

Exploring the Urban Jungle Can I become Native?

Proposal for degree of Master of Science - Fall 2007

Jay Silver
Mitch Resnick
Geetha Narayanan
Chris C.

Exploring the Urban Jungle

Can I become Native?

I yearn to be in communion with my environment: the living beings, the elements, and the structures. How can I reimagine my birthright of being... Native... in an intimate interrelationship with the landscape?

Abstract

We are disconnected from our landscape because we don't live on the same land over generations. We can't reconnect because we can't even see the nature within our urban surroundings. I will develop a methodology for coming into contact with the environment through direct observation of the previously unseen urban jungle. Building on the idea of revealing the imperceptible with a time lapse camera, I will design a synesthetic tool for first person explorations into reclaiming Nativity.

Motivation

A few years ago I started to wonder where my food came from. I took a trip to "Om Grown Farm" in Buckingham, Virginia, where I apprenticed with Farmer Brad.



Farmer Brad telling a story about a particular potato

Behind the potatoes was a field of Oregon blue garlic, and he said there were a few patches that were overwatered.



Oregon blue garlic... overwatered, but I couldn't see any signs

I asked him how he knew, and he explained that if I was patient and watchful I could find lots of signs. I spent many days at the farm touching, smelling, and tasting the landscape, not just once but over and over again to find differences over time and gradients over space. It took me a long time to get used to touching and really observing patiently. One day I noticed that the soil

around one bulb of garlic was cooler than the soil around others, and it had been that way on the previous day too. Thinking that this could be a sign of extra water in the soil, I dug into the soil to feel if it was more moist than other nearby soil. I thought it was, but I wasn't sure. Then I looked at the leaves of that bulb, and this is what I saw:



A bead of water on the tip of a garlic leaf

Very small beads of water had formed at the tips of many of the leaves. It turns out that some plants cry in this way when they're overwatered. There wasn't really a good way to take a "picture" of the soil temperature to share with you, but it was noticeably cooler to the touch. During my summer on the farm I learned more about the land. I was better able to care for the plants and understand what was going on. Most importantly I learned patience and respect.

It is easy to see why a farmer would need to know these things, but what about city folk?

The Problem

Back in the city, I started to see that many people, myself included, didn't have an understanding for how their own ecosystems were working. As landscape architect Anne Spirn says (3), "Few people stop to think about the urban landscape, how it got to be the way it is, and how it affects the quality of their lives." People used to live on the same land(s) for generations. We used to learn about the landscape from our grandparents. Now we are constantly moving (1). The continuum of interrelationship with the landscape is broken. This has practical consequences and much deeper impacts.

On a global scale, according to the UN, "The lives of some 630 million people are threatened in the regions of the world now turning into desert wasteland." (5) Yet Wendy Campbell-Purdie planted 130,000 trees in an Algerian desert that "were flourishing and the fertile area they created was growing vegetables, citrus, and grain." She "formed the Bou Saada Trust to wage biological warfare against the Sahara." She did this through an extremely intimate knowledge of the land.

At a city scale, a handful of observant city planners know how to harness the forces of nature to plan a city. They can align streets with wind flow to avoid pollution buildup in urban canyons, build water reservoirs in flood plains instead of low cost housing, and use alternatives to pavement to avoid the heat core problem (11). But they have often been unsuccessful in gaining political clout for such planning since most people aren't aware of the importance of such "subtleties". And this is only for people who have the pleasure of having an urban planner involved in their community plan at all. Mass migration to urban centers in so-called "developing" countries leaves a million new people every week to work out how their new environment should be set up for themselves.

These same practical issues exist on a smaller scale. One can control cooling and wind issues with carefully placed trees, and one can manipulate heating and lighting issues with attention to aligning windows or dwelling openings with the sun.

