

*Toe by toe the children of the sun depart
from the east out of living fire to become
spikes, glumes, anthers, sheaves, broad
montane grassland, flowing steppe,
savannah, veld, wild horse pampas...*

.Forth Into View, Random Warriors

“I don’t think I was running from anything, only that there was just so much to see. I wanted to grow up everywhere. I loved so many places so deeply—the sound of bell buoys in Casco Bay, deep cold snow in Minnesota, clear lakes in New Hampshire, shallow salty Georgia tides. Every new place I found to love didn’t diminish my love for any place else. It felt like it came from a source entirely outside and apart from me, springing up from beneath my feet wherever I stepped. Manifest love. I was only a conduit for it. How could I not be curious about how deep that well could go?”

- Rikka | Yarmouth, ME; Ely, MN; Missoula, MT





Toward a sustainable non-urban

This project is a quiet rallying cry for those who already have an ear to the ground.

Enormous thanks to all who gave time and insights to my research. Thanks especially to Rikka, to Julia and Earl, to Anna, and to my mother, who has supported me through it all.

Norah Maki
MFA Design for Social Innovation Thesis
School of Visual Arts, NYC
2014

INTRODUCTION

Nearly all predictive modeling estimates that by 2100, 90% of the world's population will live in cities. These numbers have engendered an eager, global dialogue about the future of cities – graduate programs, committees, funds – all dedicated to the study of urban resilience, urban sustainability, urban migration.

To me, an equally urgent, parallel conversation is, what happens everywhere else? What happens to all of the places that are not – and do not become – cities? The places (and people) that are non-urban?

Non-metropolitan counties make up over 80% of the land mass of the U.S.(cite), and globally, that percentage is even higher. A vast swath of the biomass of our planet, and our societies. Here, nature has been a defining force of daily life for generations.

Factor in that, for many of our daily interactions, the relevance of geographic place has been subsumed by the invisible geography of the internet. The limits of communication systems have long been a fundamental factor in defining the limits of settlements, but the rapid expansion of hi-speed internet represents a radical shift in the way we form networks, as well as how we choose to engage with physical location as the old barriers are eased.

In the U.S., hi-speed internet is at 86% penetration and growing daily. Such universal access is making remote work not only feasible but strategic for companies and individuals alike, and it's clear that the educated, creative workforce is becoming mobile in a way that we have only begun to explore.

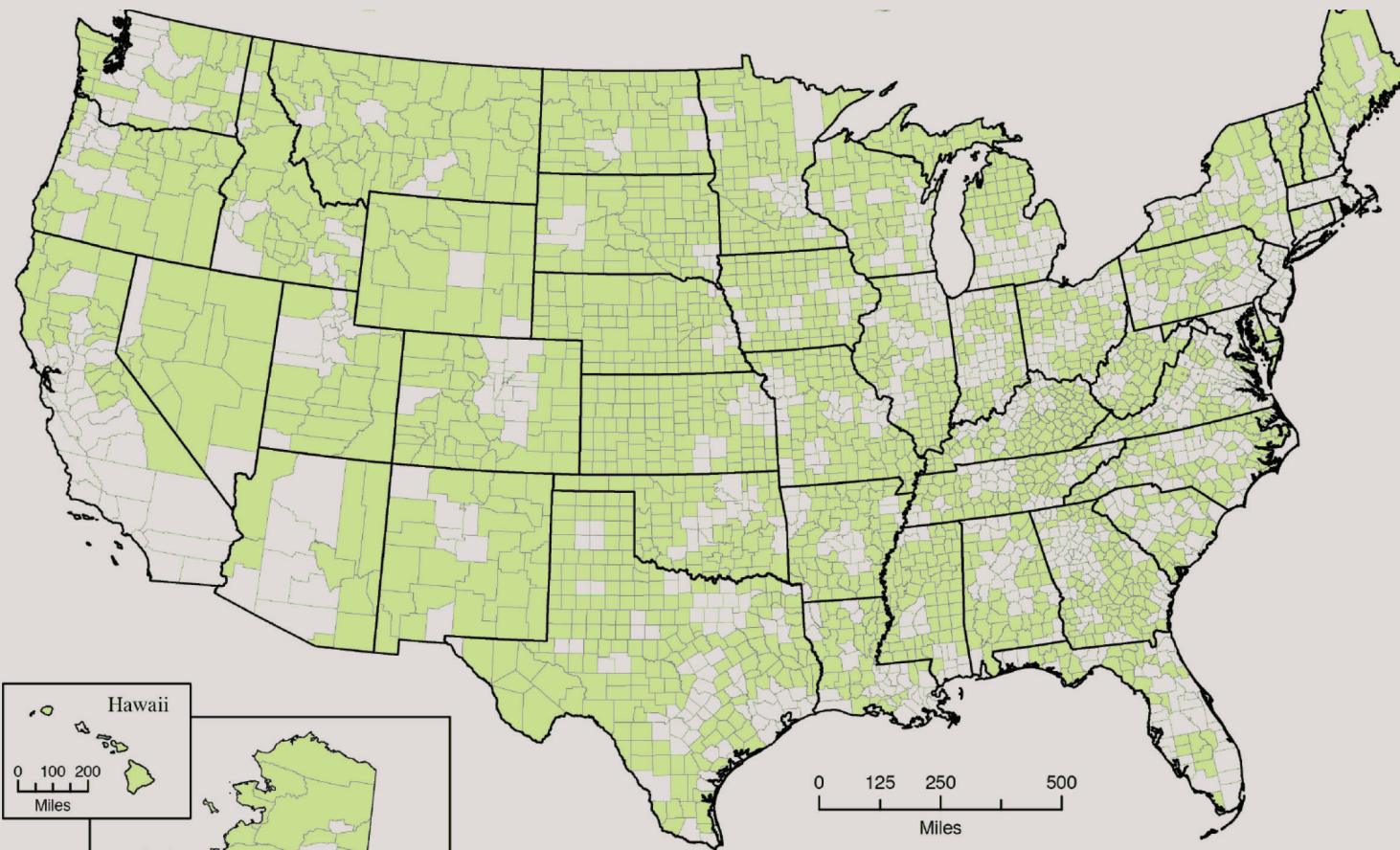
Because of the relatively rapid development and expansion of digital technologies over the past few decades, it seems like we have been unable to reshape our cultural myths to keep pace. We are left attempting to explain and define our relationship to an invisible geography that offers as much opportunity and as much risk as the natural world did to early humans.

If the internet is the new frontier, we need a new frontier myth. The deep, rampant mythology of the American Dream has, since its inception, inspired millions to risk everything for the promise of a better life – a life they have some stake in making. Its cornerstones - entrepreneurialism, opportunism, independence, hard work, toughness, grit - are more relevant than ever in an internet-economy.

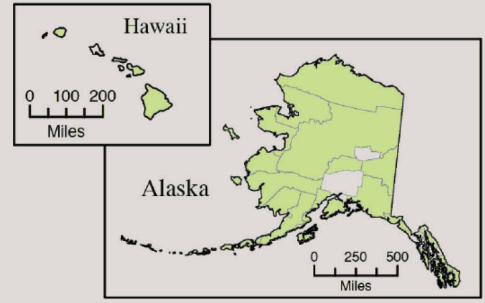
For both good and bad, these virtues remain at the core of a new American myth as the structures that once defined them are changing. The physical infrastructure of railroads and interstates that fueled national growth in the 19th and 20th centuries has evolved into a cloud-based network. Our historical reliance on natural resource extraction and production is shifting as we recognize that future growth will come from extracting the most from our intellectual capital.

With the internet, opportunity no longer has to be tied to place, and place is no longer primarily tied to opportunity.

The old myth was one of humans shaping the land. In the new myth, the land shapes our future.



- Metropolitan Counties**
- Non Metropolitan Counties**



Metropolitan Counties: 200 (100%); Non-Metropolitan Counties: 233 (100%)

Non-metropolitan counties make up over 80% of the U.S., and globally, that percentage is even higher, a vast swath of the biomass of our planet.



Urban areas are given primacy in conversations about global sustainability, but they do not exist in nature - they are a product of social behavior.

