



STE(A)M

Pedagogy in Art and Natural History
Szu-Han Ho, University of New Mexico
AIM-UP RCN : Fairbanks, AK
2.22.12



Robert Morris
Untitled (Steam Work for Bellingham)
1971
Western Washington University, Outdoor Sculpture Collection,
Bellingham WA



Szu-Han Ho
Rate of Recharge / Rate of Erosion
2011
Louise Hopkins Underwood Center for the Arts
Lubbock, TX

RATE OF RECHARGE / RATE OF EROSION

SZU-HAN HO

The works in this show are analog models of systems of discharge and recharge. They speak to the interconnections between human-made and natural systems, as well as to the relationship between geographic place and personal attachment. Bodies, like all natural systems, require nourishment, nurture, and recharge—and these requirements are often counterbalanced by constraints upon resources due to scarcity, pressure, and contamination. Our relationship with these resources, both collectively and individually, exists somewhere between straining and supporting, draining and flourishing, exhaustion and conservation.

Living on the High Plains—a place of volatile heat, cold, wind, drought, and flood—inspires awe both for the richness of landscape that makes life here possible and for the destructive forces that frustrate or overwhelm human efforts at thriving. Our own capacity for the depletion of natural wealth and the disruption of natural systems continues to lead to unintended consequences that can be devastating and long-lasting. Yet the capacity for regeneration in the natural world also inspires wonder. As a model of the hydrology of an aquifer, *Rate of Recharge* brings into play the physical properties of water and gravity to suggest the fragility of the replenishment process. *Rate of Erosion* is a model for the phenomena of soil erosion due to wind and dominant agricultural practices in a landscape that was once covered in shortgrass prairie. The processes of sifting, seeping, leaching, and holding act as parallels to affective associations of weight, containment, and loss.





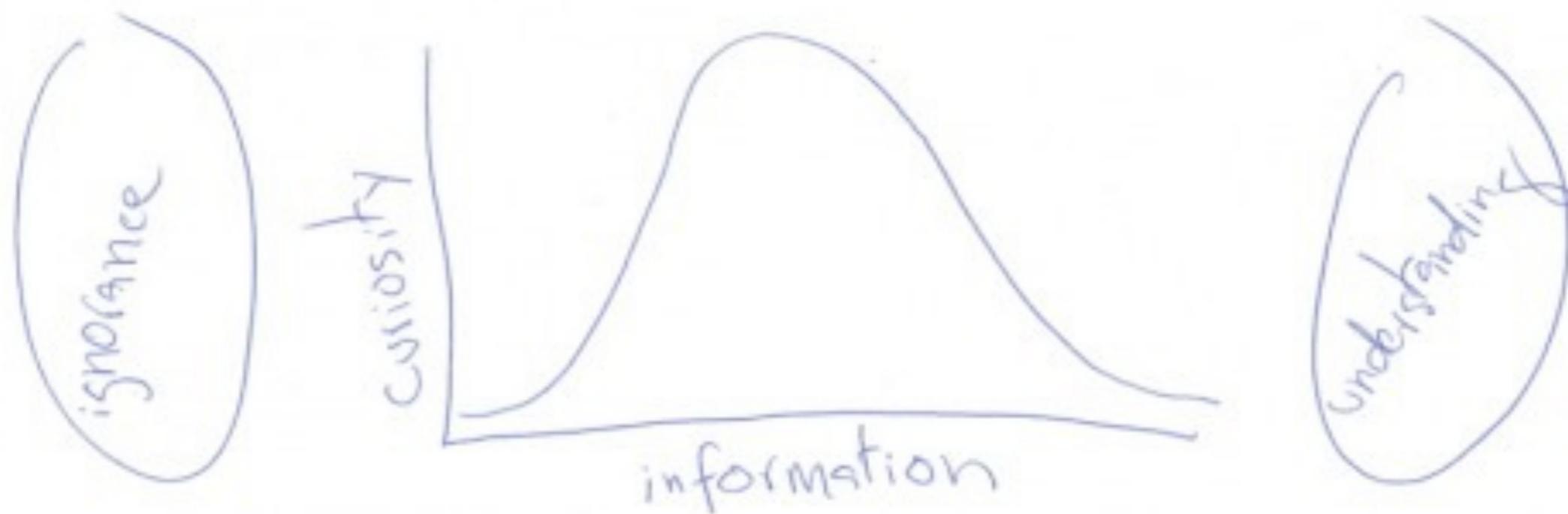




Szu-Han Ho and David Bashwiner
CORO ARROYO
in progress
ISEA 2012 Albuquerque : Machine Wilderness

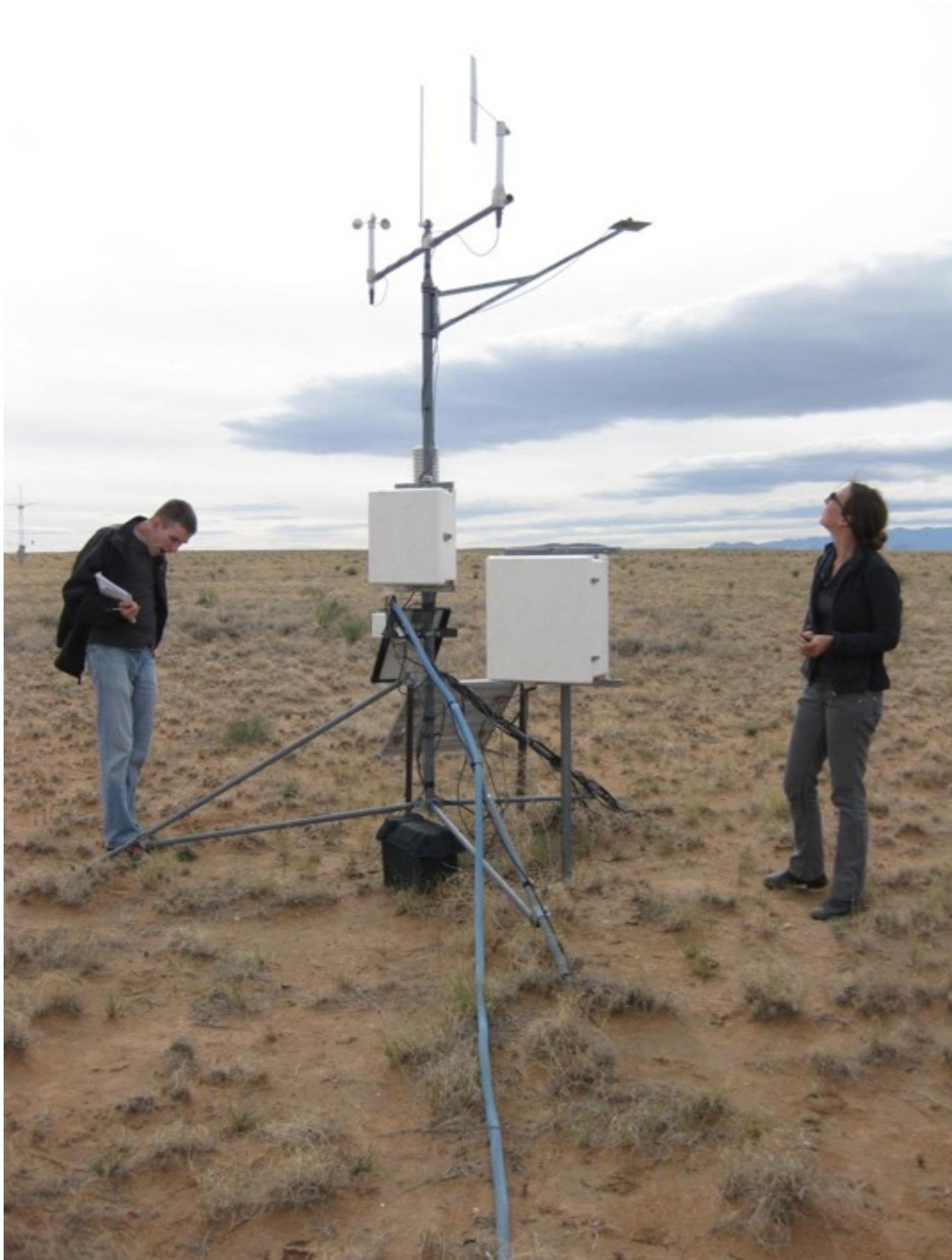


Conventional logic and traditional pedagogy posits that by accumulating information we bridge the gap that separates ignorance from understanding. This seems to make linear sense, as illustrated by this simple drawing:



But art is not education, even though the latter often tries to harness the former. The sciences want us to understand and shape the world, power structures tell us what we are supposed to think about the world, and art wants us to be awed and mystified by the world on the one hand, and to be critically aware of our assumptions about it on the other. In many ways, art seeks to compromise our understanding of the world.

– Anthony Huberman “I (not love) information”



2011 Field trip to Sevilleta LTER Station
UNM Art & Ecology students











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UNM ART & ECOLOGY

LAND ARTS OF THE AMERICAN WEST

SOCIAL MEDIA WORKGROUP

COLLABORATIONS WITH BIOLOGY, SUSTAINABILITY STUDIES, LANDSCAPE
ARCHITECTURE, ART HISTORY

Bill Gilbert // Catherine Harris // Szu-Han Ho // Andrea Polli // Molly Sturges

PARTNERS + PROJECTS

Sustainability Studies at UNM

Biology at UNM

Landscape Architecture at UNM

SEV, Long Term Ecological Research at Sevilleta National Wildlife Refuge

Centro Artistico y Cultural, El Paso, TX

Littleglobe, Santa Fe, NM

The Center for Land Use Interpretation, Wendover, UT

Art + Environment Center, Nevada Art Museum, Reno, NV

The UNM Center for Advanced Research Computing (CARC)

The Agora Group/Z-Node

The American Society for Acoustic Ecology

USDA FoodShed Field Study

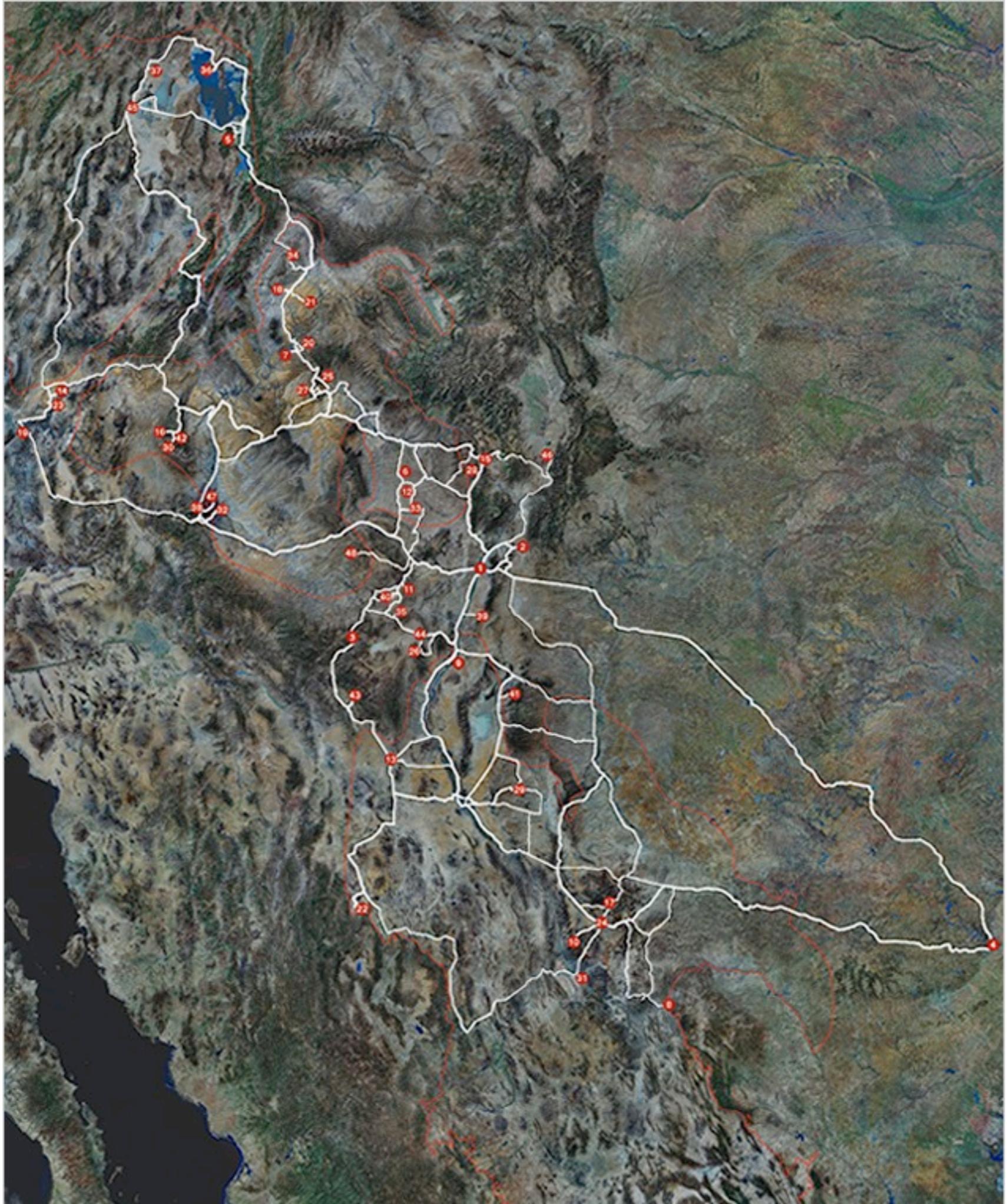
Museum of Southwestern Biology

Los Poblanos Farm Project

Albuquerque Metropolitan Area Flood Control Agency

Bosque Environmental Monitoring Project

Fodder Project: A Collaborative Research Farm





Joe Zuni, Isleta Pueblo elder, describes significance of petroglyph images at Tenabo.



