embodied by some part of every species of biotic life, and the poem relates the tale of enquiry by other beasts as to what exactly constitutes this strange creature.

Tell us about yourself we pray!  
For as yet we can’t make out in the least  
If you’re Fish or Insect, or Bird or Beast.  

With each stanza the animal kingdom sends a new member to speak with the Pip; first the fox, then the owl, followed by the whale, then finally the ant. Each creature implores the Pip to divulge his native species in vain. Each time the pip responds in a variation of the same retort, “Chippety Flip- Flittetty Chip, My only name is the Scroobius pip.” Whether it’s from stubborn

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pride, or for purely antagonistic reasons, the pip refuses to answer—and this further begs the question — can he?

In Derrida’s “The animal that therefore I am” the incommunicability of the animal; of the question of what it means to respond is the topic of much rumination.

To follow and to be after will not only be the question and the question of what we call the animal. We shall discover further along the question of the question, that which begins by wondering what to respond means, and whether an animal (but which one?) ever replies in its own name.

In the opening section of the essay (actually a transcription from the beginnings of a 10 hour address at the third Cerisy-la-salle conference in 1997) Derrida reflects on the event of being caught naked in front of his cat, and his bewilderment at his own sense of shame in front of it. In this essay, much like in Lear’s poem of the Scroobius Pip, Derrida is confronted with an animal; a being that is in some respects similar, warm blooded, alive, familiar, and yet completely and utterly outside of understanding; to put in Derrida’s terms “wholly other.”

Seeing oneself seen naked under the gaze that is

6 Derrida, “The animal that therefore I am;” 397.
As Derrida will further expound upon in the essay this gaze that is at once bottomless and abyssal is an index of the gap between what defines humans as something other than animal and will eventually become an index of a fiction; it is a fiction that we humans tell ourselves to confirm our separation from the rest of the animal kingdom. This fiction for Derrida is manifest in the literal term “animal.”

The animal, what a word! The animal is a word, it is an appellation that men have instituted, a name they have given themselves the right and the authority to give to another living creature [a l’autre vivant].

The fiction of the animal, Derrida would have us believe, is the oversimplification of the word; the complexities and fathomless differences of an (indefinite article) animal that it denies. There is more to this quote but we shall return to it in a moment. For now it is entertaining to think that the representatives of the animal kingdom in Lear’s poem felt something similar. Though if not necessarily shame, they were all naked after all, the representatives may at least have felt a sense bewilderment at this strange thing in their midst.

One of the issues raised by Lear in the Scroobius pip that is never addressed is why the animals would feel so compelled to discover his definitive species of origin. Is it for possessive reasons? That one species would like to lay claim over the other? Or is it just sheer curiosity. Of course if we take it too far we are forced to ask whether an ant, whale, fox or owl, would ever be

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7 Derrida, “The Animal that therefore I am;” 383.
8 Derrida, “The Animal that therefore I am;” 392.
curious in the sense that humans are curious, or would understand property, but really this is beside the point. What is similar between the two stories, the inquisition of the Scroobius Pip and Derrida's anxiety in front of his cat, is that both the Pip and the Cat remain mute. The cat continues to stare blankly, abyssally at Derrida and the Pip confounds all requests with the same arrogant retort. Language, and indeed response, or more precisely the failure of language, is the central theme in both stories and each involves at least one character that is "wholly other." Additionally, each story contains monsters.

Monster, like the animal, is yet another category that features prominently of Derrida's Geshlect 2. The term "monster" is for Derrida a "polysemic word" and not only represents familiar fairy tale creatures but references of course the socially and biologically abdominal along with the lesser considered French root of Montrer.

why monster? Not in order to make the thing pathetic, or because we are always near some monstrous Unheimlichkeit when we are prowling around the nationalist thing and the thing named Geshlecht. What is un monster? You know the polysemic gamut of this word. The uses one can make of it, for example concerning norms and forms, species and genus / gender: thus concerning geshlecht. I shall begin by privileging here another course [direction]. It goes in the direction, the sens, of a less known sense, since in French la monstre (a changing of gender sex, or

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9 Derrida, "Geshlect II"
geschlecht) has the poetico-musical sense of a diagram that slows [montre] in a piece of music the number of versus and the number of syllables assigned to the poet. Monster is montrer (to show or demonstrate), and une monstre is montre (a watch). I am already settled in the untranslatable idiom of my language, for I certainly intend to speak to you about translation. La Monstre, then prescribes the divisions of a line or verse for a melody. Le Monstre is what shows in order to warn or put on guard. In the past la monstre, in French was written la monstre. 10

Monster for Derrida is always at once referencing what he calls the geshlecht, (it’s futile to describe geshlecht here in any detail, but generally geshlecht is a sense of power-structures in a given time) but Derrida is also showing here that monsters and Monstrosity are closely linked to de-monstr-ate. Obviously the follow up question would be “What specifically does a Monster monstrate?” And while we might come back around to geshlecht, and the power structures of gender, race, nationality and politics already mentioned, there is more here related to the previous discussion of l’animal.

Monsters need very little definition. We all seem to know what constitutes a monster. In one sense they are the hideous and grotesque figures of childhood fairy tales. In another sense they are the socially unacceptable perpetrators of cultural abominations (rapists, serial killers and the like). What remains constant through these definitions however is that a monster is somehow unassimilable to the mass. Always on the outside, always misunderstood, and always “wholly other.” They are also, and we will need to be both vague and specific here, visible amalgamations of multiple organism. This is precisely why they remain other. Centaurs, Dragons, ogres, and Frankenstein are monstrous mainly because they are composites of man,

Derrida “Geshlect II;” 167.
and animal. Rapists, mass murderers and other socially and one might say, real-life monsters are also perversions of humanity, somehow more animalistic. Importantly they remain un-classifiable; neither human nor animal and as such lay bare the fiction of I’animal.