Cities grew up as hubs in the physical transit of goods and natural resources originating from rural areas.

The internet has fundamentally changed the way we form networks and the way we value and exchange goods and resources.

Increasingly, we operate as residents of the internet more than as residents of any one specific place.

We need a new framework for talking about and addressing the entrenched problems and growing opportunities of the non-urban.

THE AMERICAN DREAM

A MYTH GONE AWRY

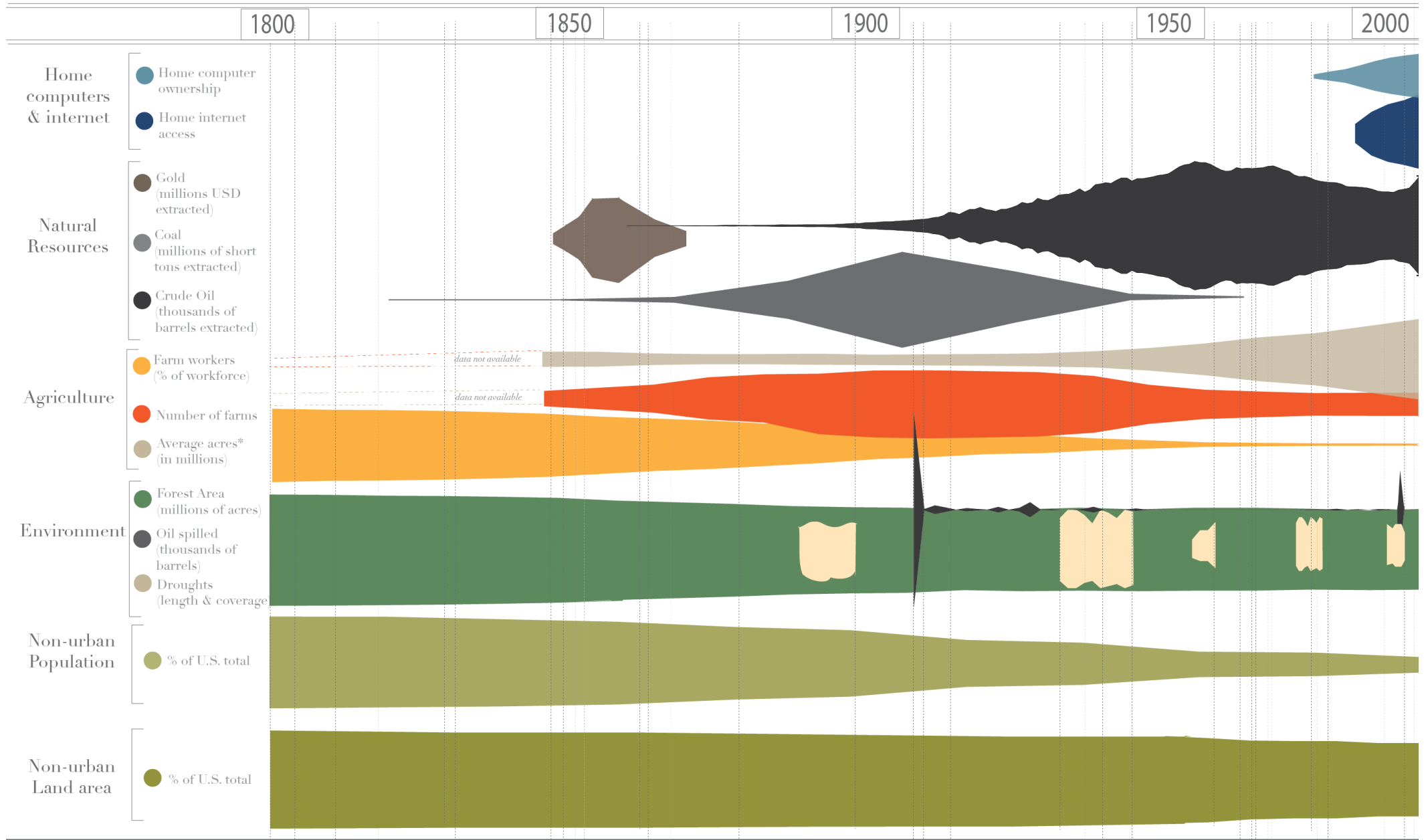
“In all the world, Americans have been the single greatest destroyers of land”

-The Worst Hard Time

Growth in non-urban America has long been grounded in geography-based extractive economies, and its history has been characterized by cycles of boom and bust, driven by deep-seated American ideologies like individualism, manifest destiny, and capitalism.

The American dream is one of the most powerful and pervasive myths of the last two centuries. It has – and continues to - inspire millions across the globe to risk everything for the promise of a better life – a life they have some stake in making.

The United States | A small examination of non-urban forces, 1800 - present

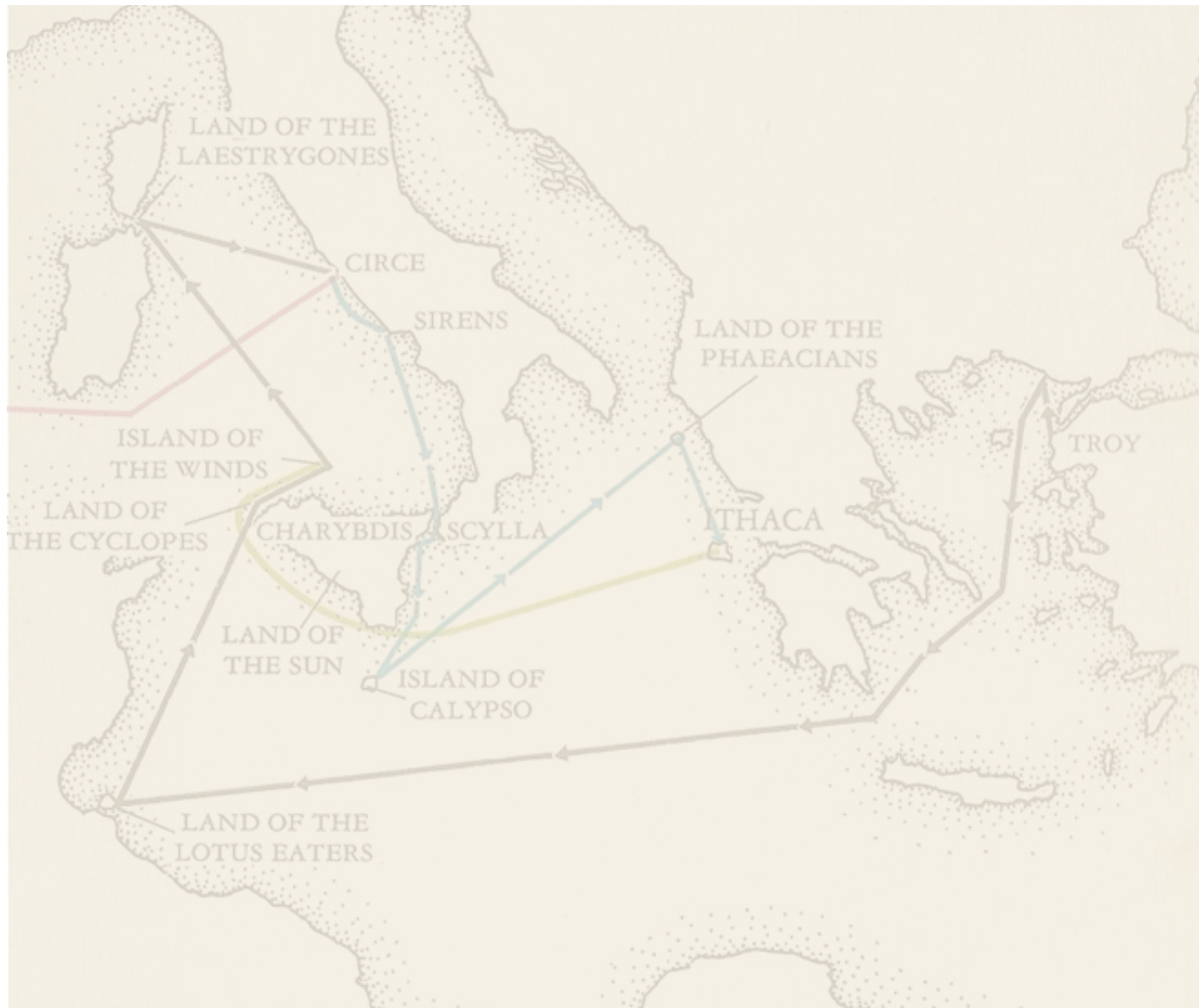


*"I wonder why progress looks so much like destruction."
- Travels with Charley*

We don't have to look far to see that the old rhetoric of extractive economies is failing us, from rural poverty rates that persist at close to 25% to the escalating threats of climate change.