Tracey Stuckey
at Muley Point
2004



Nina Dubois
Skeleton
2004



Anaya Spring Project with Joel Glanzberg
Land Arts of the American West
Anaya, NM
2005









Projecting ARTL!ES Into the Void
Land Arts of the American West
Cabinetlandia Deming, NM
2600





Clean Livin', Simparch, 2004



Outside CLUI unit facing Enola Gay hangar



Coal Project at Four Corners
Andrea Polli
Social Media Workgroup
in progress

PEDAGOGIES : ART + SCIENCE

Precedents

ANDREW YANG, PhD

The School of the Art Institute of Chicago

Undergraduate courses designed and taught at SAIC :

Insect World

Chimeric Practices: Art/Science + Hybrid Ways of Understandings

Critical Genetics

Life's Designs

Visualizing Biological Phenomena

Eco & Biosystems

Evolution and Biodiversity

The Ecology of Food

Biomimicry and Design

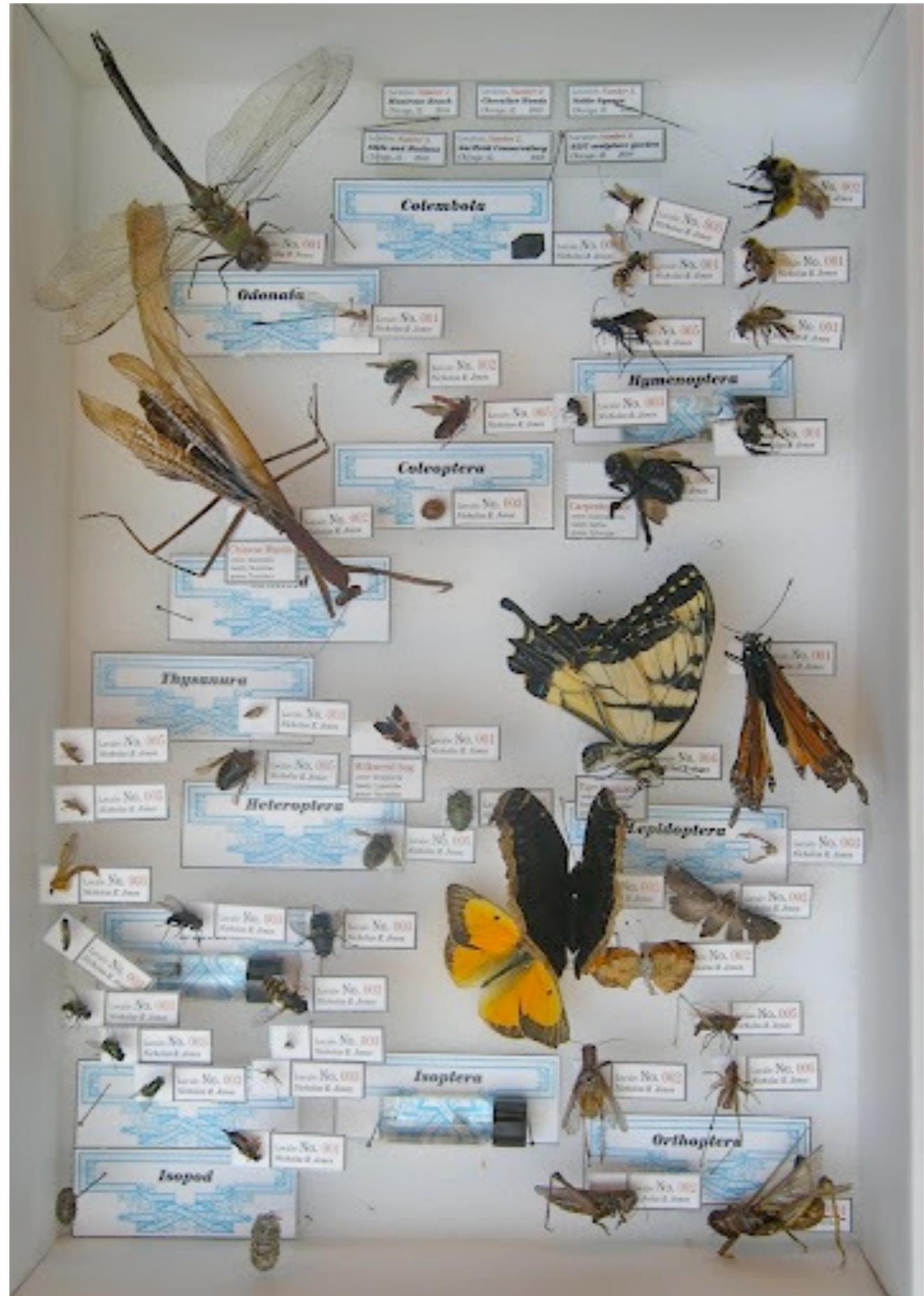
Animals in the Urban Jungle





Insect World

This course explores the biology of the most numerous form of life known on the planet: insects. We study insect form and function in relation to ecology in a hands-on manner, learning basic collection and identification techniques that enable the creation of individual insect collections by the end of the course. Biological topics include reproduction, evolution, development, communication, as well as a variety of social behaviors.



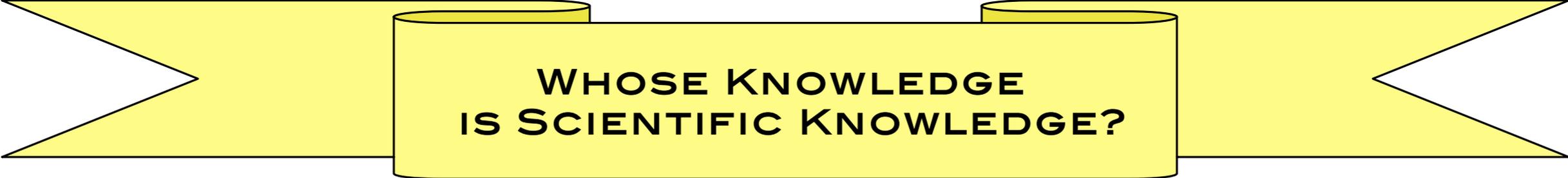


the Small Science Collective



Small Science Collective

A collaboration of scientists, artists, students, and anyone else interested in science, this project produces small zines and web comics on a variety of topics.



WHOSE KNOWLEDGE IS SCIENTIFIC KNOWLEDGE?

Many say science is one of the most democratic forms of knowledge. At the same time, the gap between scientists and the public only seems to be widening. While the privatization and patenting of scientific knowledge increases rapidly, general scientific literacy lags woefully behind.

As easy as it is to feel like science is obscure, too difficult, and perhaps even a little boring, shrugging-off its importance in our daily lives means letting others do all of the thinking, leaving everyone else to simply be consumers of the knowledge scientists & engineers produce - as education, entertainment, and technological tools & toys. What personal role can each of us play in sharing curiosity about the natural world and the ways we come to know it?

The goal of the Small Science Collective is to get everyone thinking about science through handy and inexpensive one page mini-zines. Our contributions come from researchers, students, artists, and seriously curious folk who want to share their love of nature – from gluons to gastropods – with fidelity and creativity. Our zines and pamphlets are distributed in subways, benches, coffee shops, and any place someone might least expect them. Perhaps catching the attention of strangers who didn't know they wanted to know more about ants, galaxies, or genes but are glad they got the unexpected chance. Print them, read them, share them. Leave them somewhere random for some stranger to pick up. The science is everyone's to share.

What *is* a Science Zine?

When is the last time you told a friend about an amazing scientific fact or shared a science idea with your family? Maybe just the other day. But how about also sharing science with someone you *don't* know and may never even meet through writing + pictures? *That is exactly what a "zine" is good for.*

- ☞ Unlike a textbook, anybody can make a zine! You don't have to be an MD or a PhD, you only need to know and care about your topic, and want to share this with others.
- ☞ Handier than a webpage, you don't need special equipment to make or read them. As a simple paper booklet, zines are small, inexpensive, and something you can make copies of & leave absolutely anywhere – from buses to bookstores.

How Do I Contribute to the Small Science Collective?