"The land around your home is a vital piece of the urban forest and the watershed. How that land is managed - one lot at a time - can have a significant impact on your city's flood protection, water supply, air and water quality, waste management and economy." (13) (emphasis mine)

On a less operational level, green spaces are inversely correlated with ADD/ADHD (4), and positively correlated with emotional, mental, and physical health. Other studies in Last Child in the Woods show that in nature play-space, children engage in imagination play, and the natural leaders are the creative children instead of the physically strongest leaders who dominate blacktops and astroturfs. When one starts to see the nature throughout the city, one also recognizes loose parts for creating and building as an ultimate toolkit. If we don't know how to interact with the environment, to work with it to get what we need while keeping it healthy, we become solely dependent on the market to provide us with solutions. This is what Illich calls "modernized poverty." (5) One symptom of modernized poverty: "people are helpless to recognize evidence unless it has been certified by a professional." By working through direct experience with the environment, one can gain confidence in one's own ability to understand the world – whether that means ignoring printed dates on food containers and using our own senses, or if that means improvising a fix for something that is broken instead of calling a professional.

Deeper still, one can truly learn patience, respect, and calmness, through becoming Natively intimate with the landscape.

Seeing the Urban Jungle



Boston from a bird's point of view with some terrestrial biomes labeled. Photo from cover of [Granite Garden \(11\)](#)
Annotation added by me, but in the spirit of the book.

We live in an urban jungle. Some people are already able to see this. Urban hunter/gatherers see dumpsters as urban gardens, and abandoned buildings as caves. But not everyone can see nature in the city. Many of us are disconnected from our local environment, partially because we don't live on the same land for generations anymore, and partially because our landscape changes so fast.



Urban garden outside of Boston

So for those of us who currently walk through the city blind to the urban jungle, how can we come to see and understand the inner workings of the nature (manmade and “wild”) that permeates the city?

Approach

What I Learned from Time-Lapse Photography

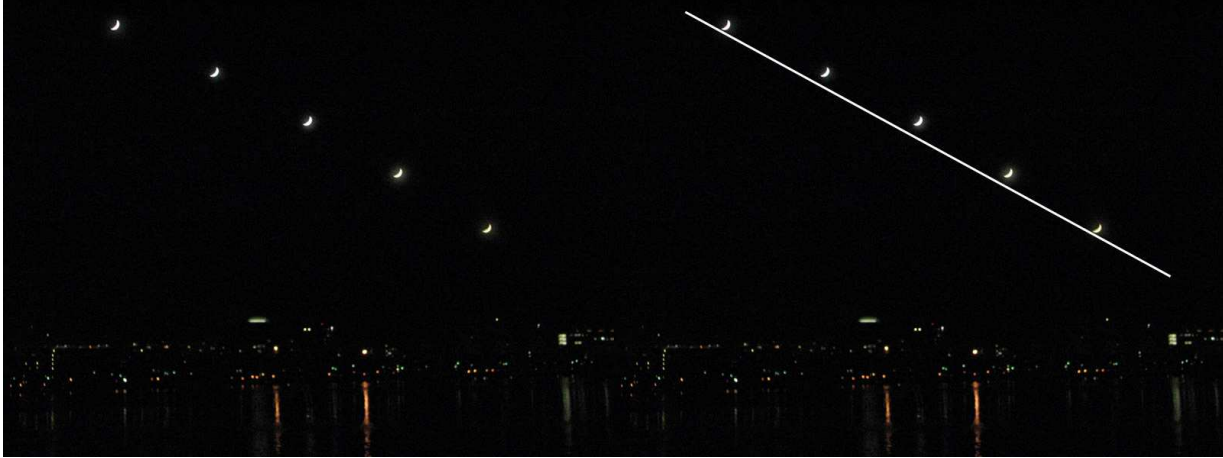
I took a class from Eleanor Duckworth, a professor at Harvard Ed. and student of Piaget and Inhelder, which was all about The Having of Wonderful Ideas. In that class we worked on solving “old” problems ourselves through direct observation and manipulation. For example, we were to watch the moon and keep a journal to try to figure out what it was doing. Two of the many questions people were wondering about were, “What path does the moon follow in the sky?” And, “Does the shape of the moon change as it moves across the sky?”

