

# Lesson: Pattern, Structure, Process

This is a core lesson: how to understand more complex problems through systems engineering principles and reframe problems.

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## Spring 2021 at Mezzacello

Well it's nearly Easter in this year after COVID19. My enclosed sustainable ecosystem is readying itself to come back to life. I decided this cold sunny day was the perfect day to record Mezzacello.

This is right before it goes through it's next big expansion. So here is a little slideshow from April 1, 2021. Let me know if you have any questions. There is some bit of trivia or an active experiment going on in everyone of these photos.

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## Don't Look a Gift Horse in the Mouth

### *Diversity*

Diversity in an ecosystem is always a good thing. I produce high quality compost and fertilizers from various sources. But

the poultry and rabbit manure have limits. And it takes time and energy to synthesize them to where the garden beds actually need those minerals and soluble nitrogen. What I need is manure from a larger herbivore with a more selective diet. Cows are OK but their manure is hit or miss and cows eat anything. Seeds can remain intact. No, what I need is horse manure. And I found some! Thanks to Facebook, Columbus Area Homesteaders group, and Abigail Santorine and her lovely little pony, Ginger. My niece and I ran over to Abigail's house and collected manure on a Monday night after work.

## Community

I rarely mention this side of being an urban farmer. It takes a village to become a knowledgeable urban farmer and it takes a village to get all the resources one will need to get an enclosed ecosystem sustainable. It takes work and community.

I am from Los Angeles. I started "farming" in 2014. I have gotten A LOT of help. And it's from a community that spans the globe and is right in my back yard. The Facebook group "Columbus Area Homesteaders" is a terrific group! Everyone on there is so empathetic and helpful (even me). If you are interested in Urban Farming, definitely check them out! Also, remember, a community is a garden as well. It needs tended, it requires care and attention, and you have to be willing to replace what you take out. Abigail, I want to support your passionate mission at Tiny Horse. I'll post details in the comments on this post! Thank you!

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# Changes, Evolution, and Chicken Coops

*I love the play house chicken coop.  
It represents my innocent and playful  
heart. I meant well; Now I know better.*

I was at a party last year (just before the #COVID19 pandemic changed the world) and I was discussing farming with a colleague. Their position was that it was impossible to be a farmer (based on my experiences) they couldn't manage the shame of failure. Straight face when they said this, by the way. There was a version of me that existed at one time that would have been horrified at this sentiment. That version of me craved convenience over confidence. I am a product of failure; I feel zero shame at my failure. What I feel instead is a desire to keep evolving, learning, and sharing. I am a product of the very culture I want to transform. The person who looks at a grocery store as the ENTIRE story of food. Thanks to modernism, technology, and capitalism this is true of many people these days. But an idea is not truth. It is a story that you create and use to describe what you can see. The trick is to always be willing to ask better questions. Yes, those questions will most likely lead to failure. But the truth is that wisdom nurses at the teet of failure. We grow very little from success; but we grow most at the hands of failure. This is a hard but necessary lesson. There was a time when seeing someone else succeed at something I was trying would make me feel shame. I burnt that nuisance weed down to the ground – with a flamethrower. My success is DEPENDENT on seeing what others do and learning from THAT. Case in point; my chicken coop.

Precious, naive me believed this was a good idea at the time.

In fact you can see the very evolution of this idea in this photo. You gave the “winter coop” and just behind it the larger coop. When I engineered these coops I believe I was engineering g from the perspective of the chickens. Small and scaled for one purpose; housing for small animals. I had not yet factored myself into their ecosystem. There did not need to be room for me to coexist in what I thought of as their “space”. But that was a failure of imagination. The enclosed ecosystems of Mezzacello I now realize need to be gracious enough for all components of that ecosystem to interact. That includes the humans.

i feel zero shame that it took me five years of continuous failure, evolution, and modification to discover this truth. I documented it all. I can point to specific moments like this and help others avoid these mistakes. There is a calculus to life that has variables of ease of use, integration, cost, and wisdom. You must be ready to factor for all of these when you make plans. My plans are changing – yet again. But they will make it easier for me to coexist in the worlds of these animals, these systems, these plants, microorganisms and fungi. As we should. I love the play house chicken coop. It represents my innocent and playful heart. I meant well; now I know better.