Though it was perhaps never intended as such, Lear’s Scroobius Pip is just such a monster. Composed of parts of other species in a frankensteinian manner, radically different from his other animal kin, he is objectified and scrutinized. The pip, though he may not be violent or all that distasteful is on the outside of his social (animal sociality?) circle. Derrida’s apparently unmonstrous cat is just as frankensteinian and just as monstrous.

Donna Haraway in her work When Species Meet is quite clear about the fact that any one living thing is a gross amalgamation of multiple other living beings.

I love the fact that human genomes can be found in only about 10 percent of all the cells that occupy the mundane space I call my body; the other 90 percent of the cells are filled with the genomes of bacteria, fungi, protists and such. Some of which play in a symphony necessary to my being alive at all, and some of which are hitching a ride and doing the rest of me, of us, no harm. I am vastly outnumbered by my tiny companions; better put, I become an adult human being in company with these tiny messmates [my italics]11.

11 Haraway; 4.
Derrida’s cat likewise is composed of a similarly disproportionate array of bacteria, protists and other “messmates.” Thus in fact, both stories, Derrida’s tale of shame in front of his feline friend and the pip’s grilling by his animal friends are in fact stories of monsters standing in the face of other monsters. Even Derrida himself, is a composite of multiple beings! So why are some monsters more locative than others? Why is it an issue? And more to the point what can any of us monsters say or show to one another? How do we respond? Certainly there seems to be a degree of scale at work here. The pip is visibly monstrous while the cat is not. But is monstrosity scalable? Derrida struggled with a monster that appeared to be a singular whole. The animal kingdom was befuddled by an apparent Frankenstein, and is there really any difference between the two? We now might find ourselves in an uncontrolled free-fall of animals within animals and nothing but monsters surrounding us. What to do? And this is precisely the point. I’d like to even further enlarge the definition of monster here to include not only independent multiplicities of animals but biological systems in general; to introduce perhaps the largest monster yet into the mix; the monstrosity of what we currently call Landscape. Only by seeing landscape as monstrous can we simultaneously access it’s wild, radical otherness and it’s demonstrability.

MONSTROUS LANDSCAPES

“Landscape” is, again like the terms “monster” and “animal” that we have seen previously, a word that dramatically oversimplifies an unimaginably complex system. When one typically
thinks of Landscape, more than likely we all, form a fairly predicable mental description. To be frank, we are usually talking about images of the horizontal surface upon which we walk. Landscape Architects and designers, make it their mission to “order”, “improve” and otherwise control this plane. They employ tools such as earth-moving, paving, and strategic planting towards the end of creating marketable environments and spaces for human enjoyment. This often means that the landscape is stripped of many otherwise integral characteristics. Bugs, fungus, bacteria, and microscopic organisms, though never completely removed are unwanted if not severely curtailed, not to mention the very typical and important processes of decay and death. These practices demonstrate a narrowing of the complexities of landscape to fit an already prescribed image of what landscape should be. This amounts to an analogous kind of speciesism that Derrida, Haraway and others have rallied against in their collective published works against “the Animal” and “the Other.” Just as Derrida and Haraway argue for a posthumanist philosophy of animality I would ask now “how do we achieve a posthumanity in our built (and unbuilt) environments?” How do we, now understanding the complexities of our condition with our companion species, live?

It has only been within the last decade and certainly within the last
generation of designers that the complexity of life in a given landscape have begun to receive
due credit. The emerging discipline of Landscape Urbanism, pioneered by Charles Waldheim,
James Corner and a small group of predomately architects and urban planners, is developing
a significant body of discourse and experimental projects driven towards a new understanding
of what a post-humanist environment might mean. Collectively they are developing the most
current definition of landscape and urbanism and consequently new methods to avoid the
fictions we found in "Animal." Just as a posthumanist, or non-humanist definition of “animal”
demands an expanded philosophical and moral attitude towards our myriad messmates a
theory or ethic towards Landscape and Urbanism requires a redefinition; something close to
what James Corner has so aptly termed Terra Fluxus.

In conceptualizing a more organic, fluid urbanism, ecology itself becomes an
extremely useful lens through which to analyze and project alternative urban futures…thus, dynamic relationships and agencies of process become high-
lighted in ecological thinking, accounting for a particular spatial form as merely
provisional state of matter, on its way to becoming something else.”

And further: “This work must necessarily view the entire metropolis as a living
arena of processes and exchanges over time, allowing new forces and relation-
ships to prepare the ground for new activities and patterns of occupancy. The
designation Terra Firma (firm, not changing; fixed and definite) gives way in
favor of the shifting processes coursing through and across the urban field:
terra fluxus.12

The static plane of sod, turf and choice ecologies has been replaced by an ever shifting flow
of energies across a biased plane. Clearly this is not the landscape of “the animal” (note the
definitive article) but of animals in the most plural sense. Similarly the city has changed as

12 Corner, “Terra Fluxus” in The Landscape Urbanism Reader” 29, 30.
well. The definition has moved from the living organism of Berger’s essay to the living arena of processes. Corner’s city is not a singular animal, even if it is composed of many different entities. It is a constantly changing milieu.