I wasn’t getting very far with keeping a journal, so I decided to take some pictures. At first I experimented, just taking photos and looking at how they turned out instantly on the digital camera screen. Then I started small time-lapse experiments consisting of several pictures.



Time lapse of the moon taken at 30 minute intervals (The whole GIF is available here: http://media.mit.edu/~silver/moon/moon_river.gif)

During my first experiments, I didn’t get the exposure right to see the shape of the moon. Also, I picked a night where the moon’s path was obstructed by clouds. But the instantaneous feedback of the digital camera let me experiment with all this until I was mature enough to set up a satisfactory experiment. One clear night on the Harvard Bridge, I took a series of photos that ended up spurring lots of discussion in the class, especially because the photos gave us a concrete way to think about the two questions from above.



Each taken 24 minutes apart and superimposed

Same picture with a straight line drawn for reference

full sequence can be seen here: <http://www.jaysilver.net/pictures/moon/moon3.gif>

We projected the moon-lapse onto a whiteboard and put dots along the center of the moon's path. We weren't quite sure if the dots were on a straight line or not. Later I created these composite pictures (above). Based on the picture above on the right, I would say that the moon doesn't travel in a straight line as viewed from Boston. I can say that without reference to any expert, but by trusting my own observation and thinking.

Then I took two of the photos of the moon which were separated by 96 minutes, put them right next to each other in space, and drew lines showing the orientation of the sun's light reflecting off the moon as perceived from Boston. This is what I got:



First and last moons put next to each other with orientation lines superimposed. The orientations aren't the same.

So I would say that the moon's lighted portion as seen from Earth does rotate as the moon moves through the sky, because the orientation lines are at different angles from each other.

I was able to see processes that were otherwise invisible. Others were really interested in seeing the photos since they were actual photos taken in Boston by someone they knew, not a theory out of a book. That is, first person perspective was involved. The whole class was hotly involved in analyzing and debating the meaning of the photos.

There are many, many other compelling uses of time lapse photography. In the film Baraka time lapse video is used to show how people and cars gush through streets in a heart-beat tempo,

like blood pumping through veins, due to the timers on the street lights. People commonly monitor activity outside their windows, take pictures of themselves every morning for years, or watch plants dance with otherwise imperceptible slowness.

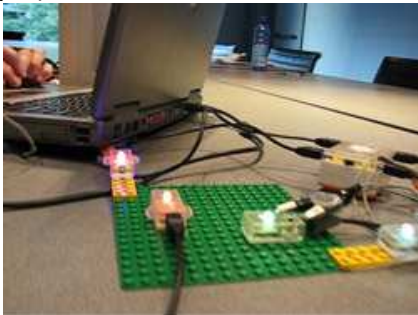
As of 2007, time lapse cameras still have downfalls for exploring the urban jungle. Cameras with this feature still aren't very deployable and are expensive. A redesign of time-lapse for urban exploration would need to be deployable into the urban jungle. This means it must be low power, cheap, weatherproof, and camouflaged. But as I learned on the farm, you can't see everything with a traditional camera, like the temperature difference I felt in the soil that led to my discovery.

Time-Lapse *Observation* (Maybe even Time-Space-Lapse)

A more general class of time-lapse camera might be one that doesn't take visual pictures per se, but can take "snapshots" of many sensible phenomena across time and space.

Synesthetic sensory transformation AND time-lapse observation

Take for example this quick prototype of a set of 4 temperature sensors (without time-lapse yet).