© Joel Pett.



“Culture, as a product of the mind, can be interpreted as an image-making machine that recreates the outside world through symbols arranged into maps and stories...”
- E.O. Wilson

Cultural change lies where it always, in metaphor and ritual.

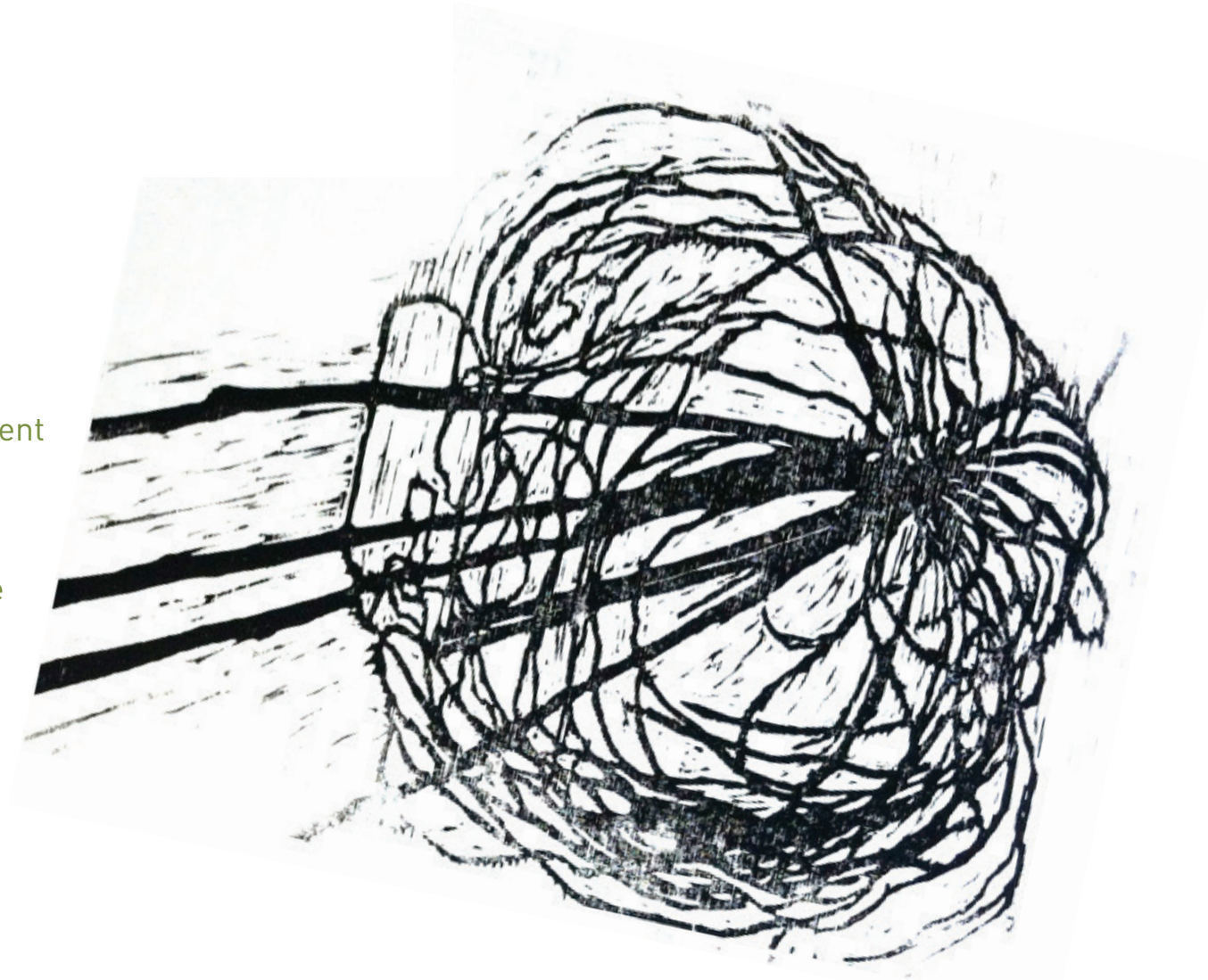
My thesis works create a framework for a new mythology with a collection of maps that address our evolving relationship to geographic place.

This new myth arises from the obstacles and opportunity of three converging networks:

environment

people

technology



“It is time to invent moral reasoning of a new and more powerful kind, to look to the very roots of motivation and understand why, in what circumstances and on which occasions we cherish and protect life.... We are human in good part because of the particular way we affiliate with other organisms....they offer the challenge and freedom innately sought. To the extent that each person can feel like a naturalist, the old excitement of the untrammelled world will be regained.” - E. O. Wilson

BIOPHILIA & CULTURAL BIOMIMICRY

BUILDING A NEW MYTH

BIODIVERSITY & BIOMIMICRY

The Biomimicry Institute defines biomimicry as an innovation method that seeks sustainable solutions by emulating nature's time-tested patterns and strategies.

Culture and mythology arose hand in hand to explain our relationship to the natural world, and, as such, seem to me to be one of our earliest and most consequential biomimetic processes.

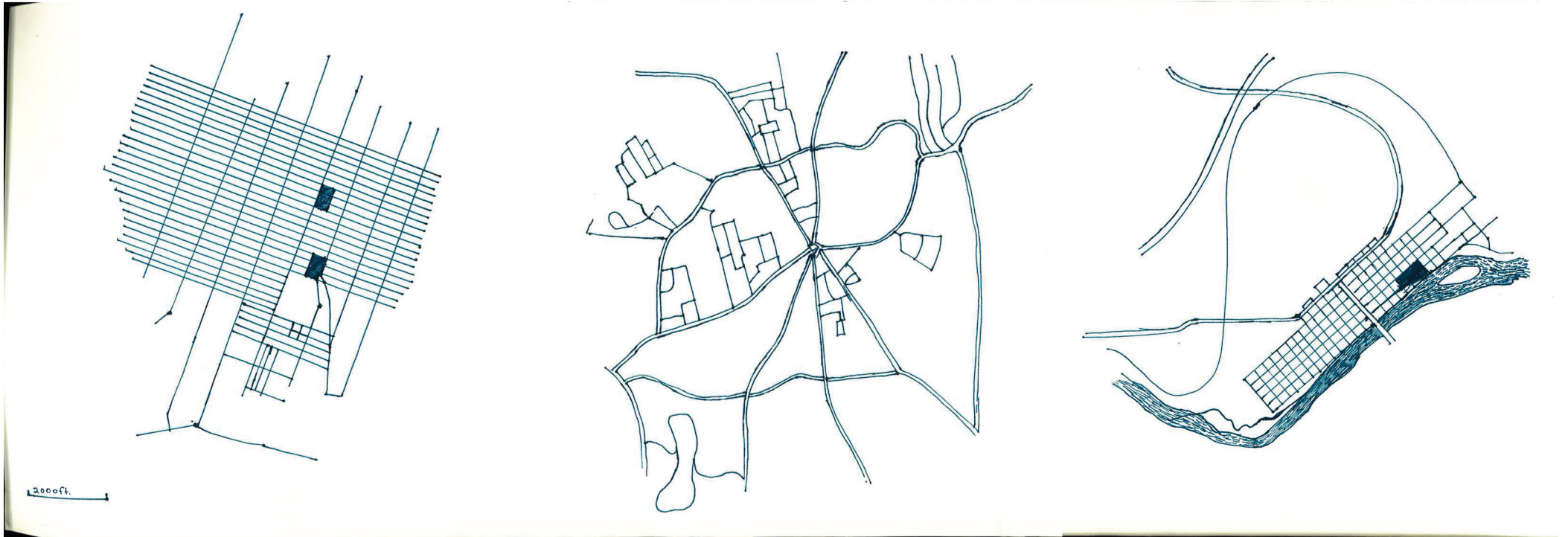
I put forth here an argument for cultural biomimicry - for the conscientious and intentional development of metaphor and ritual to bring the rhythm of natural systems into our social, technological, and economic ones. To be a conversation not only about sustainable growth, but also about manageable decline.