Christopher Hight in his essay “Portraying the Urban Landscape: Landscape in Architectural Criticism and Theory, 1960-Present” takes a slightly different approach. In this essay he suggests an even more dispersed image of the landscape than Corner and stresses the violent potential of landscape to undermine the history of Architectural production.

…the horizontal landscape is the mode of all of their processes of anti-oedipalization: the “body without organs”, the becoming animal’, the becoming rhizome, nomadology, the war machine.¹³

However, though pregnant with post-humanist or anti-humanist potential, Hight reminds us that Landscape Urbanism does not offer a clear formal response to the problematic anthropomorphism of architecture. Landscape Urbanism is not so much applicable as a design strategy or particularly useful in looking at the landscape itself but instead offers a “design ethic.”

¹³ Hight, LUAA, 30.
In this way, Landscape Urbanism offers, to use an unfashionable and misunderstood term, a design ethic. By this I do not mean a moral code, a legal standard or a ‘green’ mantra. Instead I refer to ethos: a way of doing and a mentality which privileges certain values, norms, assumptions and methods, and which treats particular problems in particular ways.\footnote{14 Hight, LUAA, 23.}

This ethic requires a "design ethos" to which Hight turns to the Foucaultian theory of the disassembled self and Deleuze and Guattari’s body without organs. For Hight, both the disassembled body and the body without organs reflect a "freeing, distancing or more precisely, [a] disassembling of the essentialist humanist subject."\footnote{15 Hight, LUAA, 24.} Landscape Urbanism, as Hight is careful to make clear, does not attempt to show us how to interact with what we call landscape or urbanism but...

...disassembles the identity of the architect and the urbanist and opens their fields of knowledge to ‘other’ potentials. Landscape urbanism, if it is to be anything must be understood as an attempt ‘to constitute a kind of ethics [as] an aesthetics of existence’.\footnote{16 Hight, LUAA quoting Michael Foucault in “On Genealogy and Ethics”, 24.}

It would appear that, like two positively charged magnets, the forced combination of the polar terms "Landscape" and "Urbanism" has resulted in a kind of dramatic othering of both, and an attempt to reconceptualize each. The ethics of landscape, as Hight would have us believe, is localized around a dispersed body, and with that we can now see a given ecosystem as analogous to Haraway’s symphony of companion species. Let me remind you of Haraway’s
companions:

Organisms are ecosystems of genomes, consortia, communities, partly digested dinners, mortal boundary formations. Even toy dogs and fat old ladies on city streets are such boundary formations; studying them 'ecologically' would show it.17

Isn't it odd that Haraway talks of studying bodies ecologically while Hight and other landscape urbanists look at ecology as if it were bodies? Under such terms it becomes difficult to see a difference between a body and an ecosystem. But while Haraway and Derrida can point to the physical, actual others that commingle in our bodies (bacteria, protists and cats respectively) what are Hight's bodies, or fragments of the previous body? Judging from the works of current Landscape Urbanists they are the visible and invisible systems that operate in and around landscape. They are not the living organisms, but their independent and combined processes of existence. As such it becomes difficult to guess what Haraway would suggest if one were to be, to use her words "polite" and "respectful" of our poly-species companions if in fact they are not so much living entities but systems and flows of energy18. It becomes even more complex when one recognizes oneself as part of the system at hand, thus to be

17 Haraway, "When Species Meet," 31.
18 Haraway, 1.
“polite” would be being polite to oneself. And if we take this leap, what are there rules of engagement?

At the end of the first chapter of “When Species Meet” Donna Haraway offers little practical guidance for living a more polite life.

Once again we are in a knot of species co-shaping one another in layers of reciprocating complexity all the way down. Response and respect are possible only in those knots, with actual animals and people looking back at each other, sticky with all their muddled histories…It is a question of learning to be ‘polite’ in responsible relation to always asymmetrical living and dying, and nurturing and killing. And so I end with the alpine tourist brochure’s severe injunction to the hiker to “be on your best countryside behavior”.

And it is here that the Landscape Urbanist should step in and say “Wait! There are physical ways to be more polite.” Just as there are table manners, and social guides of decorum there are, should or can be, ways of formally interacting with this thing called landscape that would ensure mutual responsibility. Ultimately this is where Landscape Urbanism needs to be. Hight stressed that the landscape urbanism ethic does not include a moral imperative and I say, why not? If landscape is indeed composed of these multiple and complex ecologies why not respect them and give them the responsibility they deserve? As Derrida would say “to have the plural of animals heard in the singular.” But how? Surely you can’t hear the plurality if you don’t know how to listen. And you cannot be polite if you don’t know the customs. How does one enter into the social constraints of the landscape, of ecology? More frighteningly, are we ever

19 Haraway, 42.
not already seated at the table?

I bring us back to the animal and the monster, and what we had previously determined were actually two monsters. What does a monster de-monstrate? How does one “other” see or understand what is being shown by another other? Only then, once we have heard, can we ask how to respond.