Four temperature sensors next to a laptop

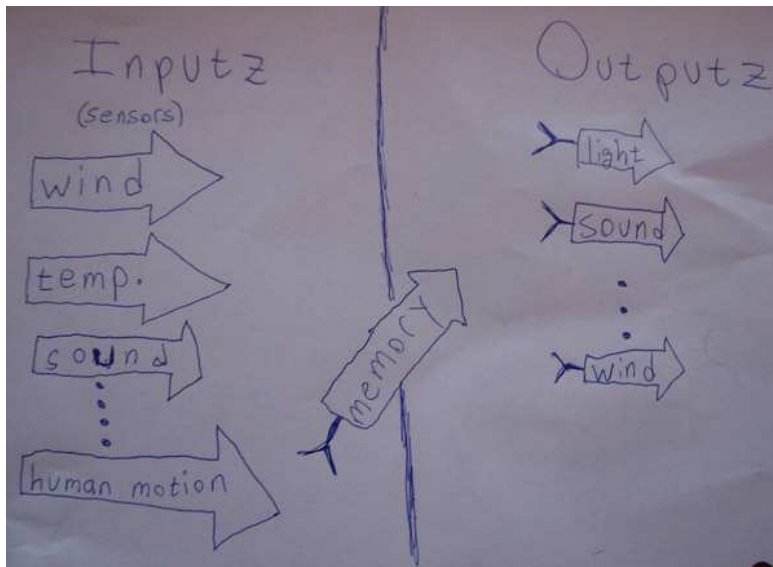
Note: I don't consider this to be the most compelling example, and I plan to get better examples for the next revision

Here, the four temperature sensors are each outputting light: red for hot, blue for cold and orange and green in between. When placed next to a laptop, they make visible the temperature gradient emanated across the laptop's environment. This is a simple case without memory, and thus no time has "lapsed". But I think it will be important to have a mode where the time lapse sensors function with instantaneous feedback just like the digital camera can be used to shoot photos and explore by trying things out. Another thing to notice is that the colored-light "graph" of the information is embedded in the landscape in an intuitive way. To make this into a time-lapse, imagine taking the temperature sensors and deploying them into the environment for 24-hours. Then later you could play them back as, for example, colored light. But you could play them back at high speed to watch the process of temperature change over condensed time.

A tool-kit for exploring the urban jungle

I start to imagine wanting to be able to capture many types of observations across time and space: temperature, wind, human/animal motion, and much more. I also imagine wanting to

play them back in different mediums like sound, light, wind, etc. So I am proposing a toolkit of inputs and outputs which can be mixed and matched.



Example of input-output pairs in the urban jungle time-lapse toolkit.

In this toolkit, you would take one block from the input category and plug (not sure what I mean yet by “plug” but it is to be interpreted liberally and informed by the design constraints) it into one block from the output category to create a synesthetic pair like “temperature-to-light”. This would allow for instant exploration of the landscape. The memory block is a special case that acts first as an output block, and then later as an input block with the option to speed up time.

The blocks listed in the chart are examples, but the actual blocks used in the kit will be informed by the design criteria in an iterative process. It is very important to carefully select the types of inputs and outputs to emphasize contact and intimacy with the landscape. It’s also important to streamline the kit to be simple to use so as to serve the population democratically. The design should also take into account the toolkit’s own transcendence as the ultimate goal, and abundant contact with nature as the immediate goal. The baseline kit should start with one compelling input and output pair, and should grow iteratively with explorers in the loop.

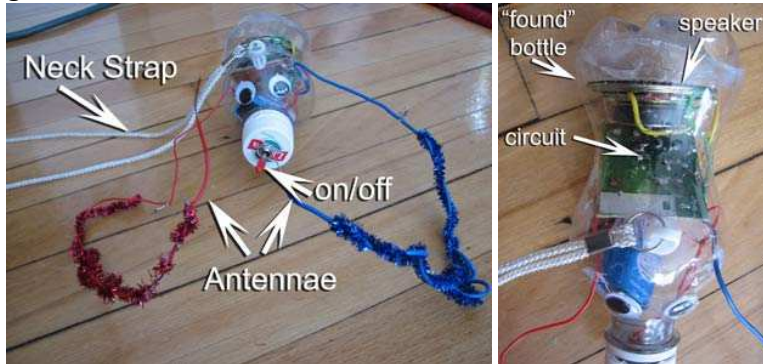
If early on in the iteration process, the kit proves to be un compelling, other strategies will be pulled in, like cheapifying time lapse camera photography or reimaging the tools.