- Use the zine templates and folding/format instructions in the following pages.
- Send your zine to us! If you send a paper version to:

Andrew Yang
School of the Art Institute of Chicago
112 S. Michigan Ave. Rm.609
Chicago, IL 60603

-Or email and PDF file or other scanned version to: smallsciencezines@gmail.com

Questions to think about as you start making your zine:

WHO do I want to read my zine?

Who is your audience? Depending on whom you want to read your zine, you may want to choose a topic you think they will both be interested in and be able to understand. If you want your 6 year-old sister to understand your zine then you will need to use words and images she could understand. If you want kids and adults alike to find your zine interesting and learn something from it, then think a lot about your topic, word choice, and images that can succeed in doing this.

Of course you cannot please or reach every reader, but when you think carefully about who you imagine reading your zine and what experience you want them to have, it will really help you in making your zine successful.

WHAT topic do I choose?

You can choose any scientific topic, from light bulbs to fireflies, global warming to gluons. It is up to you. Whatever specific topic you choose, make sure it is one that you are interested in yourself if you want others to be interested as well.

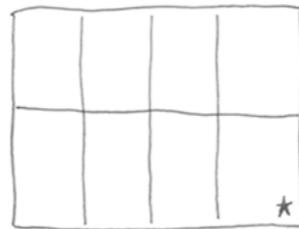
Do research to find useful and credible scientific information as well as imagery that can communicate the scientific ideas.

WHY will people read my zine?

Is it eye-catching? Does it have an interesting title? Think about making it a comic or including interesting characters that can help tell the story of your scientific idea. Humor, is of course, also a great tool for engaging your reader while also communicating. It is possible to be both silly and serious at the same time. Use interesting and clear visual images along with text (your own drawings or clip art, etc.). Correct spelling, clear lettering, and of course good grammar are also important if you want it to be easy to read.

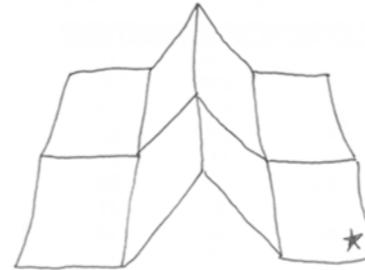
a short guide to folding an eight-page mini zine

- 1** Fold a standard piece of white copy paper (8.5 x 11 inches) into eight even parts like so:

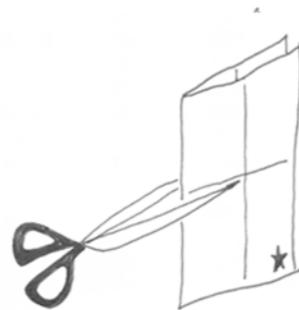


(the little star helps tell you where you are!)

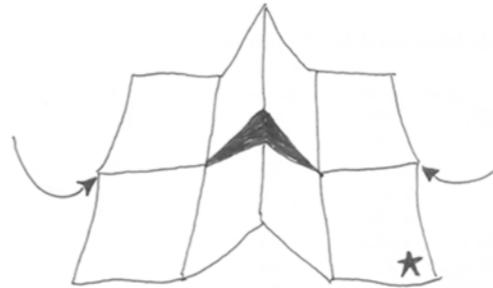
- 2** Now crease those folds so the paper rests like this naturally:



- 3** Now fold the paper in half as below and cut it halfway through so it looks like "4"...



- 4** Place the paper down like so. Now put your index fingers where the arrows are, lifting up while folding the sheet lengthwise over your index fingers...



- 5** During lengthwise folding in step "4" the middle of the sheet should buckle so that it can fold into this form naturally:



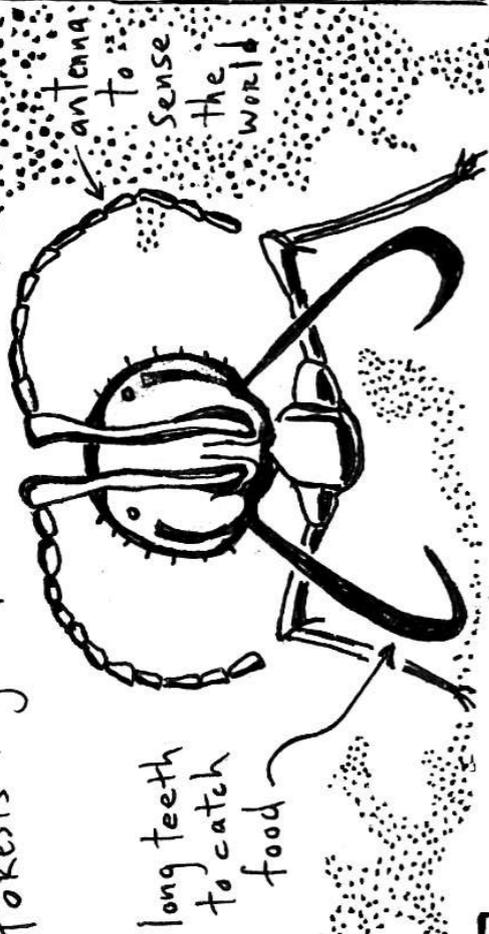
- 6** And now you have your eight-page zine! Notice the "starred" page is the front page of the zine. Voila!



Keep a 5mm blank margin around the whole sheet (Marked off in gray on the template on the next pages). Anything written within that area is not copied by most photocopiers.

The numbers on the zine template on the next page tell you the final order of the pages and the orientation of images on the pages once you fold the zine up: "1" is the first cover page and "8" is the last back cover page!

Army ants of South America roam the forests in groups of 700,000.



long teeth to catch food

antenna to sense the world

Leafcutter ants use leaves as fertilizer to grow huge mushroom gardens underground...



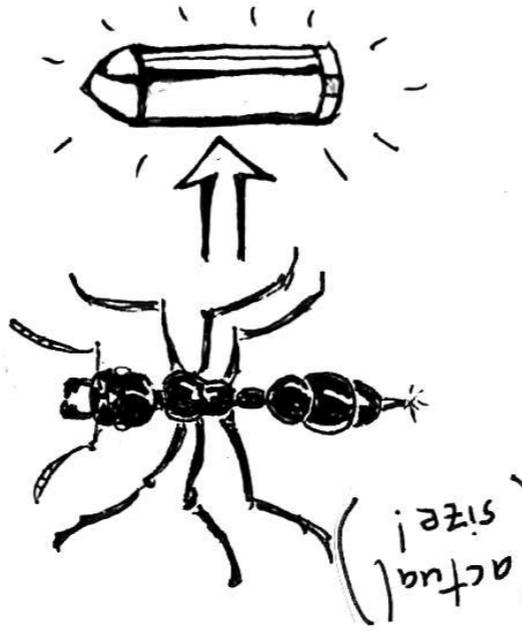
ant keeping watch for attacks by flies



The honey pot ant stores sugar water for its sisters like a bottle hanging from the ceiling

It in the desert.

These ants live in the Amazon forest. They are called "Bullet ants" because their sting hurts that bad.