REPRESENTING TERRA FLUXUS

Collected Methods of Response

Just as Derrida illuminates the significant difference between the definite (the) and indefinite (an or a) particles when preced-ing “animal” the methods through which one speaks and depicts landscape can become a significant issue for landscape urbanism. Terra Fluxus, the constantly moving and morphing plane of intensi-ties, proves to be a very difficult entity to hear and respond to, or I should say represent with current architectural tools. The challenge is to show time sensitive relationships within the environment that, by depicting them does not limit their individual sets of unique characteristics. The catch appears to be to represent according to the

I've always been impressed with Corner's tree diagram of stepped species in his proposal for the Downsview park competition. Rather than representing the park in a final stage of growth and development, Corner shows how an ecology of species might grow over the course of several years to inhabit the park. Much like the way a food-web diagram shows earlier and more primary species (grasses, insects and fungus) on the left side and the more mature and tertiary species of life (Foxes, Owls and Eagles) on the right. The strength of a such a diagram rests on a depiction of temporal relationships. It also rests on a certain degree of malleability. Though not shown, it would not be hard to imagine separate and distinct outcomes to the park if one of the species on the map never showed up. Similar to the flexibility found in the species diagram are Corner's synoptic site plans of the park. Instead of one finalized plan we get a series of suggested stages of development in the park. It is understood through these drawings that different species will grow and mature at different rates from others and that the park as a whole will move through time.

In general though, what is potentially lacking in these two sets of drawings is that they remain relatively isolated from each other. While it is suggested in the layout of the presentation, that the biological life forms move in tandem with the ecological forms, the mutual impacts of each upon each other is left unexplored. A large population of bacteria and insects would have quite a different physical impact on the landscape than a comparably disproportionate population of owls or foxes. So where does this second set of relationships lie? Though Corner has made huge steps in depicting the strategic use of plants and animals over time the inter-
relationships between the two is really where I believe Derrida and Haraway would like for us to focus. Because, again and again, (and I need to keep reminding myself as well), we are not talking about a series of entities moving on a smooth or non-biased plane. We are talking about a thick web of players and inter-connections. The challenge is to attempt to keep all of the players in mind and moving simultaneously in Donna Haraway’s poly-species symphony.

WEBS, ZONES AND PATTERNS

As Hight has been correct to point out, methods of representing the characteristics of impermanence, movability and multiplicity, becomes the primary challenge of landscape urbanists22. Towards this end practitioners in these fields have adopted non-heirarchical strategies of webs, zones and patterning.

Webs and zones, though popular in architectural discourse for the last decade appear to be rather difficult to actually design. Of course we’re not speaking of literal webs, but the webs of connections and inter-relations that would be more akin to Corner’s stepped ecological designs. Moreover webs and zones appear to be diagramming techniques more than anything else. They are tools used in the early planning stages of a projects design process and are then

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22 Hight, LUAA, 31. “Through landscape, architecture attempts to transform its body-model and its status as a model, to deterritorialize its own representation and self-image into a landscape upon which new intensities might be unfolded and desires discovered. Architecture and urbanism would then not simply fashion landscape like plans or play formalist homage to ‘bodies without organs’ but begin to operate and intervene according to a transversal mode. Moreover, if mechanical reproduction and graphic concepts were central to the advent of transversal paintings, the use of digital visualization and information technology in landscape urbanism should be understood as similar transversal operations in design, ones that may perhaps no longer be limited to these two axes, and instead suggest as yet untheorized - that is to say, yet to be pictured - modes of operation.”
erased or substituted for built structure. In the best projects they appear not as built zones or literal webs but are residual in the built plan, at best suggested by a particular density of activity or material, that is moving from graphic zones to thickened haptic experiences.

Patterning is a heavily discussed topic of in Landscape Urbanism and seems to have a great deal of potential. Firstly, patterning appears to be at least partially motivated by the sheer size of urban interventions and a simultaneous distaste for previously held Modernist conceptions of landscape and urban design. Rather than appear to repeat the mistakes of the past, which preferred grand strokes through a city or landscape, current trends tend to focus on designs that can operate at a variety of scales. This, can at times take on a fractal, or infinitely scalable quality, and indeed there’s a lot to be said about scalar design and patterns.

However successful as design strategies, the largest benefit of patterning appears as a method through which we can hope to glimpse ecological de-mons-tr-a-tions. It is important to keep in mind here that I’m not talking about bio-mimesis, or bio-morphism. Though these might be eventual formal endpoints, the emphasis must be placed on process and a kind of ecological functionality or presentation, and not formalism. Because bees and pollen tend to flow according to thermodynamic patterns, they do not preclude a curvy formal vocabulary. The most powerful aspect of patterning however, is an ability to begin to see commonalities across species and ecological systems that might indicate points, zones, or intersections of interest; and these areas would then become points of intervention. By examining patterns at a variety of scales we can begin to see potentials for the cross species co-shaping which Donna Haraway had mentioned earlier and can start to listen to our other partners in design; Our Mess-Mate-
Co-Designers\textsuperscript{23}.

MESS-MATE-CO-DESIGNERS

"To be one is always to become with many."\textsuperscript{24}

If we are always already many why is it apparently so difficult to be polite to our companion species? Inversely, how could we not always be polite if we, as we just said, are always becoming with a host of others? Is Donna simply suggesting an awareness of our multiple selves? Would that simple awareness lead to better and fuller trans-species lives? Surely it's a step in the right direction. But just as a room-mates or spouses share ways of living and over time develop confused patterns of mutual influence, and as Haraway has also shown, companion species such as dogs can have similar co-shaping effects on human companions, what would it mean to share ways of living with many other species?

Landscape Urbanism has done a great deal to redefine how a metropolis and landscape function. What it however has not fully addressed is how we, as living-multiples, live in these new environments, particularly at the smaller scale of architecture. It's not hard to see that Architecture and co-shaping are somewhat at odds. One has a history of permanence, fixity, and

\textsuperscript{23} Though Donna Haraway never specifically talks about engaging multiple species in a design sense she does speak of cross-species-engagements to focus on "livable other worlds" (autres-mondialisations). It is just this kind of co-species engagement that I am trying to elicit. "The kinds of relating that these introductions perform entangle a motley crowd of differentially situated species, including landscapes, animals, plants microorganisms, people and technologies (When Species Meet 41)."