Case Studies Conducted Using Particular Sensors for Exploring the Urban Jungle

The Curious Caterpillar – (instant feedback, no timelapse)

In Bangalore, India, in summer of 2007, I found myself at Drishya, a not-school which adheres to tenants of the slow schooling movement (6). I was working with the founder, Geetha

Narayanan, on a project called “lab in a bag”. Focused on the theme of water, and inspired by the Pico Cricket’s (11) musical banana (an instantiation of Pico Crickets for playing sound based on the resistance of a banana), I created a dedicated resistance-to-sound synesthetic pair. I packaged it in a plastic bottle and formed it into a caterpillar like the ones in Drishya’s butterfly garden.



Curious Caterpillar – front view

top view

The children touched the caterpillar’s antennae to everything in their environment that they



Testing a plant stalk

Testing the soil collaboratively

Testing rock, fruit, bikes, plastic, each other...

could find and listened to the results. The neck strap was helpful in the final design so that the hands could be free, but also tended to make it less collaborative since it was attached to one person – perhaps suggesting a double neck strap design. The water bottle was a compelling case since it is familiar and can be found in the local environment. The circuits were made in collaboration with the facilitators. All the parts were bought locally on the grey market at S.B. Road. If the circuit had had memory, we might have been able to do some interesting things by leaving it places overnight.

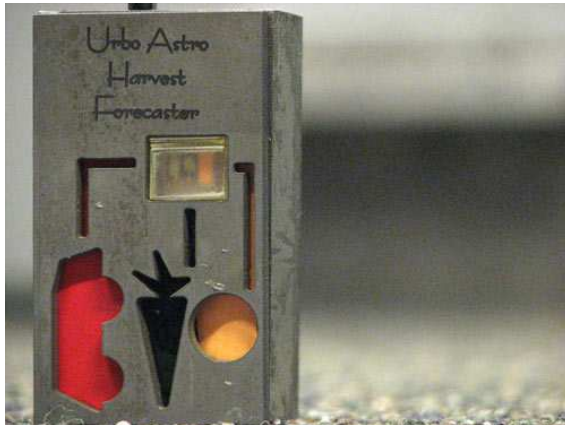


Making a curious caterpillar circuit with facilitators. Intermittently the power would go out and we'd work by candle light.

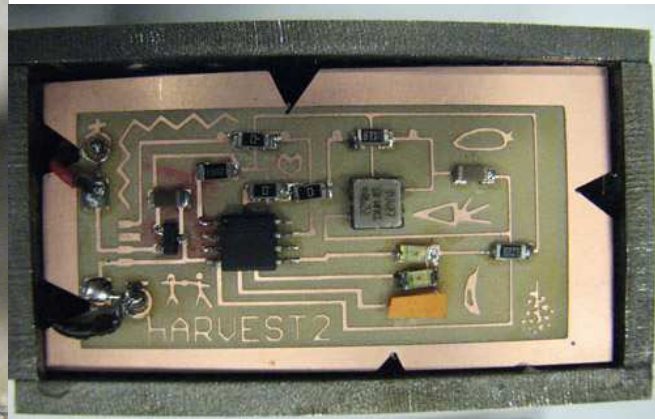
I was compelled to continue looking into these types of exploratory sensors by the overwhelming enthusiasm of the children at Drishya.

Urban Harvest Forecaster

Traditional farmers have used moon charts and biodynamic methods to predict a harvest time that is harmonious with the land. Working with a hyperlocal team of urban harvesters, I have been developing a tool to help forecast good times to harvest in the urban environment. By sensing trash-crop throw-aways and competing harvesters (especially the dumptruck), the urban harvest forecaster helps pick a bountiful moment.