DIVERSITY & EMPATHY

It seemed that if my goal was to reinvigorate a certain spirit while simultaneously changing a pervasive attitude, I needed to better understand how these three networks were intersecting.

I wanted first to re-define the scope of 'diversity' to include all living organisms. The following two images are hypotheses for the relationship between diversity and empathy in regions of different population density.

I then conducted a participatory research experiment in which I asked residents across population densities to document their day by taking a photo every 20 minutes, taking additional photos if their location changed within the twenty minutes, in an attempt to capture and quantify empathetic response toward people and nature.



An early process drawing observing patterns of settlement and development by population density. From left to right : New York City; East Longmeadow, MA; Fort Benton, MT.

Knowing that the organic formation of small communities often mimics other biological and ecological structures, these road maps were a starting place for looking at network overlap and building a visual vocabulary.

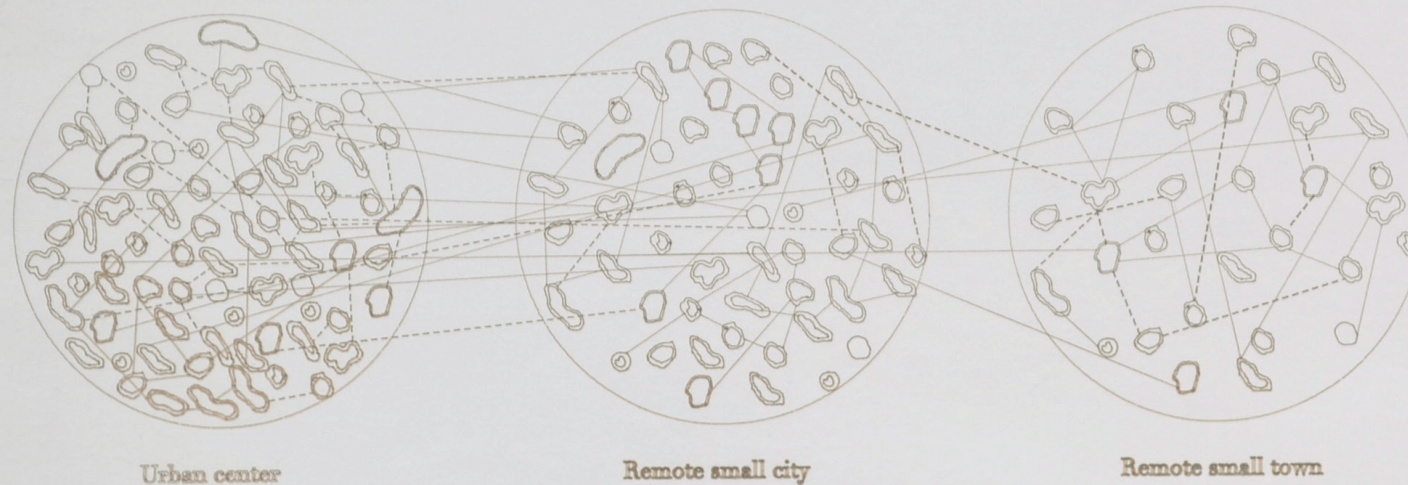
"It is time to invent moral reasoning of a new and more powerful kind, to look to the very roots of motivation and understand why, in what circumstances and on which occasions we cherish and protect life..." - E. O. Wilson

Diversity :: Self-Selection
as a measure of empathetic response

Part I | Human : Human

Hypothesis of patterns of interpersonal interaction, by population density.

—— Expected Interaction
----- Unexpected Interaction



"[This idea that] you get the most diversity living in cities...I want to throw that in the trash. When the group is big enough, it's really easy to find the people like you. The hard thing about being rural is that there isn't that group...my best friend now is a 70-year old bachelor songwriter who drives a combine....And, because there are so few of you, everyone wears different hats. That's the coolest thing. You get to be all of these things. And it's nicer to have small socializations every day. It makes you feel glowing."

-Elinor, Ft. Benton, MT

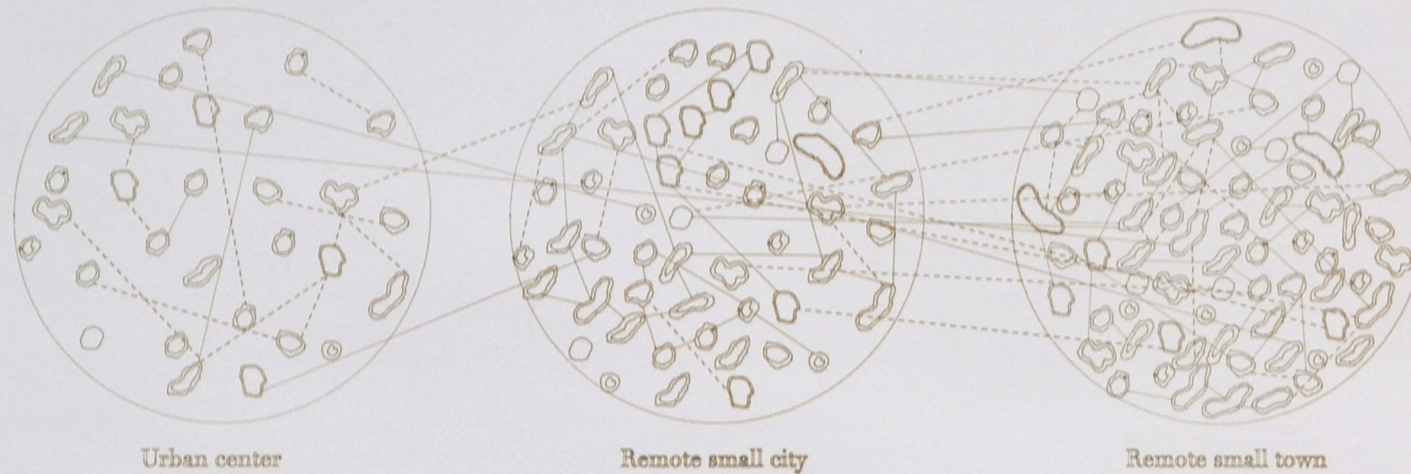
'We are human in good part because of the particular way we affiliate with other organisms....they offer the challenge and freedom innately sought. To the extent that each person can feel like a naturalist, the old excitement of the untrammled world will be regained. I offer this as a formula of reenchantment to invigorate poetry and myth...' - E. O. Wilson

Diversity :: Self-Selection as a measure of empathetic response

Part II | Human : Environment

Hypothesis of patterns of interaction between people and the natural environment, by population density.

— Expected Interaction
- - - Unexpected Interaction



"The intangibles of the land is what feeds me" - Ross Rettig, Ft. Benton, MT

"It is both enjoyable and tiring to spend the day out in the field, working in pastures and wetlands. Spending so much time in the systems I am working in means that I can observe changes in plant communities and water levels throughout the year, and also observe responses to different disturbances like fire and grazing. A combination of long-term monitoring, like downloading stage data from pressure transducers in groundwater wells (morning activity), and specific research projects, like looking at greenhouse gas fluxes in grazed and un-grazed wetlands (afternoon activity) form the basis for the work done at MAERC. We try to connect our research to the larger challenges facing both grassland ecosystems and ranching in sub-tropical Florida." - Julia, Lake Placid, FL.