\textsuperscript{24} Haraway, "When Species Meet," 4.
delineation; the other mutual influence, temporality, and chaotic development. If Landscape Urbanism is to fulfill its promise we must begin to include human structures into the equation. What are the new poly-species living environments -- humans included? Architecture, urban developments and patterns of human urban organization will have to be redefined. Architecture will have to become softer. Our human patterns of organization and interaction will have to be aware of the patterns and organizations of other species. Change and temporality will come to the forefront of design. Most importantly design will become more and more responsive and responsible. This is not simply in the ecological sense of responsible design. This is polite. It is Christopher Hight’s design ethos with a moral supplement. Through reading patterns and softening our boundaries we will begin to hear and then perhaps, we can begin to respond.
Part 2. How to Respond
“Tell us about yourself we pray!
For as yet we can’t make out in the least
If you’re fish or insect, or bird or beast.”
HOW TO RESPOND TO AN OTHER. This other can be an other person, a companion species, or a local ecosystem. Regardless, the same challenges exist. As we've seen in the previous section, the ability to adequately hear the other side of the conversation is one half of the challenge. The second half is then to speak back. The following three projects will build a case towards a common multi-species language. This is not a universalizing language but something more akin to a body language. Despite all of our individual and species specific traits it is possible to understand certain global factors that can be at least commonly accepted to have some significance across animal types.

Temple Grandin is a prominent researcher in the field of animal psychology, ethology and behavior and has completed several designs for ranching and animal processing facilities. She is one of few professionals actively working to design spaces with the well-being of animals in mind -- and she is not an architect. Temple's expertise lies mainly in animal psychology and her spaces are designed to help soothe an otherwise anxious animal on the way to processing. Her designs address an animal's field of vision and physical position relative to other animals, along with peripheral objects that may excite them. The designs are often highly curvilinear to minimize peripheral vision and convey a sense to the herding livestock that they are in fact returning home and not to the slaughter.

Animal Ethologists talk in general about internal and external factors of influence. The list of factors of influence for any animals or species can be actually if not practically infinite, especially if we account for the fact that any individual’s sensitivity to a given influence may change over time. The object is not to attempt to show how one variable can be constrained to
produce effects in a given ecological or biological entity but rather how over-arching strategies and a general sensibility towards ecology can be developed and used for design methods. Three projects will show how this sensibility might be constructed through **hyper site specificity**, closing **waste and feed-back loops** and engaging an **architecture of attraction**.

Top: Basic ethological diagram showing internal and external governing forces for any given animal.

Bot: J. Von Uekull’s inner world diagram illustrates a feed-back loop within each animal for processing both internal and external inputs.
HYPER SITE SPECIFICITY AND STRATEGIC ACCUMULATION.

THE TERROIR:
The first object of the Terrior was to define and understand the extreme local context of the project; and secondly to enter into that context as seamlessly as possible. Soil quality, wind patterns, average rain-fall and the local ecological players we mapped and studied. All became among the list of factors that can be employed to generate a responsible (by responsible read response-able, as in “able to respond”) project.

The Terroir is at once a soil harvesting oyster reef, replenishing Galveston’s depleted shores, and an experimental co-species habitat, providing housing solutions to a diverse ecosystem of oysters, birds, fish, and humans.

The Terrior is sited on Galveston Island off the coast of Texas in the gulf of Mexico. Due to the extreme vulnerability to natural disaster (hurricanes Rita and Ike, to name two recent storms) traditional methods of construction and development are unsuited for Galveston. The brief of the project lies squarely on the reality that Galveston is the most under-valued coastal property in the country and also home to some of the most devastating natural disasters in recent history. Moreover Galveston has been slowly washing away for thousands of years. A more-permanent development solution is needed, but clearly permanence in terms of thicker walls or stouter concrete is not the solution.

A logic of flexible development on Galveston offers a potential solution. Flexibility requires
overlaid maps of prominent oyster populations and salinity levels in Galveston Bay for the month of August.

overlaid maps of prominent oyster populations and salinity levels in Galveston Bay for the month of May.
firstly an understanding of the challenges involved followed by an understanding of how to use those same systems to an advantage. Rather than to build a defensive scenario for our development we’ve chosen to develop an aggressively offensive project, already constructed in a flood zone and already in a state of what might appear to be entropic disarray.

The Terroir proposes to utilize a local population of oysters to not only act as a buffer against storm surges but also to help the island grow. It is planned to capture daily tidal sediment along with debris washed ashore by the force of a storm, or flood surge. By collecting sediment the Terroir not only accumulates more developable land onto Galveston Island, but helps to form wetlands, thereby jump-starting new communities of already local species, and creating an elastic and flexible storm surge barrier. Over time and along with a densifying oyster population, sediment will collect within specific zones, thickening Galveston’s coastline, and providing more homes for local life, human or non-human.

Most importantly the scope and scale of the Terroir is suitable for explorations in biological design, as opposed to bio-morphic, or mimetic. It demonstrates the difference between bio-looking design and bio-behaving design. Founded on a logic of the most simple aggregation the Terroir demonstrates that some architectural techniques are not species specific. Simply aggregating elements into usable structures (in this case via wave action) is a suitable solution for habitation. The Terrior is simply the structural skeleton. A skeleton is laid against a flow pattern and material is allowed to accumulate. This is a pattern followed not only by oysters, but many other animals and while the Terroir may not look much like your typical oyster reef it has processional similarities to reefs, ant hills, bird nests and other communal habitats.
Horizontal sections of the terroir's reef substructure. Sections cut at -20', -15', and -5' below sea level.
Modeled soil accumulation patterns 10 and 20 years after construction.
Exploded axo showing the different scales of self-similar trusses used to compose the terroir.
Flow studies of sediment collection along the Terroir.