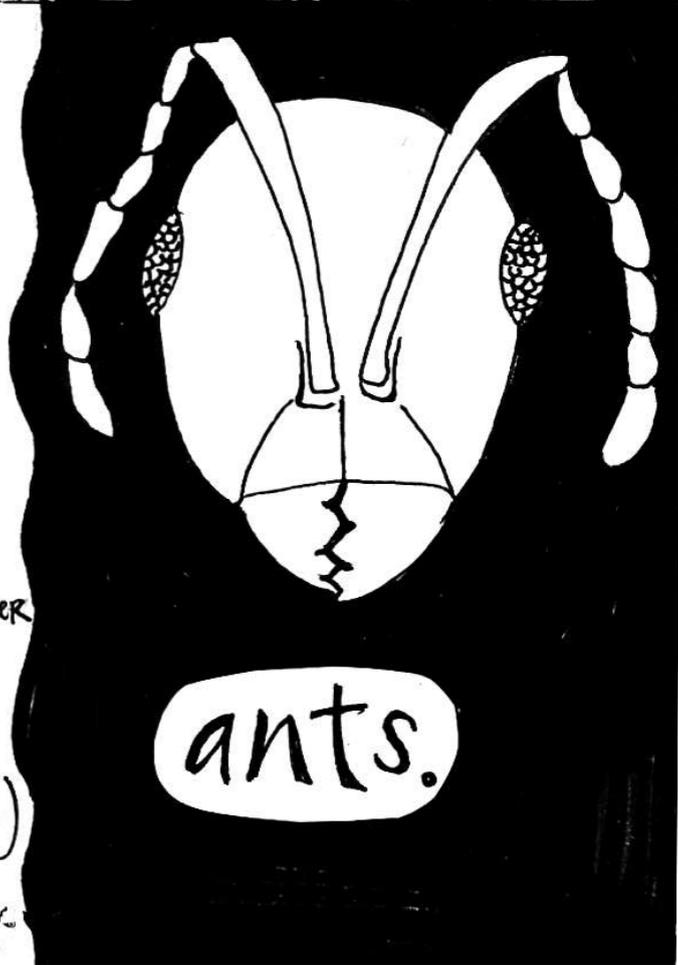


Weaver ants spin silk and knit leaves together to make a home.

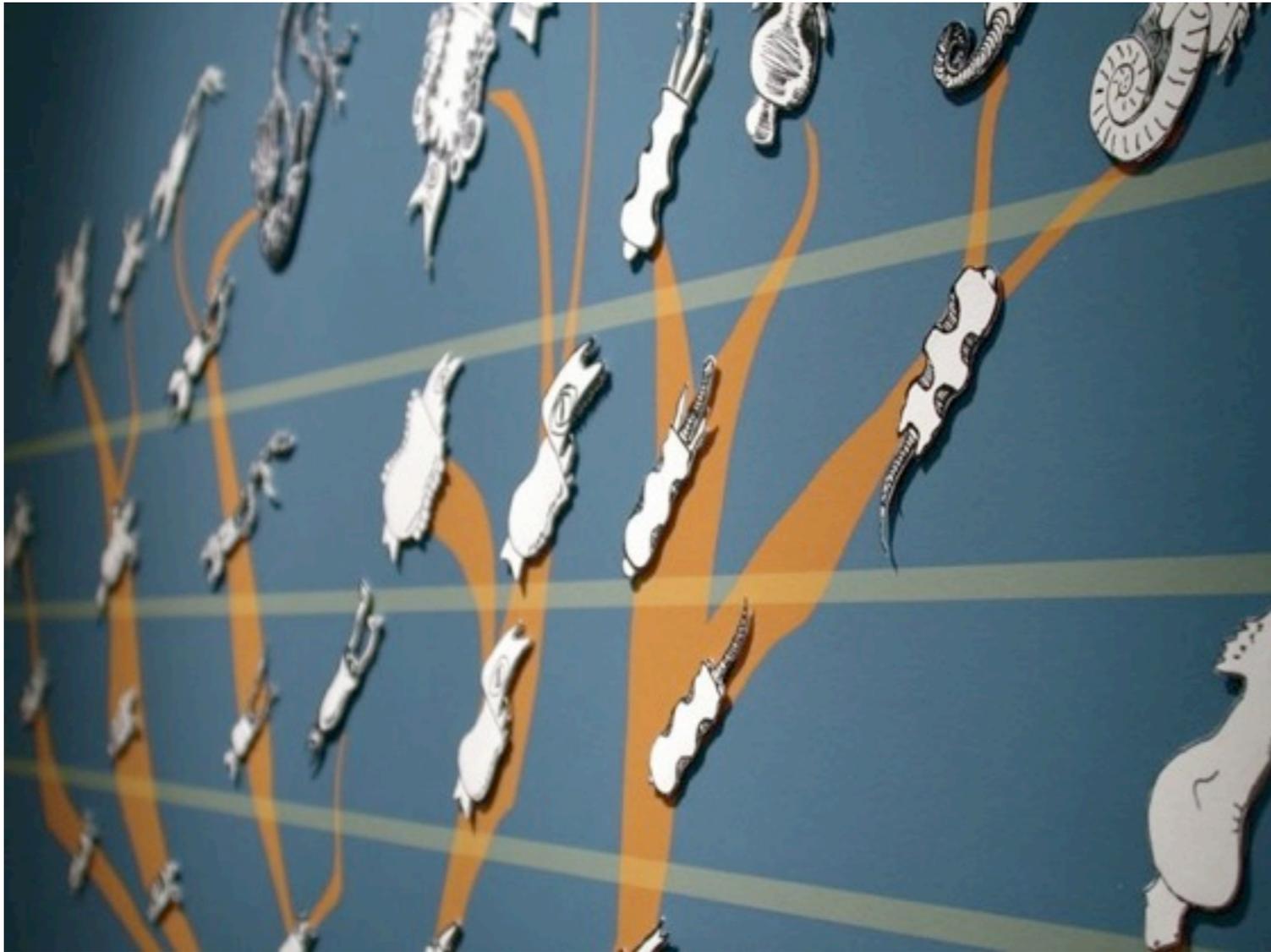


ants were on the sidewalk today, and in my kitchen... sometimes annoying, always many, and actually amazing

so remember, it's not just "red ants" or "black ants" => there are over 15,000 kinds of ants in the world, all doing something different: planting wildflower seeds, turning the soil (& perhaps spoiling a picnic...)