Empathy Test, Part 2
lasercut and digital print on paper
11" x17"

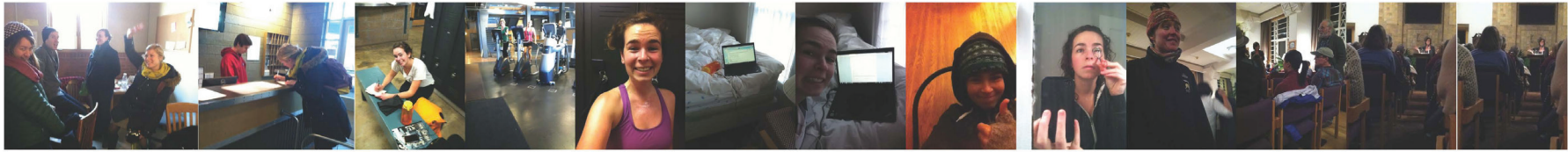


Rikka
 Missoula, MT
 population ~68,000
 MFA candidate, Teaching Assistant
 University of Montana



Documented interpersonal interactions:
 Total: 57
 Expected: 49
 Unexpected: 8

Documented environmental interactions:
 Total: 0
 Expected: 0
 Unexpected: 0



Percent of photos in which the following appear:



People 72%



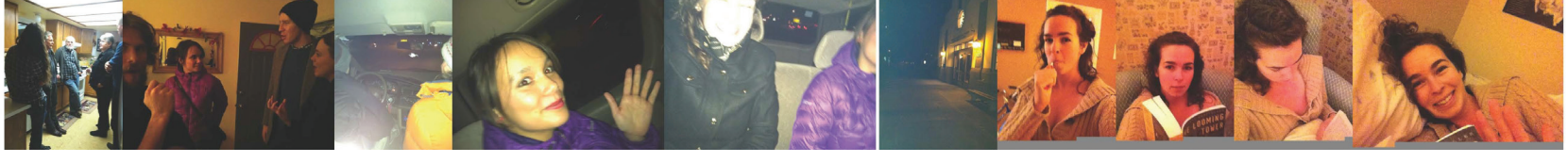
Environment 0%



Technology 13%



Driving 5%



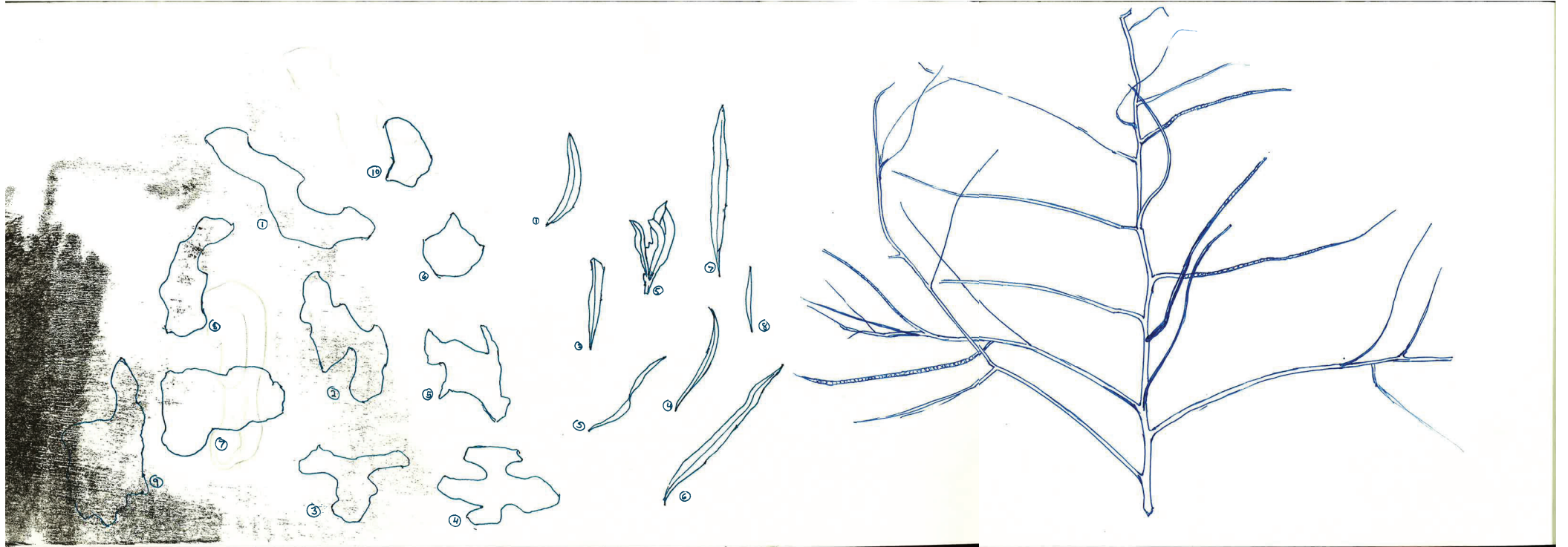
“Spending so much time in the systems I am working in means that I can observe changes in plant communities and water levels throughout the year, and also observe responses to different disturbances like fire and grazing.”
- Julia, Buck Island Ranch, FL

In the conversations that followed my photo experiment, it became clear that proximity to the natural environment directly correlated to a more complete and nuanced understanding of the various systems at play.

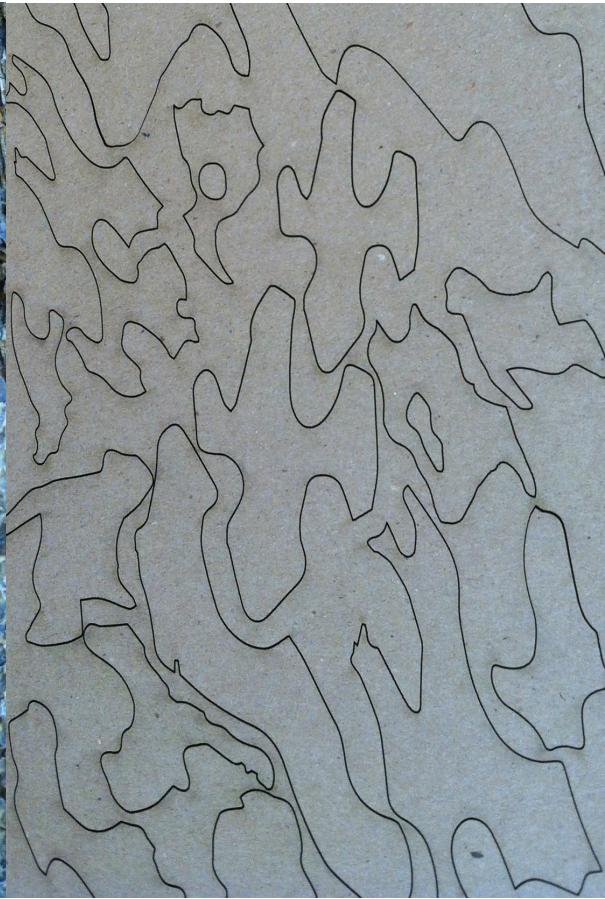
Resilience is as much about listening as it is about taking action, and cultural biomimicry meant giving the land a clear voice in the conversation.

I decided to create a visual language that re-unites nature and metaphor to map intersecting social, environmental, and technological systems. I collected elements of the natural environment from photos and other artifacts as part of a new lexicon for exploring these intersecting systems.





A sketch of some of the artifacts collected on my trip west.
From left to right : Ponderosa pine bark, sage, tumbleweed.



1. Shape-mining

Hunting through artifacts and photos collected during research for shapes and images that visually captured key concepts and relationships.

2. Processing & Refinement

Shapes are traced, scanned, extracted into vector outlines, and cut from chipboard using a lasercutter.

3. Application

The shapes are printed by hand using a modified relief process.



The process is important not only because it mirrors traditional resource extraction, but because it unites the three systems - environment, technology, and people. Organic shapes are collected from the natural environment, printed with a laser for precision, then applied and shared in a social contexts.

In designing sustainable models, particularly those that rely on biomimicry, a fundamental question we should be asking ourselves is, how far can we push the limits of integration between principles and practice?

Old Myth

New Myth

environment	— — — —	Cycles of boom and bust	— — —	Cycles of sustainable growth and decline
people	— — — — — —	Perceptions of a 'rural backwater'	— — —	Increasingly diverse population
technology	— — — — —	Job creation through geography-based extractive economies	— — —	Job creation through the invisible geography of the internet



ENVIRONMENT

The land and wildlife have a powerful role in American nostalgia.