Opposite page:
Collected renderings of the human experience of the terroir.
Top: inside the reef
Mid: human habitats
Bot: human habitation detail.
WASTE, LOOPS AND FEEDBACK.

OVIMEX BIOPOLYMER PRODUCTION

Waste need not be wasted. One being’s waste is another’s treasure. Something or someone can use someone or something else’s waste. Closing waste loops and making the most effective use of all material at hand is a pinnacle strategy for any animal. Therefore closing waste loops and productively partnering up with those other animals, agents or institutions that can make gold out of garbage is an extremely viable strategy. Each of the players involved at each step of the loop however also has particular patterns, spacial needs and constraints associated with them. These patterns can be effected, amplified or diminished to not only effect performance but to engage design decisions.

Brief: Since the near-total collapse of the American car market in 2010, Metalsa, once a major producer of American auto body chassis, has been forced to re-invent their economic model. Enter OVIMEX, the World’s leader in “Free-Range” Biopolymer production. By implementing a fluid and adaptable site strategy, OVIMEX has been able to demonstrate competitive biopolymer production while helping Metalsa to remediate their site.

Process: Phytoremediateing crops of corn are planted to purify a brownfield site and harvested for biopolymer production. A secondary crop of alfalfa is planted on the site for crop rotation (alfalfa fixes nitrogen) and is an ideal food source for a local population of roaming fertilizing goats.
Ovimex rendering and process diagram.
Goats

As the goats get older than can be sold off site to be processed, as free-range meat.

Botanical

Phytoextraction (not safe to eat)

Com

Rhizodegradation (safe to eat)

Alfalfa

Corn is one of the most common plants used for the production of bio-polymer. The corn is broken down into starch, amino acids, and peptides, which are then chemically altered to create stiff, plastic-like products.

The alfalfa is primarily used to feed the goats and to keep them fertilizing the corn and general surrounding soil. But, whatever alfalfa is not used can also, like the corn, be converted into bio-polymer.
Steel Production

Basic Oxygen Furnace, Steelmaking.

+ 

Metalsa

Biopolymers

Composting

Ecology

Industry

Bio waste

Bio Chem

Recycled product

Biopolymers can be returned from the market

Thermo-forming and extrusion
Packaging Material
Fabrics

points

Industry creates two types of products: the ones we like and the ones we don’t. The waste they produce, the "waste" products, is really just a time-sensitive waste. It’s not waste because we can’t use it now. Nothing is waste if you wait long enough, so, somewhat ironically, ecology has no problem with "waste," since it has plenty of time.

I’d rather not think of this as two interacting loops, but as one integrated and complicated loop.
The existing industrial and proposed agricultural processes have been diagrammed and combined to illustrate potential programmatic and material intersections. Waste generated from the car manufacturing process is already widely recycled back into the manufacturing processes. By integrating agricultural production in their business model however certain needs can be met agriculturally and zoologically. Corn, a crop local to Monterrey’s climate and able to withstand the harsh soil conditions is rotated with crops of alfalfa. Corn is a phytoremediator and will extract poisons and heavy metals from the soil up into its body. The corn is now toxic and inedible -- it’s only viable use is as a material for bio-polymer production. Alfalfa on the other hand is a rhizoremediator, degrading toxins in the soil through root exudates. No poisons are extracted from the soil by the alfalfa crop therefore keeping it safely edible. As these crops rotate they perform the dual tasks of remediating the site and producing a crop of industrially viable biopolymer material. Additionally a crop of native goats, are used to amplify the agricultural and remediative processes. Goats, wandering herding animals will not only eat the alfalfa crop but will also offset cost of fertilizing the corn and alfalfa. Since the corn however is toxic a sectional difference between corn and alfalfa will need to be maintained to dissuade goats from eating the corn. But by interweaving corn and alfalfa production a certain maximum of goat enabled fertilization can be achieved.

The tighter and more closely these systems are intertwined, corn, alfalfa, goats, and industrial production, the more closely each pattern and process can effect and inform the other. A tight weave is not only advantageous for mutuality but is also a more effective means to regulate the system as a whole. Over time the site can be read as the gradual development of several co-participatory processes, none of them distinct or independent of the others.
In addition to demonstrating a potentially viable market strategy for the failed car industry, a combined industrial and agricultural model shows that neither system operates independently of the other and that each can be mutually beneficial to the other. The additional message might suggest that neither is more nor less artificial than the other. It’s merely a conversation of time, material and process.
Overall rendering of the Ovimex complex

Placement of Car manufacturing facilities

Farming and cornfield distribution
Dashed Path. Seeding and harvesting can be started and stopped along the same route.

Rows. Corn is typically grown in rows. There is no limit on the length of the rows, though with tends to be less than 32 rows.

Wandering. There's no two ways about it. It's hard to keep a goat on a straight path. We kinda like that idea though.

Dispersed Field. Alfalfa, the major food crop for the goat population, grows as a grass or ground cover. Unlike corn, it doesn't have a particular planting strategy.
A goat produces enough manure in 90 days (the average growth cycle of corn) to fertilize three acres of corn.

Each acre produces roughly 5,000 lbs of corn.