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## **Spring        2021        and        the Brunerform**

An update on the gardens this spring and a candid little confessional and observation on Spring, Beauty, Life, and Fashion.

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# The Paths To The Ecosystems

The roads most traveled on an urban farm and what these paths to the ecosystems tell us. How the ecosystems of Mezzacello connect.

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## Next Steps for Project Martian

With the success of Project Martian last summer, I am making plans to extend my research. Last summer was about optimizing yield and harvest ability of the selected crops. I am still doing well in my winter larder! This spring and summer will be about implementing technology and automation to extend my mission into other food deserts.

Stay tuned for #ProjectBioLEGO. My first foray into automation agriculture and ecosystem management.

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## The Aquatic Ecosystem in 2021

It's winter, 2021. This is the fourth winter in the aquatic ecosystem for the fish at Mezzacello. If you're not familiar, [start with this nightmare](#) or [this](#), or [this](#). I have busted my gluteal muscles trying to learn what Mother Nature needs to create a #Sustainable aquatic ecosystem and make it manageable

for a 21st Century life style. It has been a rewarding journey. So much #Physics #Biology #Chemistry #Ecology #Hydrodynamics #Stats #Mathematics #Topology #Geometry and #Legal issues. All of this. From having the police called on me for digging a six foot grave, to mastering hydrology and pump technology and #Backup Systems to the magic of getting handwritten poems in the fence written by neighborhood kids. This particular ecosystem at Mezzacello has been a wonderful journey. Recently I went out and looked into the clear 1.7m abyss at the perfectly content fish I was reminded of the Haiku that one of my summer camp kids wrote to me on 2018:

*Sky of clear water*

*Dug deep down into the ground*

*Warm in winter, sound*

That's the aquatic ecosystem in a nutshell.

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## The Foodist: Martian Matzo Soup

After spending most of 2020 experimenting and learning to maximize yields, I decided to start using some of the food from #ProjectMartian. My video intern at PAST Foundation was feeling under the weather, so I decided it was a good time to make Martian Matzo Soup.

This was a #ProjectMartian mashup: MirePoix (carrots, onion, celery, oil, thyme, parsley) prepared and frozen at time of harvest. Then there was a chicken harvested, cooked, and vacuum sealed in the spring from the freezer. I also made chicken broth made from chicken carcass and spare Martian

vegetables tailings that I had frozen and stored in freezer. Lastly there was the Matzo ball mix made with stale matzo crackers (a gift (fresh, two years ago) from a PAST Foundation colleague that I found and ground into matzo meal) and dehydrated onion, garlic, and celery mixed in that was packaged and vacuum sealed and stored for another day – like today! It's make your intern feel better day!

It took me 30 minutes from start to finish to make this soup. That's it. My colleagues at PAST had to endure endless photos of the process. Looking at the first text:

To the last text of the finished soup was indeed 30 minutes.

**Here is the recipe and it is crazy easy!**

### **Ingredients:**

- 2 carrots peeled and chopped
- 2 onions peeled and chopped
- 2 celery sticks chopped
- 2 Tbsp olive oil
- or 2 mirepoix frozen cakes (2 cups)
- 4 cups water or chicken broth
- 4 cups water
- 2 cups chopped cooked chicken
- 1/2 cup white wine
- 2 Tbsp worcestershire sauce
- 1 Tbsp each Tarragon, Thyme, Parsley
- Salt and Pepper

### **Matzo Soup Base:**

- 2/3 cup seasoned matzo meal
- 2 Eggs
- 2 TBsp oil
- 1 Tbsp baking soda and 1 Tbsp vinegar or lemon juice or
- 2 Tbsp seltzer water

1. In a 4 quart pan, add olive oil and fresh vegetables. Alternatively add oil and melt mirepoix. Add 4 cups of broth or water with bouillon. Bring to a boil.
2. Reduce heat. Add in chicken, wine and herbs. Let simmer for 15 minutes.
3. Prepare Matzo balls:

#### Matzo Balls:

1. In a stainless or glass bowl (not plastic) add two eggs. Add in the oil.
2. Add in the seltzer water OR combine the baking soda and acid and mix.
3. Pour either the seltzer water or baking soda acid into bowl. Whip vigorously with a FORK – not a whisk until frothy.
4. Add in Matzo meal (you can buy matzo meal kits, but making your own is the way to go on Mars – just saying)
5. Gently combine the meal with the frothy liquids until just mixed. Do not over mix. You want lots of air!
6. Cover matzo mix with cling wrap, a cover or a cloth. Set in refrigerator for 15 minutes.
7. Form 3cm balls.

#### Finish your soup:

1. Add matzo balls to the simmering soup.
2. Baste the matzo balls with broth.
3. Cover pan and let matzo balls cook for 15-20 minutes on low heat.
4. Matzo balls will swell! This is normal. In fact as you reheat this soup the balls will disintegrate; this is OK.
5. The magic of matzo is threefold:
  - the Uber simplicity!
  - the flavor!
  - The antibiotic and antioxidants in this are off the hook!

Enjoy! PS my PAST Foundation intern was VERY concerned that the Martian Matzo Soup was purple. I explained that when you live on Mars, you eat what you have. We had Purple carrots. He ate it, and he loved it! So did mom!

I told him to tell his mom she needs to go to Msrs! LOL! just kidding. Juana, this blog post is dedicated to you!

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## COVID19 and Creating Martian Compost

I have declared 2020 the year of #ProjectMartian at Mezzacello. I took part in a grant with great big aspirations and some very cool science. It was a partnership grant with [PAST Foundation](#), [The Columbus Foundation](#), and Scotts Miracle Gro. The point of the grant was to explore creating beds on another planet with easily sourced and lightweight materials to build a growing environment on Mars. The plan was to create 10 videos covering different STEM aspects of growing food in a substrate of compost and Martian dirt – and select accelerants, minerals and chemicals. There was an amazing summer camp experience planned, maker manias, and killer lesson plans for teachers and students. Then we had COVID19 lockdown. This was a bummer – but it did not deter me or mother nature. I still did all the work. I took part in online zoom forums, hosted virtual tours, created processes and machinery to do what I wanted robots to do on Mars. And I had a blast!

In addition to creating entirely new systems and processes at Mezzacello for efficiently growing food in these killer new compost beds, I also singlehandedly created Five 1.43 cubic meter compost beds at PAST Foundation. This is a large amount

of compost. Picture 8 cubes 1 meter on each side. I collected that for 12 weeks over the late spring and summer and set it up in the raised beds at PAST. I layered in green, brown, diatomaceous earth (very fine, sharp plankton shells to simulate Martian regolith), inoculant, compost accelerant, minerals. Layer, pour and repeat. Five layers in each 1.82 x 2.43 meter (6'x8') beds. Each bed was 33 cm (12") deep.

The beds at PAST remained tightly covered all summer long by waterproof tarps. The tarps allowed me to meticulously control and document the amounts of water I wanted add and to discover the correct ratios of water to compost. The results were impressive. I will have 4.3 cubic meters of compost in the late winter. I will use this "seed compost matrix" in the 2021 spring and summer camps at PAST Foundation. The plan for summer 2021 is to extend this model with robotics and automated tending systems. I was very proud of the system that I developed. There were failures. But now I know better. Not everything will grow well in this substrate. But I can tell you this, Mark Watney was right, potatoes grow so well in this!

My favorite side effect element of this project was how much closer and well-connected I became with my neighbors in the densely populated urban area where Mezzacello is located. It took a moment to get my neighbors to recognize that I was dead serious about begging for their grass clippings! I developed a robust network of fabulous neighbors who truly supported my vision. And not just in Olde Towne East, but in Grandview, in Upper Arlington and Westerville as well. It turns out that building a model garden system for another planet also builds better gardens of engaged and caring neighbors on this planet as well. That fills me with pride and hope. When we show up, we all grow up. Thanks to my friends!