Dependence on an unpredictable and sometimes harsh landscape mean that resourcefulness and adaptability have long been mainstays of rural life.

These landscapes defy easy elegies:

the other lead in the Billings Gazette,
Wolf 690, mange-struck and hungry,
shot dead by a rancher after her pack,
from Druid Peak, sickly dispersed,
and died deep in hostile territories
(the only kind wolves know). She cut a sheep,
he had to shoot. The story of the west;

-Kristen Gunther, Wolf 690



'It's too much for me,' responded Levin. 'Do try, no, and put yourself in my place, take the point of view of a country person. We in the country try to bring our hands into such a state as will be most convenient for working with. So we cut our nails; sometimes we turn up our sleeves. And here people purposely let their nails grow as long as they will, and link on small saucers by way of studs, so that they can do nothing with their hands.'

Stepan Arkadyevitch smiled gaily:

'Oh, yes, that's just a sign that he has no need to do coarse work. His work is with the mind...'

'Maybe. But still it's queer to me, just as at this moment it seems queer to me that we country folks try to get our meals over as soon as we can, so as to be ready for our work, while here are we trying to drag out our meal as long as possible, and with that object eating oysters...'

'Why, of course,' objected Stepan Arkadyevitch. 'But that's just the aim of civilization – to make everything a source of enjoyment.'

'Well, if that's its aim, I'd rather be a savage.'

-Anna Karenina

"I just thought life [in D.C.] would be more interesting than this, you know? I'd get off work, go look at some pigeons, go to happy hour. It was a cycle of small parties.... There are a huge number of potential experiences you could be having, but when you look at your week, what do you actually do?"

- Elinor, Ft. Benton, MT

PEOPLE

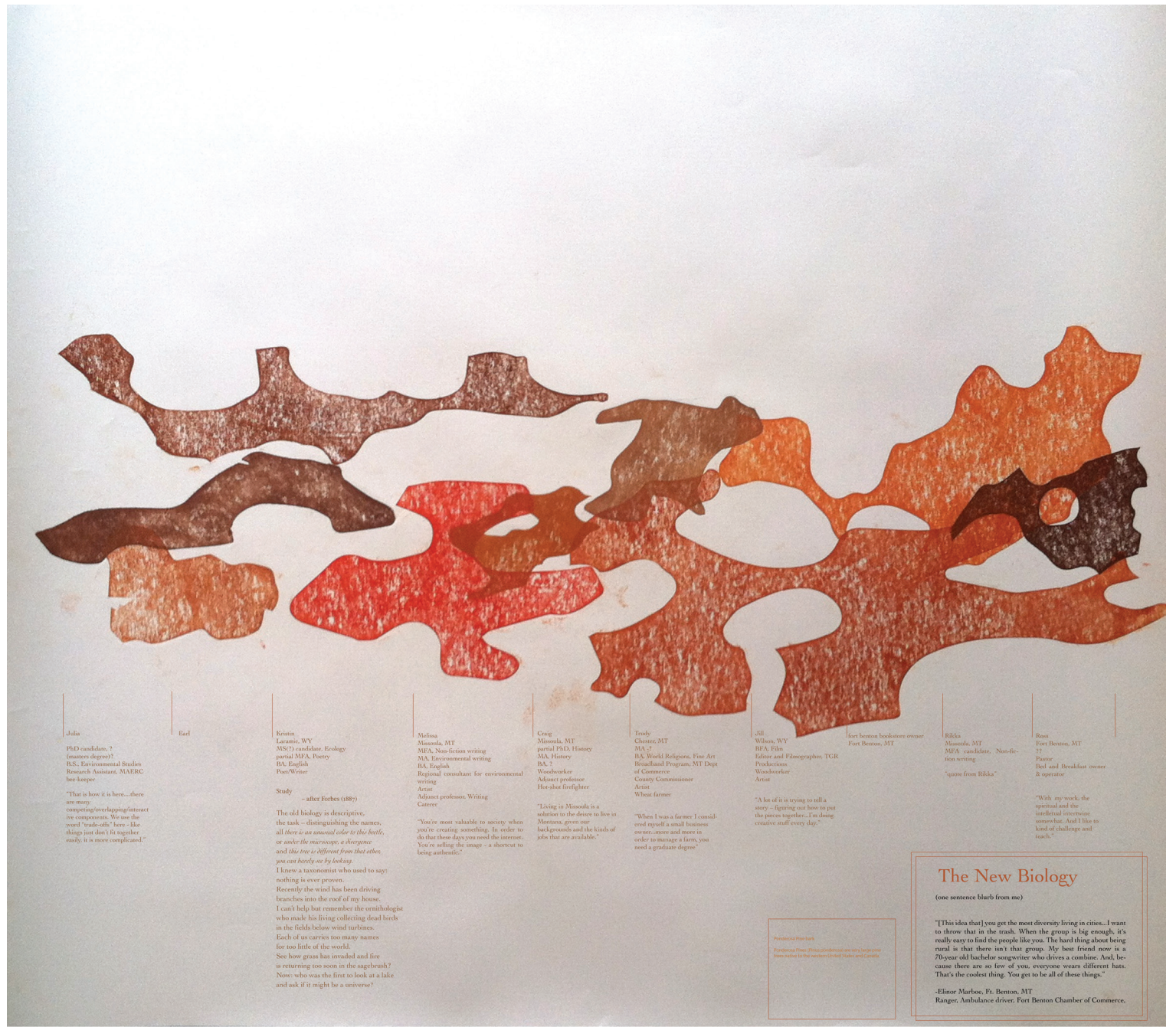
Even though the percentage of population in non-urban areas continues to decline, the absolute number of people living here is at an all-time high, and the make-up of the population is changing.

There is lower economic inequality than in cities, which has been shown to correlate with increased empathy and stronger communities.

The non-urban population is aging overall, but studies show that those 65+ are more engaged in their communities and in jobs than any previous generation

It is also becoming more diverse - immigration here has far out-paced immigration to major urban centers most interesting to me was a trend I saw among creative professionals.

“That is how it is here....there are many competing/overlapping/interactive components. We use the word “trade-offs” here - like things just don’t fit together easily, it is more complicated.”
-Julia, Buck Island Ranch, FL



Julia
 PhD candidate, ?
 (masters degree)
 B.S. Environmental Studies
 Research Assistant, MAERC
 bee-keeper
 “That is how it is here...there are many competing/overlapping/interactive components. We use the word “trade-offs” here - like things just don’t fit together easily, it is more complicated.”

Earl
 Kristin
 Laramie, WY
 MS(?) candidate, Ecology
 partial MPA, Poetry
 BA, English
 Poet/Writer
 Study
 — after Forbes (1887)
 The old biology is descriptive, the task — distinguishing the names, all there is an unusual color to this beetle, or under the microscope, a divergence and the tree is different from that other, just one barkless by looking. I knew a taxonomist who used to say: nothing is ever proven. Recently the wind has been driving branches into the roof of my house. I can’t help but remember the ornithologist who made his living collecting dead birds in the fields below wind turbines. Each of us carries too many names for our little of the world. See how grass has invaded and fire is returning too soon in the sagebrush? None, who was the first to look at a lake and ask, if it might be a universe?

Melissa
 Missoula, MT
 MPA, Non-fiction writing
 MA, Environmental writing
 BA, English
 Regional consultant for environmental writing
 Artist
 Adjunct professor, Writing
 Careers
 “You’re most valuable to society when you’re creating something. In order to do that these days you need the internet. You’re selling the image - a shortcut to being authentic.”

Craig
 Missoula, MT
 partial PhD, History
 MA, History
 BA, ?
 Woodworker
 Adjunct professor
 Hermit firefighter
 “Living in Missoula is a solution to the desire to live in Montana, given our backgrounds and the kinds of jobs that are available.”

Trudy
 Chester, MT
 MA,
 BA, World Religions, Fine Art
 Broadband Program, MT Dept of Commerce
 County Commissioner
 Artist
 Wheat farmer
 “When I was a farmer I considered myself a small business owner...more and more in order to manage a farm, you need a graduate degree.”