8,400 lbs of corn = 16,800 lbs of corn

= 8,400 lbs of material for bio-polymers.

1 acre of corn

1/6th of an acre of alfalfa

Full Growth
fig. 7
Prospective rendering of PolySpecies
Park plan and facility arrangements.
PolySpecies Park
**PolySpecies Park:**

PolySpecies park is a proposal for a new research and production facility of tissue engineered meat in Smithfield, V.A. on the site of what is now the country’s largest producer of pork products, Smithfield Foods. PolySpecies Park is part farm, part tissue engineering factory, part eco-resort, and part research facility [figs. 6a, 6b]. The park is a producer of new types of engineered meat, a facility for studying dietary aspects of the new foods and demonstrates a new dialogue between living / non-living systems. It’s important to point out here that each facility, while ostensibly rendering farming obsolete will need to keep a small population of each animal on site, not only for tissue engineering purposes (cell harvesting) but also for the study and comparison of meat texture and quality.

The park is composed of roughly two dozen facilities of four independent types, each catering to different typology of animal and producing a unique type of engineered meat. These animals are organized according to their method of interaction with larger environmental strata -- terrestrial animals (hoofed and herding animals), avian animals (things with wings), aquatic animals (anything that lives most comfortably in the water) and finally the subterranean animals and microbes (animals in soil). Each facility utilizes a range of species specific tools to lure, control and study each specific animal. There is the potential for cross fertilization and factories will tend to be organized in groups. Each facility also contains the equipment and materials needed for tissue production along with the infrastructure needed for tourism, research and on site living quarters.

By tapping into the individual sensorial ranges, audible, olfactory, or haptic of each individual
Patterns formed by fish movement and activity. The notable factor here is that different forces in influences can provoke very clear spatial arrangements in biotic systems.

J. von Uekull's umwelt diagram, illustrating complexity of information processing within any biological organism.
Landscape / System
Explorations in co-species cohabitation
Or how to design WITH an animal.

Site system process diagram.
The Site is mapped, zoned and differentiated according to animal population and remapped according to environmental and ecological factors.
PolySpecies Park: The Imperative
Explorations in co-species habitation
Or how to design WITH an animal.

The history between architecture and the animal has been traditionally manifest in the form of farming. Animals are grown and bred for market value and in the process they are conditioned to the spaces of production. The architecture and practice of farming are, one might argue, just as significant in the evolution and development of livestock as meat to weight ratios or other market forces.

This history is now subject to revision. No longer are animals needed for farming and no longer is architecture the dominant means of biological control. Tissue engineering and biology/mechanics are now ushering in a new era of biopolitics with implications to architecture, ethics and everyday life.
Terrestrial Animals

Animal Characteristics

- Limited Committed Space
- Wide Peripheral Field
- Sensitivity to Sounds
- Travel Radius Limited
- Social Compassion
- Flexible Scheduling
- Visual Concerns

Design Elements

- Cow Path
- TC+ Facility

Proposed section
Terrestrial station schematic plans and diagrams. The only expressly mobile station the terrestrial factory is designed to participate in herding and animal migration patterns.

Potential perspective

The relative position of the mobile units to each other is dependent upon the type, path and number of terrestrial animals desired for meat, production or study.
species the park redefines all of the architecture, infrastructure, landscape and individual organisms as animal players in a much larger system. Architecture becomes part attractor, part program container and part animal/architecture interface and the animals begin to influence the siting and design of individual buildings. Each building helps to manage and attract a species of animal while also being subject to larger migratory, or environmental patterns. But, more than providing a production facility for new types of engineered meats, the park offers the visitor with the experience of participating in a conversation with another animal.

Animals, humans included, are fairly predictable. Every animal has behavioral patterns, and each pattern has spatial implications. These are witnessed by fish schooling, bird flocking and territory demarcation, caribou herding patterns…etc. Each facility acts to enter into these species specific patterns more closely, thereby allowing the individual species to participate in the over-all design and planning of the factory farm as a whole.

To do this we need to understand the basic inputs and outputs of each species. The most easily influenced animal factors are food, sex, and shelter. The architecture becomes one of sensory emission and soft control rather than hard-lined establishments. The position of each building, and the design of architecture pays close attention to the specific ethological needs and patterns of their target species.

Each tissue engineering meat facility participates in a lager site system allowing for crop rotation and seasonal migration. The site is diagrammed and zoned to accommodate a wide array of animals and animal behavior. In the diagrams to the right, each circle represents an acre. As different species are taken into consideration the grid becomes differentiated and zoned for
Initial Concept diagram of once separated systems interwoven and allowed to grow and impact each other over time.

Polyspecies Architecture mediates the relationship between the animal and the method of food production. The built architecture becomes something of a membrane or mesh against which the behavior of the animal and functions of tissue engineering are projected.

Two site plans for PolySpecies Park reflect seasonal changes in facility siting based on average rainfall.
more particular species. Just as the substrate in tissue engineering is manipulated to become more responsive to biological life so too does the overall site plan respond to the various needs and particularities of agricultural livestock.