Urban Harvest Forecaster, heavy steel like a farm tool



Under the hood, the sensor embodies its meaning internally with circuit art: carrot, banana, people holding hands, etc.

When an urban garden is bursting with crops, it's typical to feed 12 people for a week from a single 30-minute harvest. We now have a vehicle which runs off of used restaurant veggie oil.



A good harvest from one food garden and one office supply garden

The forecaster uses a system of two acceleration-to-memory sensors. Deployable models have recently been prototyped. As of October, 2007, they are being tested in the urban jungle for efficiency increase and consciousness shiftability.

They have been problematic to learn and experiment with because there is no playful exploratory mode, only a data gathering “time-lapse” mode. One of the two sensors is currently food-ouflaged near other rotten food at the bottom of the dumpster and the other is rust-ouflaged near a rusty part of that particular dumpster (7).

Domains of influence for design

I’d like to incorporate aspects from the following movements into the design criteria of both the tool-kit and the methodology for action:

- @ Inspiration from schools of nature
- @ Inspiration from constructionist literature
- @ Inspiration from feminist notions of urban spaces
- @ Methodologies from urban explorers
- @ A genuine desire to make the tools more like mud (8)

These fields should shape the tool-kit design, the language used during the action, the discourse, and the mind-state of the design team.

Methodology

The urban safaris will be a hybrid of the critical exploration method (9), nature walks, legend tripping, and longer more focused hyperlocal mapping and observation

Related Work

Nature Schools teach people how to do what I'm talking about, but are different because they are focused on the space outside the city. Urban explorers engage in these exploratory activities already, and can offer lots of different insights. There are photography classes (10) that study hyperlocal spaces in the urban jungle, though they use only *visual* cameras. There are sensors that overlap with this work as well: The Hobo is a tool for climatologists. It's so named because you could throw it on a train and it will take temperature readings across the country for you. But it requires the use of a computer and it isn't playful or simple to get started. Pico Crickets (11) are playful, but aren't long term deployable. Flow Blocks provide a nice tangible interface, but don't interact with real-world inputs and outputs.

Evaluation

Using the methodology described above, I will take an interventionist approach, working especially with children and activists. Through a handful of case studies, I will construct inquiry-based narratives using video ethnography, revealing how consciousness and thought processes change over time. I will watch to see in which ways the methodologies and technologies were transcended, and in which ways they were the end rather than the means.

Biblio-Dawg

- (1) Long, Larry. Migration and Residential Mobility in the U.S.
 - (2) Illich, Ivan. Toward a History of Needs
 - (3) Spirn, Anne. West Philadelphia Plan
 - (4) Louv, Richard. Last Child in the Woods
 - (5) "Tree of Life", The Next Whole Earth Catalog 1980
 - (6) Narayanan, Geetha, A Dangerous but Powerful Idea - Counter Acceleration and Speed with Slowness and Wholeness
 - (7) Fiery, Denis. How to Hide Things in Public Places
 - (8) Resnick, Mitchel. Computers and Mud
 - (9) Duckworth, Eleanor. The Having of Wonderful Ideas
 - (10) Spirn, Anne. MIT Course Number 11.309J. *Sensing Place: Photography as Inquiry*
 - (11) Spirn, Anne. The Granite Garden
 - (12) Resnick, Mitch. Computer as Paintbrush: Technology, Play, and the Creative Society
 - (13) Trans-agency Resources for Environmental and Economic Sustainability <http://treepeople.org/>
- (a better bibliography will be coming to theses across America soon)

Timeline

Nov – Write final proposal

Dec – Prepare important readings in literature and assemble team

Jan – Build kit in iterative design/immersion cycles, testing methodology within design team

Feb – Start case studies

Mar – Iterate

April – Write and iterate

May – Commune with nature and submit