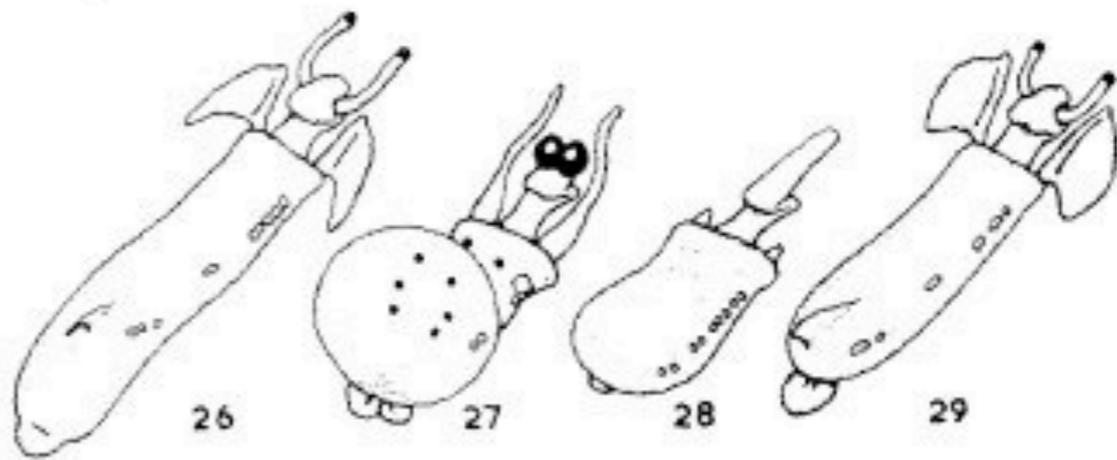
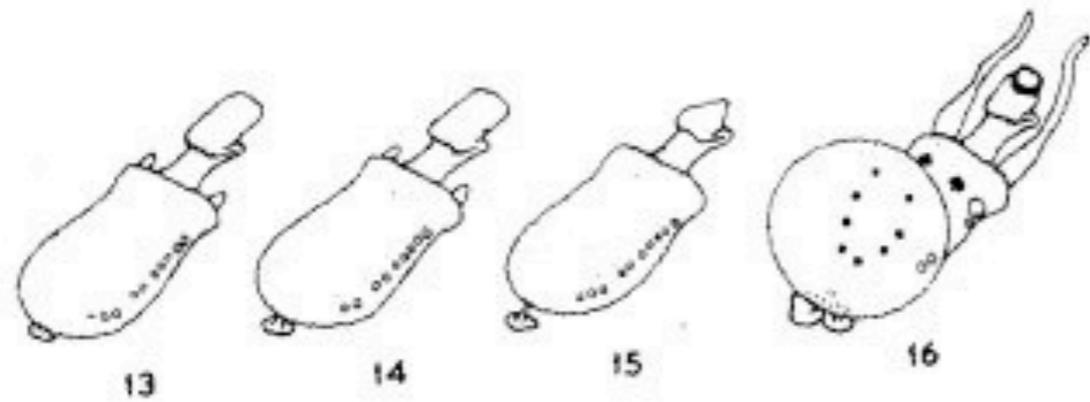
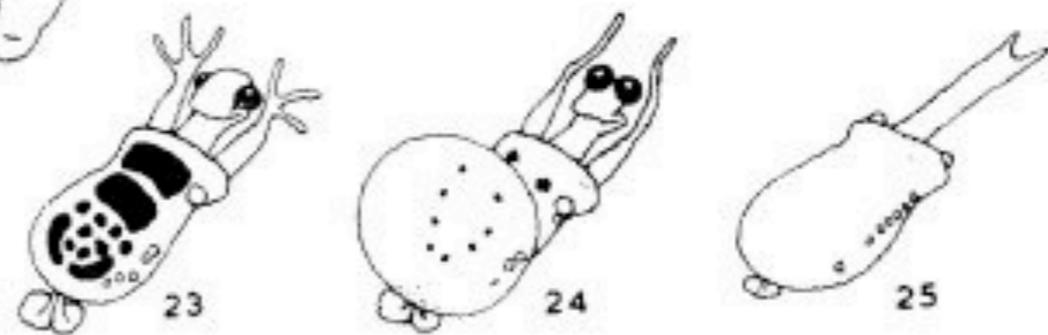
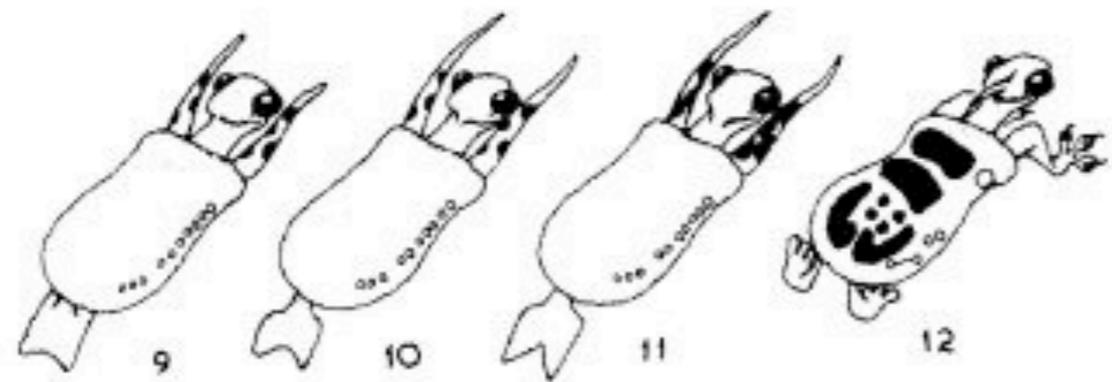
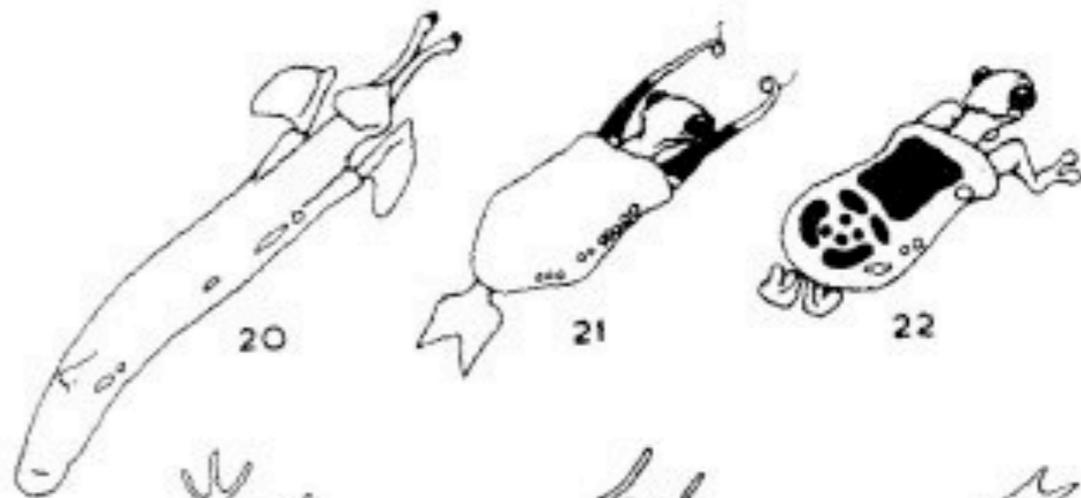
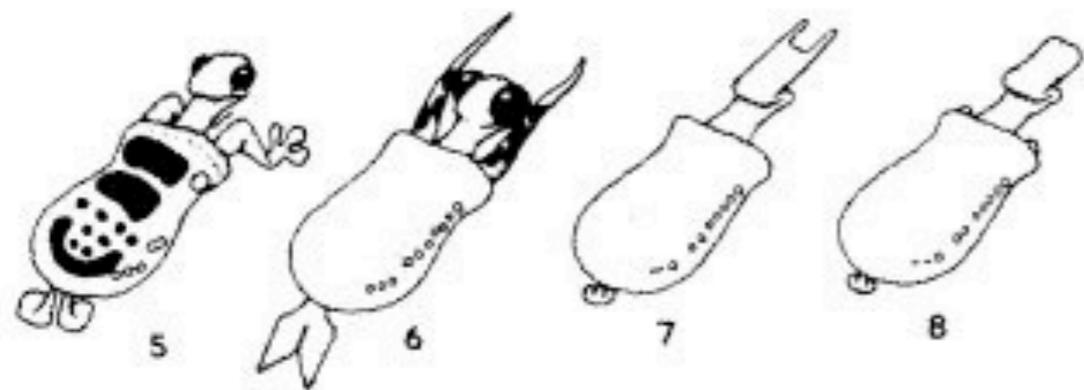
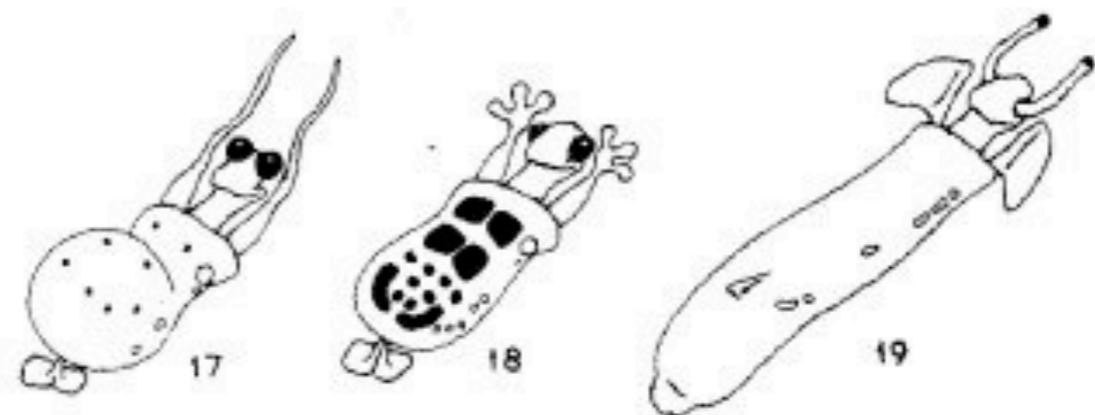
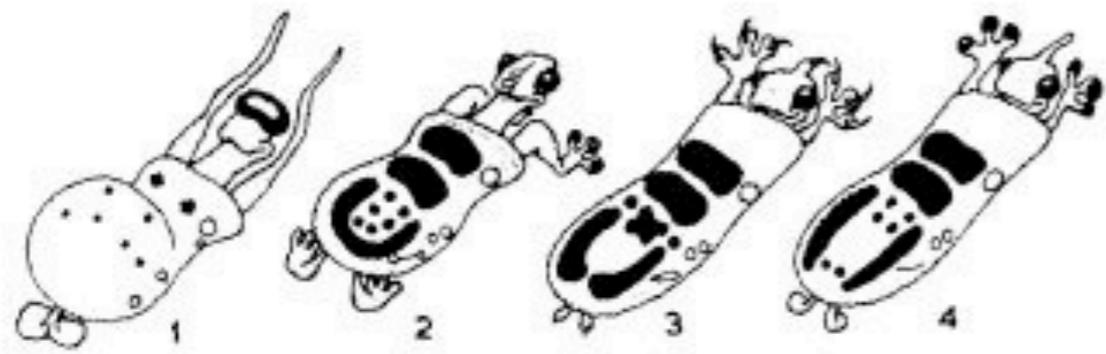
ants.