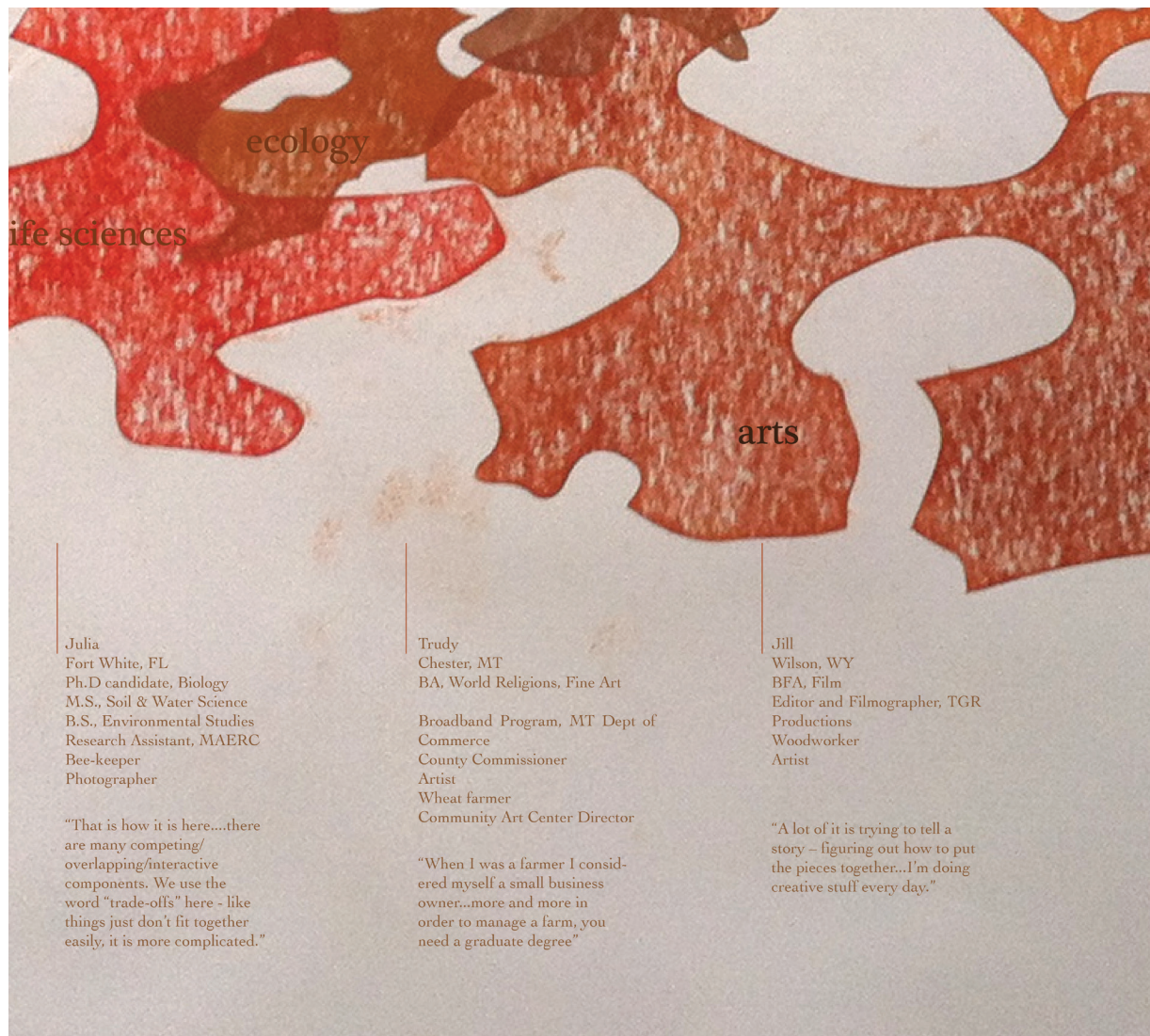
Jill
 Wilson, WY
 BFA, Film
 Editor and Filmmaker, TGR
 Production
 Woodworker
 Artist
 “A lot of it is trying to tell a story - figuring out how to put the pieces together...I’m doing creative stuff every day.”

fort benton bookstore owner
 Fort Benton, MT
 Rikka
 Missoula, MT
 MPA - candidate, Non-fiction writing
 “Spits from Rikka”
 “With my work, the spiritual and the intellectual intersect somewhat. And I like to kind of challenge and teach.”

Roos
 Fort Benton, MT
 ?
 Pastor
 Bed and Breakfast owner
 & operator

The New Biology
 (one sentence blurbs from me)
 “[This idea that] you get the most diversity living in cities...I want to throw that in the trash. When the group is big enough, it’s really easy to find the people like you. The hard thing about being rural is that there isn’t that group. My best friend now is a 70-year old bachelor songwriter who drives a combine. And, because there are so few of you, everyone wears different hats. That’s the coolest thing. You get to be all of these things.”
 -Elinor Marboe, Ft. Benton, MT
 Ranger, Ambulance driver, Fort Benton Chamber of Commerce.

Presidential Press Park
 Presidential Press Park, 1000 Presidential Avenue, a regional destination in the heart of Great Falls and Cascade



ecology

life sciences

arts

Julia
Fort White, FL
Ph.D candidate, Biology
M.S., Soil & Water Science
B.S., Environmental Studies
Research Assistant, MAERC
Bee-keeper
Photographer

"That is how it is here....there are many competing/overlapping/interactive components. We use the word "trade-offs" here - like things just don't fit together easily, it is more complicated."

Trudy
Chester, MT
BA, World Religions, Fine Art

Broadband Program, MT Dept of Commerce
County Commissioner
Artist
Wheat farmer
Community Art Center Director

"When I was a farmer I considered myself a small business owner...more and more in order to manage a farm, you need a graduate degree"

Jill
Wilson, WY
BFA, Film
Editor and Filmographer, TGR Productions
Woodworker
Artist

"A lot of it is trying to tell a story - figuring out how to put the pieces together...I'm doing creative stuff every day."

"Saturday i'm teaching a class on Ikebana at the local museum. It's sort of an interesting thing. There's a small town 100 miles from Chester that has a japanese flower arranging chapter of Ikebana International. The New York chapter is number 7 and our chapter is number 8, so you know, we're pretty old.