Humans are animals too. In this discussion of farming and ecological sustainability it is easy to avoid the reality that we, people, are no less animal or natural than the rest of the non-human animals on this planet. By giving the shape and design of certain aspects of the park over to animal patterns and methodologies the distinction between human and non-human becomes less and less important. More over the hierarchy and values associated with a sub-conscious if not overt speciesism are brought to the fore. The point is not to live more humanely, but to live more animalisticly. PolySpecies Park offers just one example in an open set of potential explorations for designing with animals -- for extending a polyspecies conversation into our human-centric lives. It may be true that we are what we eat and it may be true that we will continue to be speciesist but Haraway and Derrida have posed us with a challenge. A challenge to engage other non-human beings on an equal plane of respect and it is now our challenge to enact a new way of living that reflects their missive. Hopefully it will be a challenge we will never leave.
Two site plans for PolySpecies Park reflect seasonal changes in facility siting based on average rainfall.
Animal Agents
Explorations in co-species habitation
Or how to design WITH an animal.

Each Animal has specific Patterns which can be studied, mapped, utilized and modified. Moreover each animal is subject to environmental forces and attractors (scent, sound etc...) To control these factors is to control the animal.
An Architecture/Animal Singularity

Polyspecies Park introduces animals and their specific paths, habits, and unvelts to a larger audience. No longer needed as direct sources of food, each species of animal is kept as a biological bank of genetic information, ecological research and alter-human knowledge.

Polyspecies Park is part Tissue Engineering facility, partly Polyspecies Research facility, and part bioengineering tourist destination.

The architecture becomes a flexible system of relationships.

Each animal has a specific sensory range.

fig. 9
Over arching strategy for responding and respecting animal dialog.
Avian Animals

Animal Characteristics

Design Elements

Aerial tissue production facility, strategy and diagrams. Here sonic, and tactile qualities can be manipulated to effect avian behavior.
Aquatic Animals

Animal Characteristics

The aquatic factory acts as a section through the various strata of the water, interacting with different species at different depths.

Design Elements

Feeding and Feeding Behavior

Aquatic tissue station schematic plans and diagrams. These facilitate interaction with the early and oxidation stages.
Subterrestrial

Seismic signal strength

Animal Characteristics

Interior Perspective

fig. 8c
subterrestrial farming station
schematic plans and diagrams. The
factory specializes in seismic and
sub-sonic communication.
Seismic waves, potentially detectable up to 30 miles away.

Vertical gradients between terrestrial and subterranean animals.

Factory Plan

Tissue engineering facility and seismic communication research center.
Part 3. refrain
“If we thus continue to infinity, we shall readily conceive the whole of Nature as one individual whose parts — that is, all the constituent bodies — vary in infinite way without any change in the individual as a whole.”

Baruch Spinoza, The Ethics Part ii
This exploration of designing **with** as opposed to **for** the animal began with a general desire to tailor the context of current architectural discourse towards something more animated -- to invigorate that which is currently dead. Architecture, in all of its myriad functionalist, "Green," "Sustainable," bio-morphic, bio-mimetic, epigenetic, or otherwise is dead -- dead in the sense that each scenario excludes life. Simply, architecture is not currently conceived to live, or to be part of surrounding environmental, biotic or zootic life. Now, it is very possible that as Koolhaas has stated, "Where there is nothing, everything is possible. Where there is architecture, nothing is possible" and as we can suggest through a rough history of civilization that classically defined architecture and classically defined civilization coincide to the extent that perhaps, architecture (as it is generally understood, that is houses, buildings, institutions, infrastructure, etc...) was never and will never fully positively address life. That is, it will always be exclusionary, will always have one eye towards the past, and will somehow be tied to permanence, memory and language -- all of which are hallmarks of early civilization.

And in many ways my proposed move in architectural discourse is a paradigm shift away from **human** society and civilization as we know it. Animals, those things that are generally understood to be without social organs such as memory, and language, are also generally understood to not have architecture. Animals remain society-less and architecture-less (regardless of how many species we find to possess variations on the theme) until we come to accept that Humans are yes, indeed, animals -- and this is where we enter into the discussion.

Permanence, death, memory, etc... may be the eventual conclusion of architecture. But, and as I've argued here, this merely means that we are called to take on the small (maybe not so
small) task of re-inventing architecture. It is important to stress here now that the new architecture, which is partially formulated here -- the Animal Architecture -- must not be formulated as a negative thesis against the current status but as a positive exploration of poly-species environments.

The previous work collected here has attempted to show that animals can be involved in the design and planning of a city, a factory and a farm. There is an obviously fantastic quality to the majority of the projects but designers and thinkers such as Temple Grandin, Catherine Ingraham, and James corner each show that such prospects are not completely out of the realm of the possible. Animals and the reality of human animality, once confronted, negotiated and resolved, can provide a strong framework through which we can reformulate the apparatus of our global colonization.

We need not look too far for conceptual guidance. Donna Harraway, Jacques Derrida and Cary Wolfe among others have outlined our path. What we need now are firm design decisions. It is the challenge of the builders, those who define and daily reaffirm certain proscribed ways of life, to set this new discourse into motion. Talking to ourselves alone will not do it. This does not mean that we, as Delleuze and Guattari propose, are to become more animal. We have never been more or less animal (human) than we already are. We might however be able to become more human, or extra-human.

This book started with “We are how we Eat” and the obvious next logical step there-in is “We are how we Are”. If architecture and society have walked side-by-side thus far then perhaps
a change in one will effect a similar change in the other. Both currently seem to have arrived at a point of inflection. Will architecture be more nimble than humanism? Will it be easier to change how we think of structure than how we daily reaffirm our un-animality? My bet is that architecture this time will be faster than humanism.


Haraway, Donna J. **When Species Meet,** Minneapolis; University of Minnesota Press, 2008.

Lally, and Young, **Softspace: From A Representation of Form to a Simulation of Space. New York, NY: Routledge Press,** 2007.


Francois Roche and R&Sie. Work and material: http://www.new-territories.com/