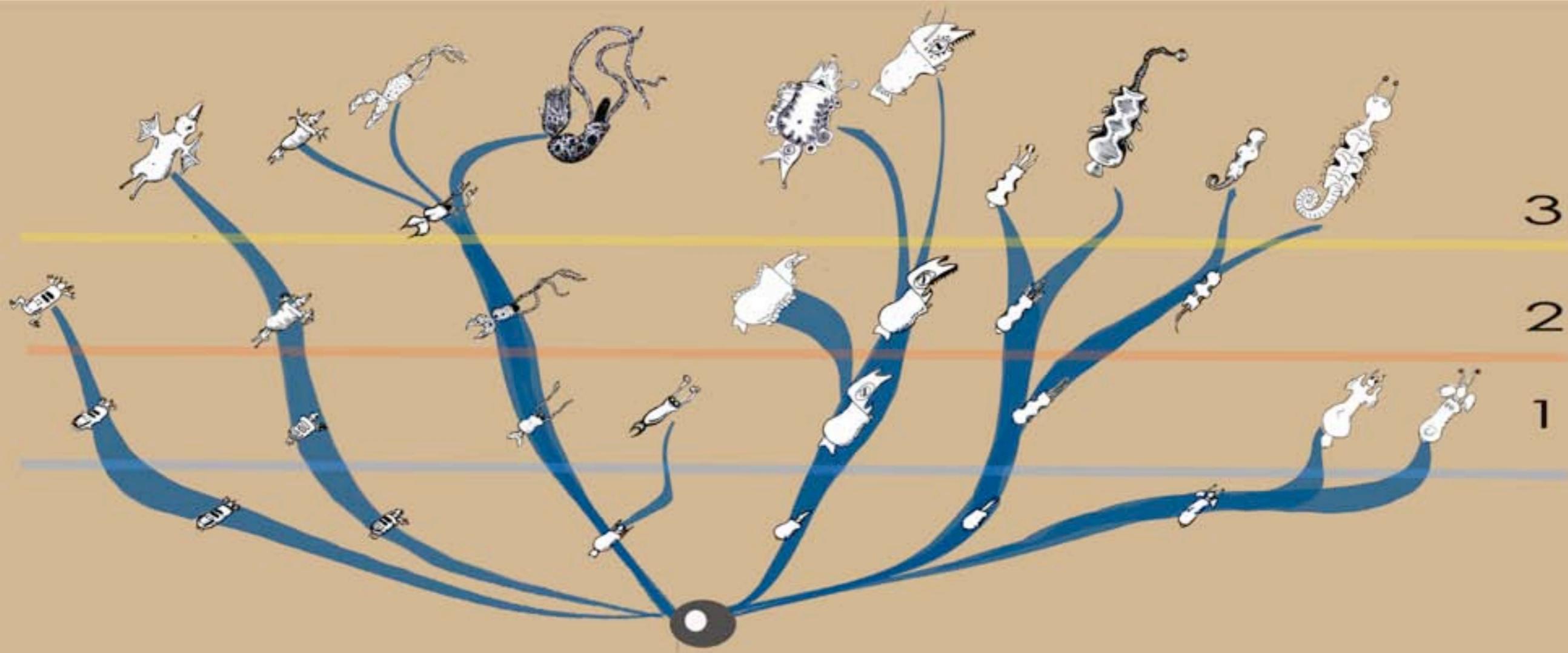


THE CAMINALCULE EXQUISITE CORPSE (an evolution project)

Evolution by natural selection is a lot like the popular Surrealist parlor game, the “Exquisite Corpse.” In both cases alterations & mutations build up blindly, cumulatively, and with very unpredictable outcomes. In the case of organic evolution, the results can be things such as: jellyfish, the platypus, giant tortoises, butterflies, sequoias, and human Surrealists themselves.

Developing this idea further, I took it to one of my Evolution and Biodiversity class at SAIC in Fall of 2005 and we tried it out over the course of half a semester.





CAMINACULIDA

Project 1_Collections

1. curate |'kyoŏ,rāt|

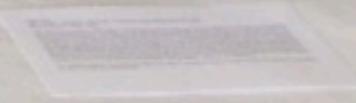
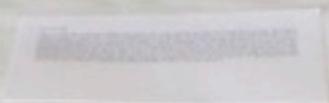
verb [trans.] (usu. **be curated**)

select, organize, and look after the items in (a collection or exhibition) : *both exhibitions are curated by the museum's director.*

ORIGIN Middle English : from medieval Latin *curatus*, from Latin *cura* 'care.'

Collections tell stories, whether part of an art museum, a natural history museum, or a personal cache. They form a body of knowledge— a selective way of seeing and ordering the world based on the perspective of the collector. Curating, classification, and taxonomy lend this body of knowledge a framework *of caring*.¹ Collections allow relationships between objects, ideas, geography, and time to be woven together, so that new relationships and stories can emerge. Embedded in this project is the original premise of the course—an introduction to art and ecology— including the classic definition of ecology as "an organism in its environment." These collections articulate some portion of the self in relationship to its environment.