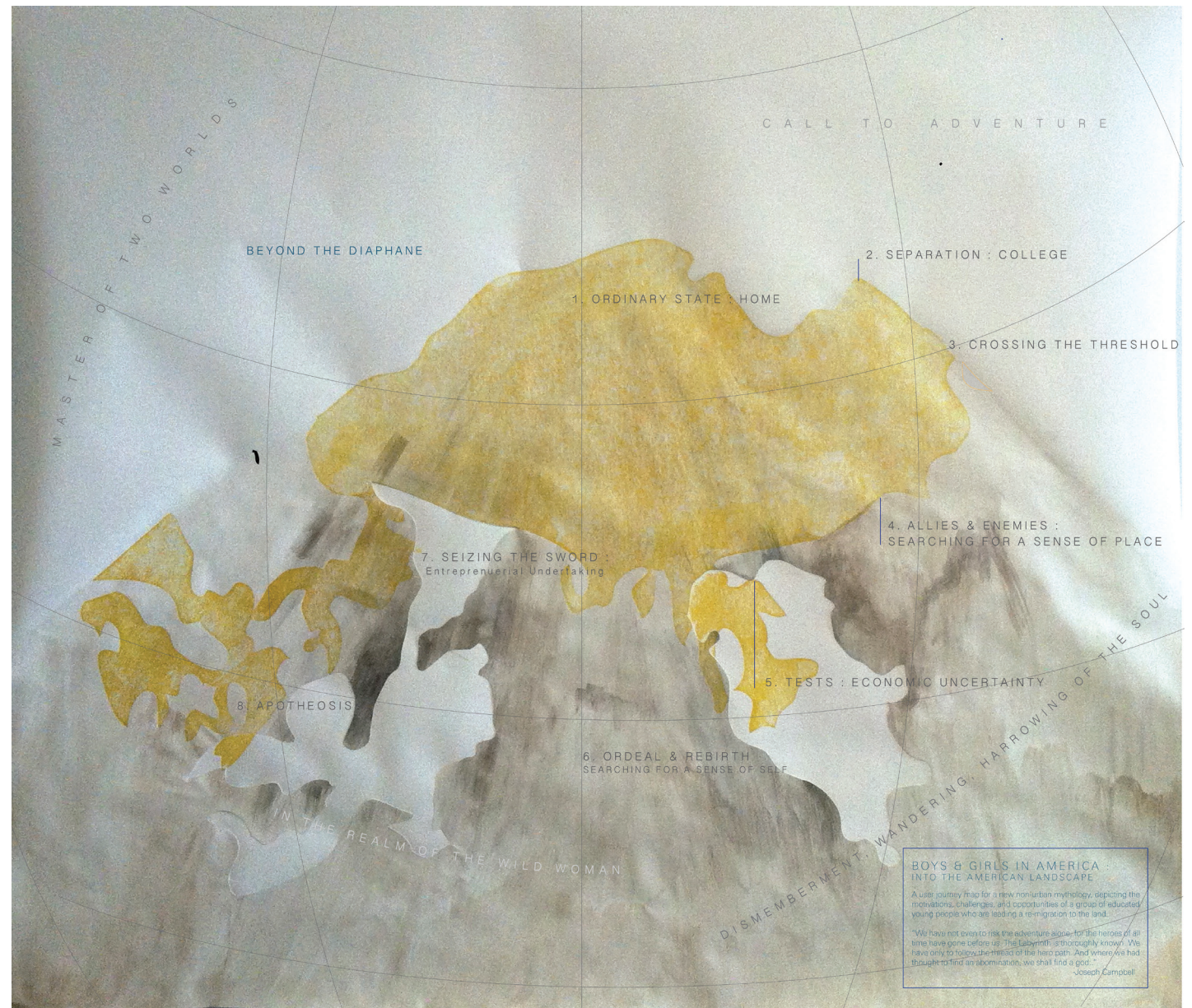
It is this really interesting, culturally diverse, mind-expanding thing, to have these older women who have spent most of their lives in a rural area, talking about shinto..."
- Trudy, Chester, MT

This group is under 40 or over 60, educated, and working at the intersection of ecology, art, and industry.

They bring a relevant body of knowledge and skills that makes them my primary audience for this project.

A common tool used in design research is a 'user journey' map that creates a research-based narrative to identify needs and opportunities of the persona we are designing for.

If we think about it, this is just an iteration of the Hero's Journey, a central mythological construct that is a framework for understanding motivations and behaviors in the face of obstacles and opportunities. In this case, our primary user persona is young, educated, female, and voluntarily moving to non-urban America.



1. Our Heroine is the daughter of educated, middle-class parents living in a small town in the northeastern United States. Her life is full of clear, reasonable expectations that she dutifully believes and follows.

2. As she both wants and is expected to, our Heroine quite reasonably heads off to college, where her inclination toward beauty and generalism lead her to study the arts and environmental sciences.

3. Partially in defiance of the American Dream she sees crumbling before her, and partially to seek out where it has been lost in order to reclaim it, our Heroine goes far from home and returns to its well-spring – rural America.

4. Like generations of homesteaders before her, our Heroine is dwarfed by the vastness and power of the land. She seeks to find her way in a new pace of life among neighbors both inquisitive and taciturn, whose interests, expertise, and perspectives challenge her long-nurtured assumptions about what is good and right in the world.

5. Ownership here is bought not with money but with time – time that builds understanding of the land and its labors. She adopts skills and habits that are part of her new environment – how to can vegetables, chop wood, make vehicle repairs- the tools and behaviors of shaping and surviving the land.

6. The initial charm of her new life over, our Heroine faces the harsher reality of limited economic opportunities in a place where very few employment options align with her educational background. The patchwork of low-paying, part-time work in non-profits, academia, and the service industry she has pieced together begins to wear on her.

7. At a breaking point in the tradeoff between economic security and fulfilling work, our Heroine calls it quits with either her job or her degree program.

8. Desiring a more interesting and effective way to maintain, integrate and use her variety of knowledge and skills, our Heroine strikes out out to find a way to monetize them through artistic and agricultural pursuits.

9. Our Heroine is both liberated by and mired in her new independence. The way forward is rocky and uncertain, and the temptation is to recede into the safety of the familiar.

10. “Finally, the mind breaks the bounding sphere of the cosmos to a realization transcending all experiences of form - all symbolizations, all divinities: a realization of the ineluctable void.” - Joseph Campbell

INELUCTABLE MODALITY OF THE VISIBLE: AT LEAST THAT IF NO MORE. Limit of the diaphane in. Why in? Diaphane, adiaphane. If you can put your five fingers through it, it is a gate, if not a door. Shut your eyes and see.” -Ulysses

TECHNOLOGY

Part of what is enabling these creative professionals to lead a re-migration to the land is new technologies, especially the internet.

The internet makes it easier for entrepreneurs and small businesses to get relevant information and find new markets.

It enables remote work, which is becoming not only popular but strategic for traditional companies, and offers the possibility of employment networks that are not tied to a specific location.

“Speaking to you as a farmer and former county commissioner, the internet is so vital to the economic health of a community....I see it more and more.”
- Trudy, Ft. Benton, MT

COMMUNITY MAPPING : CO-CREATION & CULTURAL BIOMIMICRY



cabbage palm boots

PROTOTYPE :

MACARTHUR AGRO-ECOLOGY RESEARCH CENTER (MAERC),
BUCK ISLAND RANCH, FL



The MacArthur Agro-ecology Research Center at Buck Island Ranch (MAERC) is a 10,500-acre ranch owned by the John D. and Catherine T. MacArthur Foundation, dedicated to long-term research on the ecology of Florida's cattle ranches. The ranch is run at full commercial scale and is among the top 20 cattle producers in Florida. This provides researchers the opportunity to investigate ecological interactions in a real-world agricultural setting, and to evaluate the relationship between economic and ecological factors. The MAERC program focuses on the role of ranches in sustaining essential ecosystem services in South Florida, particularly food production, water quality and supply, and wildlife habitat and biodiversity. [description courtesy of maerc.org]



“Easy to visualize the multiple paths can take you to the same solution”

“Needs and root causes initially congregate around the problem statement, but then you can arrive at needs further out, which are needs that offer a solution to one aspect of the problem statement (i.e. initially water storage and phosphorous retention are root causes at the center, but they lead through other tiles to PES programs, which also becomes a need)”

“Could visualize where there were lots of stakeholders and resources dedicated to a root cause that doesn’t really have a lot of opportunity for being addressed (like Legacy P) and you can see how it would make more sense to move all that effort to another need or root cause where you are more likely to find success”

“Certain stakeholder tiles were used in multiple areas of the board, but we were able to see how the same stakeholders seemed to congregate together in multiple places, and certain stakeholders frequently interacted, and some never interacted.”

“We ended up using certain words under multiple categories - like University of Florida IFAS can be both a stakeholder and a root cause - having different colors makes it easy to visualize how one entity can represent multiple roles (and some roles may be contributors to the problem and some may be solutions - i.e. ranchers can be seen as both a root cause, and a stakeholder than can provide solutions)”

The non-urban is primed for interesting opportunities, but the conversation needs to change.

I am sending copies of the maps to locations and people who were most active participants in my research. These individuals are already very engaged in their communities, meaning they are primed to lead these conversations at a local level.

“The agony of breaking through personal limitations is the agony of spiritual growth. Art, literature, myth and cult, philosophy, and ascetic disciplines are instruments to help the individual past his limiting horizons into spheres of ever-expanding realization. As he crosses threshold after threshold, conquering dragon after dragon, the stature of the divinity that he summons to his highest wish increases, until it subsumes the cosmos. Finally, the mind breaks the bounding sphere of the cosmos to a realization transcending all experiences of form - all symbolizations, all divinities: a realization of the ineluctable void.”
— Joseph Campbell, *The Hero With a Thousand Faces*