Small document or label on the wall, containing text and possibly a diagram or list.





Alaska Piper
Spring 2012
Multi-Functions, Fascinations, and Trinkets:
A Collection of Multi-Media Artistic Remedies.



Kasha McCollough
Spring 2012





Alexandra Rohrscheib
Memento Mori
Spring 2012





AIM-UP

UNIVERSITY OF NEW MEXICO

Biology // Art & Ecology

Joseph Cook and Szu-Han Ho

Art Studio // Biology // Honors

3 cr : 1 hr seminar + 2-day intensive workshops

The theme of our seminar and workshop series is "Morphology and Geographic Variation." With the natural history collection as our starting point, we'll hear from scientists, artists, designers, programmers, musicians, and more on place-based study.

As collaboration and communication between fields becomes increasingly prevalent within scientific research as well as artistic practice, there is a greater need for interdisciplinary exchange between biologists, artists, historians, and other researchers to share resources and methods for building collective knowledge. This course aims to bridge the gap between traditionally segregated disciplines, in order to foster the creativity, expansive thinking, and rigorous inquiry necessary to become future leaders in research and practice.



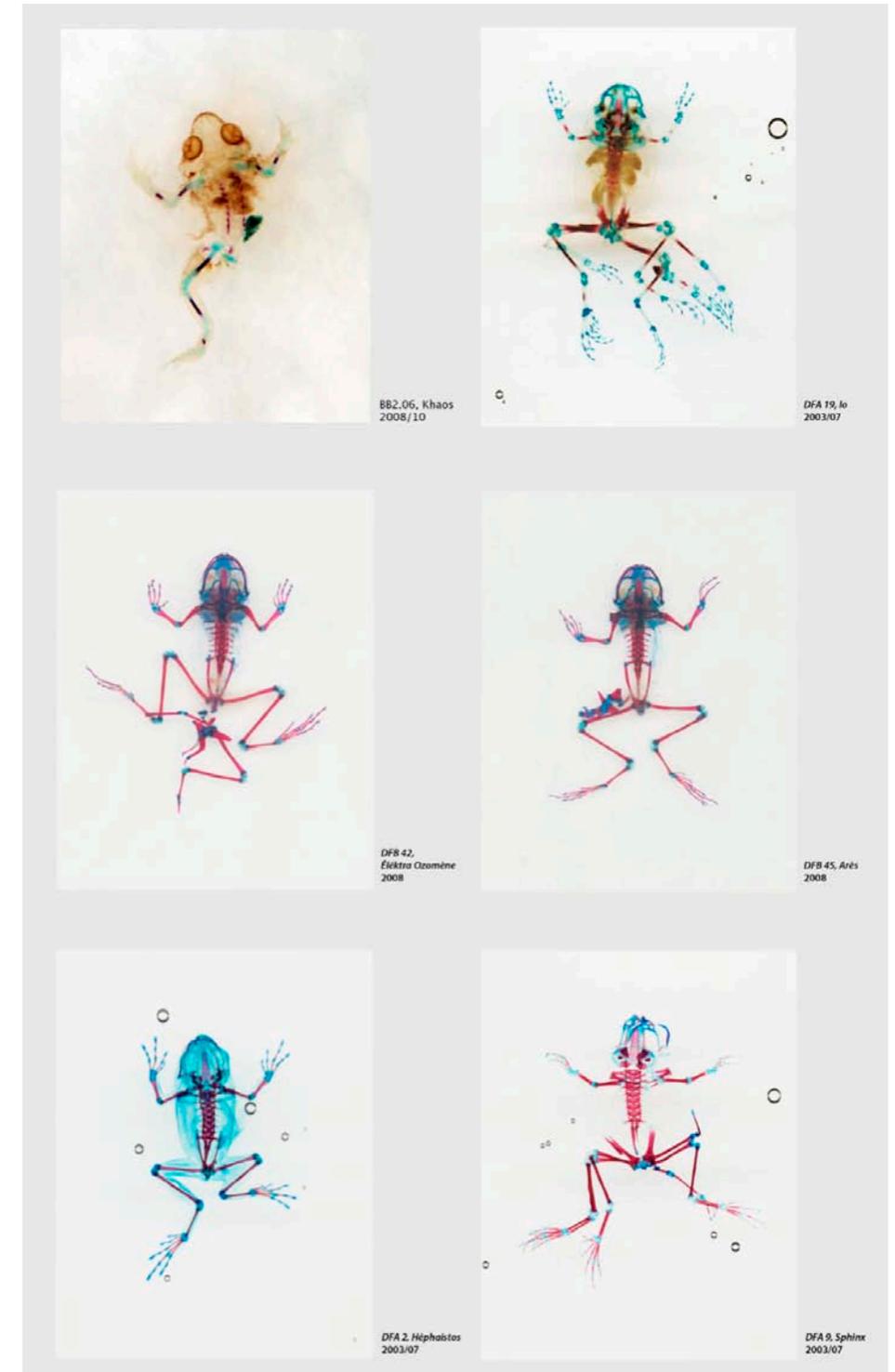
Brandon Ballengée // NYC

Workshop 1 Cataloguing Wonder

collecting through the senses



Amphibian Eco-Action, Yorkshire Sculpture Park, Wakefield, England
Photograph 2008 by Jonty Wild



Suzanne Anker : School of Visual Arts // NYC

Workshop 2 Fluid Taxonomy

on the dynamic, ever-shifting practice of classification and its implication in culture



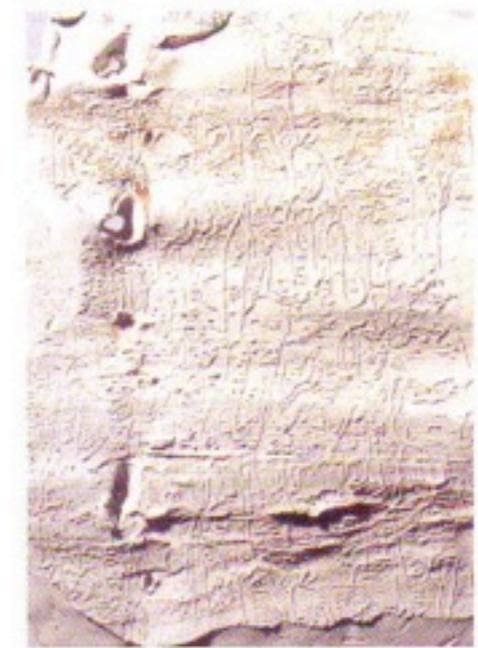
Brian Conley : California College of the Arts // San Francisco, CA

Workshop 3 Morphology and Evolution

investigating change in nature and culture, through space and time



Plate 1: LX-Ca Bc 001



In his forward to the exhibition catalogue of 'Things we don't understand', Dietrich Karner succinctly points to the political implication of the project: 'it is not always easy to be confronted with situations that invalidate entrenched patterns of understanding. The value of this confrontation is directly proportionate to our ability to convert the crisis of insecurity into the fertile potential of change...'13

...To stand for the importance of 'things we don't understand' is to stand for an active and reactive pursuit of knowledge. To favour the curious mind over the informed one is to make room for experimentation and risk-taking. To stop the path of information is to reject the passive consumer and to require, instead, an active engagement of a motivated and implicated audience of participants.

– Anthony Huberman